PREVENTABLE DEATHS:

Enhancing the survivability of our soldiers, fundamental questions about the competence and lack accountability of Army generals, and deep concern about the lack of civilian oversight and remedial action.

We are at war. With that in mind, a reasonable first premise is that we need to think more about what goes into survivability.

The second premise is that although Afghanistan and Iraq were, and are, dangerous for those involved, we are likely to face significantly more lethal enemies in the future and should prepare accordingly. In Vietnam we lost more soldiers in a week than we have lost in the entire Iraq war to date.

The third premise is that the time has come to make those directly responsible for the survivability of our soldiers, the Army generals, accountable.

Author's Note.

The capture of Saddam Hussein after nine months will tend to make some observers of the US Army think all is well with that great institution. Unfortunately, they would be mistaken.

Other more informed observers, who have a high regard for the Army as a whole, still think there is something deeply, and fundamentally, wrong with the Army leadership culture.

They point out, quite accurately, that Iraq, like Afghanistan, presented no formidable opposition when it was attacked, and they are sharply critical of the pace of the assault, the details of its implementation, and the abject conduct of the aftermath where virtually nothing was done for a month after Baghdad was seized.

They point out, with some justification, that a more vigorous pursuit of the campaign might well have seized Saddam Hussein much earlier and they argue that the Army leadership's lackluster approach to its occupation duties made no small contribution towards the ongoing Iraqi insurgency.

In effect, signals were sent that the Army leadership, after apparent conventional military victory – in contrast to the US Marines – was indecisive.

We have nothing but praise for the average American soldier.

It is vitally important to distinguish between soldiers and generals. Their careers, goals, risks, incentives, dangers and rewards are *not* the same.

Too many Army generals these days lead from the rear. It was not always so.
It still is not in the case of the US Marines.

In most cases, ordinary soldiers do the dying. At general officer level, *where currently there is almost no accountability*, the outcome is more likely to be fame and fortune.

Competence is not a requirement for entry into the club of Army generals.
Conformity – a demonstrated unwillingness to question the status quo – is.
To achieve a general's star in the US Army these days means you have more than a fair chance of becoming a millionaire through your second career – which will most likely be with a defense contractor or similar.

The result, subject to some notable exceptions, is that acquisition politics and careerism are driving the agenda at a time when the needs of the fighting soldiers should be paramount.

The overall findings of this report are disturbing.

The Army are currently spending well over $100 billion a year, a staggering sum by historical standards, yet as we show here, there is every evidence they are spending substantial sums on the wrong equipment – the Stryker is the most egregious example - while neglecting the current force.

Worryingly, the Army's operational thinking is flawed in a number of key areas.

The division based structure of the Army has remained virtually unchanged for over half a century despite much evidence that it is clumsy and hard to deploy and that it is not how the Army fights.

The disastrous Army Individual Replacement System used for personnel management has still not been reformed.

This author and the many who assisted with this report have great affection for the Army. We just wish the leadership would remedy some fundamental and very obvious flaws.

It would be timely.

We are at war.

A wide variety of sources including more than a few generals.

Many people inside the defense establishment, from Members of Congress to analysts, from staffers to program managers, have contributed to this report, which builds on our earlier report, 'Stryker and the Reality of War' that was issued in August 2003 and which may be found on www.cochrane.com and other defense related web sites.

Ironically, our Army sources, in the main, are Army general officers, and virtually all other sources are either serving or recently retired senior members of the Army officer corps. Clearly, it would be better if they would speak up for themselves but they are victims of the very self serving culture that lies at the core of the problem.

The price for candor is too high. Further, the concept of open debate, that "Disagreement is not disrespect," as articulated so well by retired Army Chief of Staff Gordon Sullivan, seems to have no place in the current Army culture; and the Army is poorer for it.

All sources now agree that the Army cannot reform itself.

There is nothing wrong with this great Army that informed and active Congressional oversight, and OSD direction, will not cure.

However, all sources now agree that the Army is incapable of reforming itself.

Victor O'Reilly, December 2003

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Who commands makes a fundamental difference. The competence, or lack of it, of US Army generals can win, or lose us this war. We have lost before.

Executive Summary

Caliber of Army leadership a case for concern. Careerism rampant.

We are at war. Survivability in the Army, whether Active Component, Reserves or National Guard is not receiving the attention it deserves.

Fundamental equipment shortfalls should not be happening after the shooting has started. Generals are paid to think, plan, and anticipate and they have had plenty of time to do so.

Iraq was signaled well in advance and we have been at war for over two years.

Neglect of the survivability basics under these circumstances is inexcusable.

The most important element in the survivability mix is the caliber of the Army leadership. Here there is much evidence that we have considerable cause for concern regarding the quality, competence and integrity of some general officers. We should be equally concerned about the Army leadership culture in general.

Though we would emphasize that there are notable exceptions, much of the Army general officer culture has become opportunistic and careerist with more interest being paid to retirement jobs with defense contractors than to the welfare of the troops.

One might think being at war would change that situation. It has not.

There is a demonstrable case for fundamental Army reform.

Civilian oversight of Army inadequate. Conflicts of interest common.

Civilian oversight both by Congress and by the Office of the Secretary of Defense is inadequate.

Yet, reform of the Army will only be possible if mandated by Congress and implemented by the Secretary of Defense.

The Army cannot reform itself.

Too many Army generals, whether serving or retired, have a vested interest in the status quo. For all too many, the Army has become a business opportunity with warfighting being considered a disagreeable disruption.

A major manifestation of the flawed Army general officer culture is apparent in the Army's approach to acquisition. Here, personal agendas and egos have tended to dominate the very real warfighting needs of the soldier. Ineffective prestige equipment has been bought at the expense of maintaining and upgrading equipment that is in daily use in combat right now.

Few would argue with the need to have a robust and highly profitable defense industry – for how else how can our armed forces have the capabilities they need? – but the excessively close relationships between many general officers and the defense industry have to a case for concern because it means that acquisition can be, and sometimes is, run for personal career advantage rather than being based upon purchasing what is best for the troops.

The roles and missions of the Army and the Marine Corps needs to be re-examined to determine their most appropriate responsibilities.

Culture is so hard to change that one cannot look optimistically upon such success being possible in the Army, no matter how desirable.

Accordingly, based upon attitude, responsiveness, and performance in combat, it is self evident that in an age of Global Expeditionary Warfare, there is now a substantial case for switching resources from the Army to the Marine Corps. They seem to be able to do more with less and do it faster – and they certainly do not have the same cultural and leadership problems as the Army. Further, they also have an expeditionary mindset so take naturally to global deployability.

Fighting Army neglected. Heavy armor vindicated.
National Guard last in line for combat essential equipment.

In essence, the fighting Army – the force that needs the best possible equipment now - has been neglected because of deeply flawed acquisition policies which have focused on a mixture of the wrong equipment (the Stryker) and equipment which will not be fielded for years, and which is based upon little more than concepts (the Future combat System). And the National Guard, who are being ordered into the same hazardous locations as the Active Component, are being neglected even more.

The purchase of the wheeled Stryker vehicle (supposedly an off the shelf item which has resulted in a reported 8,000 changes), justified by virtually no data, despite the fact that it has failed to achieve many of its key operational requirements, is an example of a personal acquisition agenda driving the allocation of scarce resources agenda ahead of the evidence and the real needs of the soldiers.

The continuing attempts to develop the Stryker Mobile Gun System (also supposedly an off the shelf item) at vast additional cost despite the fact that it still does not work and that a vastly more capable alternative, the type classified M8 Armored Gun System exists, indicates an acquisition agenda being advanced for reasons other than the interests of the troops who need a working weapon now.

The blatant neglect and mismanagement of the tracked M113 Family of Vehicles, which are destined to be in service until 2032, and which are in harms way every day, illustrates that the survivability of our fighting soldiers is not the priority is should be for the Army leadership.

After action reports from Iraqi Freedom, and the current insurgent campaigns in Iraq and Afghanistan, demonstrate graphically that if survivability is to be enhanced, the use of heavily armored vehicles, wherever possible, is essential.

A corollary of that point is that since only tracked vehicles can handle the necessary weight of armor and maneuver across virtually all terrain, they need fresh consideration.

M1A1/2 Abrams tanks and Bradley M2/3 Infantry Fighting Vehicles performed excellently in Iraq and proved to be highly survivable. They deserve to be upgraded.

Army becoming too wheel oriented, and thus road bound, at the cost of survivability. Time to re-think.

The wheeled High Mobility Multi-purpose Wheeled Vehicle (HMMWV - a light truck and not a fighting vehicle) has proved to be robust, but not survivable in combat.

Serious questions now exist as to whether the Army are, in fact, trying to make the HMMWV into something it is not. Also, there is every evidence that they have become overly reliant on it.

The HMMWV is an excellent light truck, but it is entirely vulnerable in combat. Armoring a HMMWV is possible for only some models and is still not neither heavy machine gun nor RPG resistant.

Better warfighting vehicles are available.

The Army's recent focus on wheeled vehicles ahead of tracked mobility undermines survivability by making armor less of an option and by making off road maneuver vastly more difficult.

To be road bound is to be predictable. You can be ambushed or caught in an artillery barrage. You can be caught by air strikes.

Whatever be the outcome, to be predictable is, most probably, to die.

Further, there are few roads in many of the places where we seem destined to fight in the War on Terror.

Few roads means a fairly clear requirement for an off road capability.

Well, it would seem logical.

Thunderbolt, hybrid electric engines and band tracks show what is possible – such as fuel consumption that is 24 times more efficient than an M1A1/2 Abrams tank.

Tracked vehicles such as the M8 Armored Gun System and the Thunderbolt Armored Gun System (essentially an upgraded M8 with a 120mm) gun demonstrate that there are vastly more combat effective options to the wheeled Stryker and HMMWV approach currently being followed by the Army.

The combination of hybrid electric engines and composite rubber band tracks overcome many of the traditional objections to tracked vehicles and yield huge logistical advantages.

The hybrid electric Thunderbolt, for instance, has a fuel consumption rate that is 24 times better than the M1A1/2 Abrams tank. Band tracks improve the ride, allow higher road speeds, are much quieter, and are durable.

The case for the adoption of both hybrid electric engines and band tracks, where possible, is overwhelming.

Need for Congressionally mandated Army reform.

Overall, we present the case in this document for much more rigorous oversight of the Army by Congress, together with a Congressionally mandated program of Army reform.

We also argue that Congressional reform will only be possible if Congress improves its own capabilities and addresses some serious issues to do with the divided loyalties of many Armed Services Committee staffers. We make the point that if staffers see the Armed Services Committees only as stepping stones, their loyalties to Congress may well be subordinated to allegiance to the services from which many of them have come, or alliances made with prospective future employers.

We make the point that improvements in staffers pay and conditions may well be advisable together with a split between the process that devours staffers time, and the need to provide information.

We also make many recommendations of detail, such as the need to upgrade the M113 fleet, with low cost concerning, available, survivability enhancements. ❖

Just one illustration of the consequences of the Army leadership spending vast sums on the wrong systems at the expense of the survivability of the Active Component and National Guard forces that are actually doing the fighting right now.

- *Fifty programs* that would have supported and modernized the National Guard and Reserves were cancelled to find funds to buy and support the then chief of Staff's vision – the disastrous Stryker program and Future Combat System.

- The fighting force was not just neglected; it was abandoned - even after 9/11 demonstrated in the clearest terms that we were at war and that the current force had to be the priority.

- Just one year's worth of Strykers used enough procurement money to fully upgrade all the Army's M113s to the A3 configuration expected to be in use after 2010 – and to provide appliqué armor and mine armor to the units deployed and to be deployed.

- Private Huxley died in an un-upgraded and obsolete M113A2.

1. Introduction

A highly survivable tracked Bradley Infantry fighting Vehicle at work. Equally at home both on and off road, it is well armored enough to take hits and still to be able to shoot back with deadly effect with 25mm chain gun, TOW missiles or 7.62mm machine gun. Did exceptionally well in Iraq.

We are at war and that changes everything; or should. But that demands leadership. And leadership requires integrity – a virtue, subject to some notable exceptions, that would appear to be in short supply in the current crop of Army general officers.

We are at war, and likely to be so for many years to come.

War demands a change in priorities and focus from peacetime because the lives of our soldiers are on the line *now*. The imminent prospect of injury or death should act as a profound imperative to do the right thing and focus less on one's career and rather more on Duty, Honor and Country.

The operational evidence from inside the Beltway is not so encouraging. It is business as usual. Careerism, and the securing of highly paid jobs with defense contractors after retirement, are the priorities.

The acquisition agenda – the procurement of billions of dollars of dubious equipment ahead of attending to the immediate survivability needs of the fighting

force still seems to be driving events to the absolute shame of the Army leadership.

The Army is led by the Corps of General Officers. It is their shame.

Not all know what is going on in detail, but many do in general terms yet none will speak up *publicly*. To be entirely candid on the record, particularly if it involves being critical of other generals, violates one of the principle rules of the club of generals.

To break the code means being excluded from that club. It eliminates the possibility of another star. It destroys one's post retirement career prospects. It stops one being a defense insider. One is shunned.

It is a price that virtually no Army general officers are prepared to pay. Moral courage is not a common virtue at senior officer level. The saying that Army officers will sacrifice their lives ahead of their careers has more than a little truth in it.

Since no one will speak up, the corruption, the degradation of standards, the neglect of our soldiers, the politically correct approach to soldiering goes on.

Survivability should be more of an issue. More can and should be done. Sometimes it is money; mostly it is mindset. Fundamentally, it is about leadership, and it is sorely lacking in both the Administration and the Army. It is our focus in this document.

This document was inspired by the photograph on the front of this paper. Private Huxley might well have lived if his M113A2 had been upgraded and up-armored.

The technology is available, the costs low and the M113 is ubiquitous on the battlefield. It is the second most commonly used vehicle after the HMMWV, sometimes goes ahead of the vastly more heavily armored M1A1/2 Abrams main battle tanks to the very tip of the fighting spear – yet its modernization and up-armoring have been shamefully neglected.

In fact, since 1986, the Army has installed armor mounting provisions on the M113A3, thus clearly recognizing the need, yet has never bought the armor.

The illusion of action over the substance is, regrettably, a long standing Army technique.

We have made provision for these vehicles to be up-armored.

Factually true but a lie by implication. Spin.

Further, the thousands upon thousands of M113s are likely to be in service for decades more. No replacement is planned.

During peacetime, there may well have been a resource argument for such neglect. During wartime, such a situation makes a contribution to Preventable Deaths. The point is that they are preventable.

We can enhance survivability *now* at limited cost compared to the vast costs of the promised weapons systems of a decade or more hence.

The full story of the M113 fiasco and the debacle over the procurement of the Stryker is told later in this document.

Who commands makes a difference. Current Army leadership seems to have an inadequate grip on the situation.

The operational evidence from the field is even less encouraging. Despite the capture of Saddam Hussein, justifiably a source of great satisfaction, there is abundant evidence that there is a serious military leadership problem in Iraq.

This is scarcely a surprise within informed circles. The fact that the Army has long had a serious problem with its officer corps, and its general officers in particular, is well known inside the Beltway, albeit not publicized for reasons that are explained later in this document.

Specific examples of flawed and indecisive Army generalship are given elsewhere in this report.

What is a surprise, and is deeply disturbing, is the unwillingness of this Administration to take drastic corrective action. Leaving inadequate Army generals in charge during a time of war is equivalent to conspiring in the deaths of American soldiers. It may be politically expedient during an election year, because it might be thought that the American public would not understand firm action against the generals (they would) but it is a morally bankrupt position.

An American casualty – as opposed to the death of any other coalition soldier – has special significance for our enemies. They doubt our resolve for the long fight.

Few actions, *other than a failure to complete the mission*, are more important than preventing the death and injury of our soldiers.

The death or injury of an American soldier is not just a personal tragedy, but a broadcast event of international political significance.

Our enemies, who understand the significance of the US and international media, consider that killing and maiming our troops weakens our national resolve regardless of the immediate military significance.

They believe that a relative small number of American casualties – small in a historical context – will sap our will to fight. We will pack up and go home. We will abandon our friends and allies. We have no stomach for the long fight.

The Iraqis, such as those in Basra in 1991, have suffered the terrible price of America leaving before.

Why should they trust us now?

More to the point, why should this be a surprise to us?

There are reasons why our enemies think the way they do – and even better reasons why we now have to show resolve.

There is precedent, and it is not to our credit.

We did retreat in Lebanon and Somalia.

We did abandon our friends in Vietnam.

We did fail the Shiites in Southern Iraq after we had encouraged them to rebel against Saddam Hussein.

There are consequences to such actions, and we are feeling them now, and probably will continue to do so for many years to come.

We have not behaved well. We have not kept the faith.

We presume the Army is doing the best it can because that is our comfort zone. Unfortunately, sometimes such an assumption is wrong.

It is sobering when American soldiers are being killed on a daily basis but most of us feel helpless to do anything about it; we have our own lives to lead and, in the main, we don't know enough to express informed opinions.

We presume that the Army is doing the best it can and that Congress has provided the best equipment that money can buy and exercises the mandated oversight.

Sometimes, such confidence is justified.

Sometimes, more often than is generally appreciated, it is not. There is nothing new in this concern. It has been the norm, more often than not, for over half a century.

The latter is our focus in this document. ❖

An extract from 'Overlord' by Max Hastings.

A decisive factor in its (the German Army's) ability to defend Normandy (in 1944) for so long, and to such effect, was the superiority of almost all its weapons in quality, if not in quantity, to those of Allied Forces.

During the first weeks in Normandy, Allied Units were dismayed to discover the ease with which their Shermans brewed up after a single hit, while their own shells were unable to penetrate the Panther, far less a Tiger, unless they struck a vital spot at close range.

The Sherman tank was the principle armored weapon of the Allied Armies, magnificently reliable and mechanically efficient, *but critically handicapped by thin armor and the lack of an adequate gun…*

Unfortunately, the Army has a long history of mismanaging its procurement at the expense of its soldiers (details are listed elsewhere in this report).

Comparisons with the Stryker are self evident.

2. Survivability

Being road-bound makes you predictable and, therefore, vulnerable. There are the strongest arguments for support vehicles, too, to be all terrain capable and protected.

Soldiers first, albeit not at the expense of the mission.

The essence of survivability is to save American soldiers from death and injury. An important but decidedly secondary objective is to help the vehicle, if a vehicle was involved, survive.

Underlying these objectives is the imperative that the mission be accomplished and the impressive fact that soldiers will accept unavoidable casualties in the interests of the mission.

The courage of the average American soldier is not in question.

Survivability has to be looked at holistically.

One has to look at survivability as a totality and study how the pieces integrate.

A feature of the Army, because different programs were started at different times, and because of the different mindsets of the various branches, and a general tendency to stovepipe, is that a benefit in one area is frequently offset by limitations elsewhere.

What that means, in practical terms, is that survivability does not get the attention it deserves. It becomes a victim of bureaucratic process.

The solution is leadership of the right caliber.

Things are likely to get worse before they get better. But, can we learn from experience?

A principal theme of this report is that we are not, as yet, facing serious opponents in a strategic sense. Certainly, individuals have been in serious danger and some have been killed, but the risks in both Afghanistan and Iraq, for our forces as a whole, have rarely been comparable with Korea and Vietnam – to give but two examples. The casualty figures support this.

That situation is likely to change, as new threats emerge, and the question is whether we can learn from recent events or merely hunker down and wait for what is coming.

It could be argued that the US Army is already the most survivability oriented force in the world and examples from the M1A1/2 Abrams tank to Interceptor body armor (unfortunately not available to all our troops) could be put forwards as proof.

We would accept aspects of that finding, which stands to the credit of those involved, but we would counter with the fact that the achievements of the past do not set the current standard. We would have to add that the past, where procurement was involved, was deeply flawed also.

The Army has a long tradition of mismanaging its procurement at the expense of its soldiers.

In fact, the Army has a long tradition of mis-managing its procurement of fighting equipment at great cost to the lives of our soldiers.

Note. Consistent themes throughout these procurement scandals have been a cult of secrecy, long procurement cycles, Army acquisition personnel ending up with the defense contractors they were negotiating with, massive cost inflation, and a deep aversion to realistic live fire testing.

Some examples.

- **The under-gunned Sherman tank in WW II.**
- **The Bazooka that could not stop enemy tanks in Korea.**
- **The M16 rifle that jammed in Vietnam.**
- **The M60 machine gun that was inferior to the MG42 it was based upon.**
- **The much hated and ineffective Dragon anti-tank missile.**
- **The Sergeant York DIVADS (Air Defense System) which was cancelled after the rigged tests were discovered.**

- **The unwillingness of the Army to live fire test the Bradley thoroughly until after pressure from the Office of the Secretary of Defense.**

- **The Comanche helicopter development that was started in 1983 and which, after 20 years, and billions of dollars, is still far from fielding an operational prototype.**

- **The Army's refusal to buy up-armor kits for its large M113 fleet even though the survivability requirement was clear.**

- **The Army's obsession with its new wheeled vehicle, the Stryker, which cannot do what it is supposed to do.**

There is considerable evidence that the Army's peace-keeping focus in the Nineties, and resultant cultural attitudes, has undermined its warfighting priorities.

Some examples:

- **The Army cut its combat power by about 25% in the 1997 division re-design which cut maneuver companies from 4 to 3 in each combat battalion (thereby reducing it from 58 to 44 tanks in each armor battalion) – yet kept its command overhead intact.**

  Nonetheless, it kept, and still keeps, its existing echelons of commands despite the fact that they no longer made or make any military sense. This kept billets for the generals, and further fostered careerism, but worked to the detriment of warfighting capability by bleeding off combat resources at the point of the spear.

- **Despite overwhelming evidence from combat, that the Army Personnel System (based upon the Individual Replacement System) was unsuitable for combat, and diminished survivability, no action was taken to change it.**

  This inertia continued even though the substantial combat and survivability advantages of a cohesive system, where soldiers were kept together and rotated together, were widely known.

  Soldiers in cohesive units bond, get to know each other's strengths and weaknesses, learn military skills better, fight more effectively, and support each other through the kind of stresses which otherwise can cause permanent psychological damage.

  The phrase 'Band of Brothers' puts it about as well as one can express.

  The only beneficiaries from the status quo and the disastrous Individual Replacement System were the Army leadership and the administrators. It was easier to do nothing despite the lessons of Vietnam.

- **The existing structure of the Army based upon corps and divisions has long been recognized as unwieldy, difficult to deploy and not reflective of modern combat power (it dates back to Napoleonic times).**

  Nonetheless, the Army has long refused to reform because the status quo suits the comfort zones of the generals.

  Ironically, although it is official Army doctrine – and common sense - that one should train as one fights, the first thing a division tends to do when deployed is re-structure into combat commands or battle groups. That happened in WWII and it happened again in Iraq II.

  A reasonable person might think that a battle group type structure might be the better permanent alternative.

- **The Army did not change its Transformation plans to any significant extent after 9/11. Current force continued to be neglected. Billions wasted on the Stryker and the Future Combat System.**

  The status quo was perpetuated despite clear evidence that we were now in a very different strategic situation and had to gear up for Global Expeditionary Warfare for the indefinite future.

  Investment in the current combat force remained completely zeroed out while billions of dollars continued to be spent on the wheeled Stryker which was then known to not only fail its deployability requirements, but to have significant survivability problems.

  Furthermore, nearly 50 combat force programs from vehicles to munitions, to Unmanned Aerial Vehicles, were canceled to create a $20 billion wedge to fund the Future Combat System – a program which will not even field a single capability to soldiers in combat this decade.

Despite the fact that we at war, and have been for over two years, known survivability issues are not being dealt with.

Some examples:

- **The RPG threat ignored.**

  The decades old known threat of the RPG has been neither adequately anticipated nor countered despite its prevalence in Vietnam and its awesome success against us in Mogadishu.

  The wheeled Stryker, for instance, was initially procured without the RPG threat being factored in.

- **Lack of body armor.**

  Supplies of Interceptor body armor, as of the time of writing, are still inadequate in Iraq.

What is less widely known has been Army reluctance in the Pentagon, as of October 2003, to buy adequate body armor even after additional funds were made available. They had 'other priorities' which clearly did not include the soldiers in harms way.

- **Poor training of support troops. Neglect of defense of convoys.**

  As the Jessica Lynch affair demonstrated, training of support troops has been demonstrably inadequate.

  One should ask serious questions about an Army leadership mindset which ignores the high probability that Army convoys will be attacked and that all deployed forces – from a tank platoon to a supply company – are in combat. Is this incompetence, callousness or professional ignorance - or all three?

- **Entirely inadequate preparations for stability operations in Iraq.**

  The preparation for stability operations following combat, from the provision of interpreters to effective intelligence, has been poor to non existent despite plenty of advance notice that the conflict in Iraq was going to take place and that the Army was responsible for this task.

  The comment "They are not trained for it" is much used about the soldiers' stabilization duties despite the obvious fact that post combat stabilization is a key Army role, and always has been.

  A better observation would be, "Why are they not trained for it." Stabilization is always a requirement after combat and soldiers always have to do it.

- **Bradley Infantry Fighting Vehicles not adequately upgraded or up-armored.**

  This neglect is a byproduct of the Army's recent focus on fielding its wheeled Stryker Brigades and high tech Future Combat System instead of making sure the current force was adequately maintained.

  The Bradleys that fought their way to Baghdad were largely the same vehicles put in to pre-positioned stocks after Desert Storm 10 years ago – which were deliberately *not* upgraded to save money.

  Pre-positioned equipment, the equipment most likely to be used in a fight because it is next to a known trouble spot, should not be allowed to become obsolete equipment.

  A reasonable person might think that the force doing the fighting today – those being shot at and taking casualties now - should receive a higher priority.

- **M113 Family Of Vehicles not overhauled since 1994 and neglected in numerous other ways despite being used in front line combat.**

The M113 Family of vehicles, despite there being 15,000 still in service, has not been effectively overhauled since the early 1990s.

The M113A2 model is now obsolete. It is too slow and it lacks significant survivability features.

Only about half of this fleet have been modified to the M113A3 design which started in 1986. Nonetheless, no funding for such upgrades is included in the Army program though 2009.

Further, despite the fact that M113s are often at the cutting edge of combat, no attempt has made to fit readily available and tested up-armor kits.

The Army's track record in developing and fielding its latest armored vehicle, the Stryker, is far from reassuring, and shows less than adequate focus on survivability.

- **Key vulnerabilities and no RPG resistance**

  Whereas the development of the M1 Abrams tanks two decades earlier, made crew survivability a major focus, the developers of the Stryker program have produced a vehicle which features a series of key vulnerabilities from the rubber tires, to exposed wheel well areas, to poor visibility, to limited off road performance, to flawed armor which has no RPG resistance.

- **Infantry Stryker lacks turret and heavy firepower. Weapons supplied cannot shoot on the move.**

  The Stryker's survivability is further undermined by the fact that the infantry carrier version carries only a .50 cal machine gun or M19 grenade launcher fired from an un-stabilized Remote Weapons System with a very restricted field of view.

  In short, the weapon cannot be shot with any accuracy while the vehicle is on the move even though the stabilization technology to fire accurately on the move has been available for thirty years.

- **Stryker's direct fire support vehicle, the 105mm MGS, does not work. Lack of integrity in the acquisition process.**

  The Stryker's main direct firepower comes from the MGS or Mobile Gun System variant – it mounts a 105mm gun - which is both inadequately armored and, more to the point, does not work.

  The MGS, being wheeled, is inherently less stable than the tracked alternative. Its off road performance is poor. It is armored only up to 14.5mm and has no RPG resistance.

  Early November 2003, the MGS received such a poor assessment at Fort Knox from its LUT (Limited User Test) that the test was cancelled and reclassified as a 'review.'

The MGS should have been failed. The point of tests is to secure a result. Instead, because this is seen as a prestige project, the LUT is merely being postponed while the Army throws good money after bad trying to fix it.

The fear now is that the Army will move the test away from the integrity of Master Gunner review at Fort Knox to a place like Fort Lewis where Army leaders can better control and influence the outcome.

Abuse of command influence to manipulate the process until a predetermined result has been obtained, regardless of the actual results, has become fairly typical of the current careerist driven approach in the Army and is deeply corrupt.

Massaging of data to yield a predetermined result is also commonplace whether after testing or during simulations.

Further promotion depends upon conformity.

- **First Stryker Brigade is being deployed to Iraq without its direct fire support. Survivability undermined.**

The Army has just deployed its first Stryker Brigade to Iraq without its Mobile Gun System, and without any armored replacement for this capability shortfall – thus seriously undermining the survivability of the brigade.

- **Army has a type classified alternative to Stryker MGS available now but won't use it. A refusal to admit a mistake rather than focus on survivability is driving the agenda.**

The Army has a far superior alternative to the Stryker Mobile Gun System already type classified, the M8 AGS or Armored Gun System, but refuses to use it despite the fact that 82nd Airborne has a standing requirement for such a weapon to replace its Sheridan tanks, and has vehemently argued to be supplied with the existing stock of these weapons to use under operational conditions in Baghdad.

Four, in perfect working order, are available in store.

The Army have refused in case the success of the M8 AGS threatens the future of the Stryker Mobile Gun System. This is an unsupportable decision under any circumstances because the Stryker MGS, apart from the fact that it does not work, is not air droppable – a requirement of the 82nd.

This is a very clear demonstration that survivability, lethality, overall combat capabilities, and the needs of troops in harms way are not driving the agenda.

The Army leadership wants what it wants for reasons of its own which have a great deal more to do with ego, careerism, and acquisition politics than the needs of the fighting force.

The Army's plans and actions in relation to the future (Transformation), as evidenced in relation to the Future Combat System (FCS), display some disturbing trends.

- **The general approach has been to starve the Current Force (previously called the Legacy Force) of funds in order to pay for the future.**

  That might seem like a reasonable risk in peacetime but it becomes highly suspect when we are at war and the Current Force is doing the fighting and known deficiencies are not being attended to.

- **The FCS concept (a system of systems) is based upon the notion of all vehicles, other devices and soldiers being networked, and tied in to such effective sensors, that we have near total situational awareness. This awareness, so the concept would have you believe, thus enables us to kill from afar with precision weapons, and supposedly ensures that our combat forces are never tactically surprised.**

  That, in turn, supposedly allows the Army to abandon heavy armor because it will never have to engage in the Close Fight.

  All accept the value of advanced technology but thinking soldiers regard the notion that we will never be tactically surprised as absurd both because technology has acute limitations and also because our enemies are already developing devices to neutralize our technological advances.

  Increasingly, they have technology too.

  In short, despite the notions of some generals and the ambitions of some contractors, the Close Fight and the concept of tactical surprise is not going to go away.

  In turn, if that argument is valid, the need for armor and a continuous focus on the practicalities of survivability, remain equally valid.

There is considerable evidence that the Army's consistent and vehement opposition to experimentation is not only wrong, but foolish, dangerous, intellectually corrupt, and counter-productive. It also undermines survivability.

The point about an experiment is that you cannot, if the experiment is to be valid and of use, pre-ordain the result. The purpose of experimentation is to learn and progress, to find out, based upon results alone, what works best and what should be discarded.

The purpose of military experimentation is to make the force carrying out that experimentation better at its primary business - warfighting (which includes the critically important stabilization period). It also helps to counter the notions, prejudices and private agendas that beset the human condition.

Experimentation is intellectually ruthless (which means honest), and absolutely cannot – or should not - be subject to command influence.

The results must speak for themselves; and they can be unpredictable. Indeed, they can go wrong and fail.

Experimentation is a risky business. But then so is war.

Unfortunately, the US Army's command culture has a problem dealing with unpredictability and an even greater one dealing with failure thanks to a deeply flawed officer's promotional system that rewards keeping one's boss happy, and making no mistakes, ahead of risk taking and initiative.

Better never to try than to fail. Better to massage the data than fail to meet the boss's wishes. Aren't 'Duty, Honor, Country' the same thing as keeping his agenda on track? Isn't loyalty to one's immediate superior the same thing as loyalty to one's country?

Not really.

As an examination of the backgrounds of many of the current crop of generals will show, to excel at PowerPoint and, as an aide, to keep one's superior happy, has proven to be a much better path to promotion than being innovative on the battlefield or tactically daring while at one of the training centers. In fact, to do one's job really well, and thus stand out, is regarded as suspect also because it might suggest that you are more able than your superior, a thought that is, of course, outrageous.

Informed observers have described this US Army culture as sycophantic and it would be hard to argue with that view.

Experimentation, because by definition it suggests uncertainty, also undermines the shared cultural assumption of the generals that they already know all the important answers – which is why they are generals – so therefore why experiment? And one has to add that Army generals, as a breed, positively shine in their lack of intellectual curiosity.

'Why' is a very un-military word.

Experimentation's great crime, however, lies with the fact that it removes control from the Army leadership; and what is the point of being a general if some wretched experiment undermines your personal agenda (particularly programs you back) and intrudes into your comfort zone? Experimentation, one might well argue, if one follows the mindset of the generals, hovers close to mutiny in being perceived as contrary to the wellbeing of the Army (which means, in the eyes of the generals, the generals).

Experimentation implies questioning the carefully constructed careerist system that is the US Army – as far as the generals are concerned - and that is perceived as being intolerable.

In fact, worse prospect of all, it might put at risk one's retirement job.

Many generals would reply that these allegations are baseless and offer as proof the numerous tests carried out by the various Army commands. They would emphasize the ever increasing use of computer simulation to model a wide range of possible options. They would wax lyrical about force on force training

in the National Training Center at Fort Irwin or the Joint Readiness Training Center at Fort Polk.

The Army is a regular hotbed of experimentation, they would argue.

They would be right statistically in terms of numbers of tests (which are not quite the same as experimentation – and where there are problems also).

They would entirely wrong about experimentation where it really matters. Where the issues are really substantive, the Army avoids experimentation like the plague, massages the results where possible, invalidates computer simulations by fiddling with the assumptions, classifies failures, blinds Congress, the media and the American public with smoke and mirrors, lies and deceives wherever necessary, moves the goal posts wherever possible, and uses command influence to a degree that would make Julius Caesar blush.

Experimentation is only considered a good thing by the generals when it yields the desired results. And the desired results are the ones the generals desire.

It's a simple standard which officers, who lust for a general's star understand very well. And 'lust' is the right word.

If experimentation yields any other results then, by definition, it must be wrong, so using every means necessary to neutralize such politically 'wrong' findings has to be the right thing as far as prevailing US Army culture is concerned.

A reasonable person might find such logic both convoluted and intellectually dishonest. But, such are the facts.

The most egregious example of this kind of intellectual corruption is the selection and fielding of the wheeled Stryker over the four year period starting in 2000.

When the exercise started, the Army had a fairly clear objective as laid down in their original request for proposals and as articulated by the then Chief of Staff of the Army in the major AUSA (Association of the United States Army) speech that preceded this request in the Fall of 1999.

In essence, the Army wanted to field, with some speed, a C-130 deployable light armored force, a brigade of which could be transported anywhere in the world within 96 hours.

An experimentation orientation approach would have compared all candidates, one against the other, in a series of tests based upon the Army's original request for proposals. And the best vehicle, based solely on performance, would have been selected.

What actually happened was that the Army ignored comparative evaluation and instead organized a mere demonstration – a smoke and mirrors event where the candidates could show their vehicles but where direct, measured, comparison was not the issue. In fact the process was about as unscientific as you could get.

The two leading candidates were the wheeled LAV III (later to become the Stryker) and the tracked MTVL.

Though the tracked MTVL actually did better in a number of aspects of the demonstration – a somewhat subjective judgment given the unscientific nature of the whole process – the 'Stryker' was selected.

A serious dispute then broke out which cried out to be resolved by a straightforward vehicle against vehicle comparative examination but the Army refused any such experimentation. They had made their decision, they said (based upon no experimentation) and it would stand.

In essence, the decision to buy 6 Stryker Brigades at average cost of $1.5-2 billion, to which must be added military construction costs and many other expenditures, was based upon little more than a whim.

We would argue that is not a sufficient reason for the American taxpayer to have to pay $12-15 billion.

To this day, despite numerous problems with the Stryker program, including the fact that the vehicle is too heavy to fly any tactically useful distance in a C-130, the Stryker and the MTVL *have never been tested against each other* in a field experiment.

At Congressional insistence, the Army did compare the Stryker against the venerable tracked M113A3, a C-130 deployable vehicle already in stock which many had argued to have met the Army's requirements at vastly lower cost.

If the Army's public statements had been correct, the tracked M113 should have lost hands down, of course. After all, the wheeled Stryker was state of the art, faster on the road and clearly the latest thing. In contrast, the M113A3 had last been modernized a decade and a half earlier.

Further, there is considerable anecdotal evidence to support the view that the Army rigged the tests to support the Stryker. Cross country testing, for instance, which might have favored the tracked M113 were minimized. Roads and trails, which supposedly favored the wheeled Stryker, were much stipulated instead.

Ironically, the supposedly slower M113A3, won the road race – because it could turn faster.

Overall, the M113A3 was rated as being at least as effective as the Stryker by the Director of Operational Testing and Evaluation. However, the M113A3 was lighter and thus genuinely deployable by C-130 for tactically useful distances – a key performance indicator the Army refused to test.

The Army massaged the results for some time to obscure the significance of the more detailed findings and stayed with the Stryker. Facts, once again, were not allowed to get in the way of the agenda of a general.

The MTVL (described elsewhere in this document) is a lengthened and much enhanced version of the M113A3 with the added advantages of being able to be equipped with a hybrid electric engine and rubber composite band tracks.

By a simple process of deduction, based upon the Stryker/M113A3 tests, the MTVL is significantly superior to the Stryker under almost all headings.

Experimentation could and should be used to resolve the debate.

A similar intellectually bankrupt policy is being followed in relation to the Stryker Mobile Gun System. It is being pushed against all common sense by the Army despite the fact that it does not work - and the existence of the much more capable M8 Armored Gun System.

A shoot off between the two gun systems is clearly the best way to resolve the issue. Instead, every effort has to made to keep the M8 Armored Gun System out of service and to suppress any notion of comparing one against the other in realistic field trials.

This fear of experimentation is not just confined to weapons systems.

Currently, there is a manifest need to re-structure the Army combined with considerable debate as to the most effective new structures to follow.

Common sense would dictate trying two or more options and only making further decisions after some practical experiences.

But the Army won't do that.

Instead they have decided to have at least 6 Stryker Brigades even though the first is not proven yet, and the vehicle itself is decidedly problematic, and despite the fact that no other combat organizations have been tested.

A reluctance to experiment & a pervasive lack of intellectual rigor

The Army's reluctance to experiment, and their pervasive lack of intellectual honesty at more senior levels, is, in fact, an incredibly seriously issue which we have only touched on in this section.

It slows progress, wastes resources, undermines survivability and means that in practice, we end up paying too high a price in lives when the shooting starts.

A focus on survivability should not be confused with risk aversion (which directly undermines the effectiveness of the Army).

Risk aversion has been the curse of the US Army since the Gulf War – and, perhaps, a great deal earlier. It stems from the notion that the loss of American soldiers' lives is politically unacceptable (which, in turn, means that to lose soldiers is a career breaker for the officers involved). As a consequence, so much emphasis is placed upon force protection that the very purpose of having an Army is undercut. The Army becomes an instrument of policy which cannot be used except in situations of minimal or no risk.

Our retreat from Somalia was a clear example of political risk aversion and it sent a clear message to the Army general officer corps, that was quickly absorbed by the culture, that the mission was secondary to avoiding losses.

Unfortunately, it also sent an equally clear message to our enemies which said, in effect, that the US lacked military resolve and our forces would inevitably be withdrawn if casualties were inflicted.

There were many examples of risk aversion in the nineties, from missions being refused to the bunker mentality displayed in Bosnia and Kosovo and there is wide agreement that it did not vanish from the Army leadership after 9/11 despite clear evidence that we had no other recourse but to go to war.

Risk aversion by Army senior officers should not construed as any lack of fortitude by the troops.

Risk aversion has nothing to do with the courage of the average soldier. That has never been in doubt and American soldiers have repeatedly shown a willingness to commit all in the interests of completing the mission. Instead, it is behavioral pattern which shows up at the Army leadership and political level.

A focus on survivability is profoundly different to risk aversion. It puts the mission first, accepts the possibility of casualties but says that soldiers who are putting their lives in harm's way deserve the best leadership, protection and equipment to ensure that their chances of survival, despite the very considerable dangers they sometimes have to face, are as good as we can humanly make them.

Survivability rests upon the following

This does not pretend to be a total list (for instance, it does not cover medical matters). It is a set of the more obvious priorities, a base of understanding.

- **The mission**

  This means the totality of the mission and not just the part to do with killing people and breaking things. For instance the mission to invade Iraq, whether explicit or implicit, clearly included stabilizing the country afterwards – which, in turn, raises the question of why our troops were not adequately trained or equipped to do this. The requirement was absolutely clear.

  Either the mission was wrong, or it was inadequately defined and planned for by the Army leadership.

  It is the job of the President and the Secretary of Defense to set policy and determine broad objectives but it is not their job to attend to all the details.

  Army generals are responsible here. Iraq II showed clearly that Army generals neither prepared nor delivered adequately after major combat was over.

  This is no minor omission. It handed the initiative to the insurgents and we have been paying for it ever since.

- **The quality of Army leadership.**

  Iraq apart, there is abundant evidence that we need to give the issue of the quality and commitment of our Army general officers much closer attention. In the main (there are some exceptions), they lack intellectual depth and mastery of their profession and are promoted more for conviviality within

the club of generals, than competence. And mediocrities tend to promote mediocrities because to promote talent threatens the comfortable status quo.

The comfortable status quo has to be right because it promoted the very generals who inhabit it. "The system that promoted me has to be good. It is self evident."

This is a fairly predictable cycle.

To read, to be a student of military history, to display a real interest in the profession of arms, is akin, in the Army, to having a social disease. It makes you socially unacceptable. Anti-intellectualism in the Army is more than a virtue; it is a way of life. And the consequences are disastrous. It means that generals do not learn from the past. It is as if history was never written. Mostly, they know surprisingly little and understand less because understanding their profession demands the kind of intellectual rigor that is frowned upon in the Army.

Debate of the issues, in the sense of honest disagreement over important issues, is regarded as just plain unacceptable. The price of having a successful Army career is, for many, to become an intellectual eunuch. To question is career suicide.

There are few exceptions though as ever in the human condition, there are some.

The quality, or lack of quality, of Army leadership will become even more important in the future because the requirements for the successful prosecution of Global Expeditionary Warfare - which is what we are now facing – are much more intellectually demanding than being part of a vast garrison based force facing the Soviets or the Koreans over predictable terrain. Global Expeditionary Warfare requires rigorously educated, intellectually curious leaders who have studied the profession of arms in depth and who are innovative and entirely comfortable dealing with the unexpected.

Such people are in very short supply in today's Army.

One should add that training should not be confused with education.

Training ensures competence in certain specific activities.

Education, if comprehensive enough, develops one's ability to think widely, originally and from first principles as well as giving much needed perspective to the human condition.

The combination makes for more effective soldiers. Operation Iraqi Freedom has demonstrated the competence in combat of junior leaders. The US Army may turn out the best Lieutenant colonels in the world; yet turns out primarily mediocre generals. Why is this so?

- **The caliber and training of our soldiers.**

The basis of current Army training is to first teach soldiers to conform, and then to teach a number of specific skills. This is highly successful in the context of a mass production industrial age Army but it also has the effect of suppressing initiative and individual brain power.

Soldiers, to put it mildly, are not encouraged to think out of the box (although many have the potential to do so).

Since the culture dictates that all wisdom is rank related, the actual effect is to restrict the talent of the average soldier. At first this is but a superficial restriction but over time many soldiers forget how to think for themselves. They have no incentive to do so, and initiative can atrophy in an overly authoritarian environment.

They conform. Conditioning works. They become institutionalized, and only capable of acting when so directed, and within prescribed parameters.

The current authoritarian general officer culture not only encourages such conformity but insists on it at great loss to the operational effectiveness of the Army as a whole.

Conformist soldiers are easier to control and 'control' is the current mantra of the general officer corps. Control is confused with discipline.

Thinking soldiers fight better but are inherently harder to control and much more demanding of their officers and that makes general officers uncomfortable. The generals crave order and predictability because such an environment means no mistakes on their watch and further promotion followed by a well rewarded second career in the defense business.

The current general officer culture has its own very clear agenda. Warfighting, where there is serious risk involved, is, preferably, kept off it. Warfighting is unpredictable and dangerous and can be a career breaker.

Special Forces are highly disciplined but are still so much more effective than the average soldier that one has to wonder why. Partly, this has to do with the fact that they are above average and are more highly trained. At least as much has to do with the fact that they are empowered to think for themselves and to use their initiative. Their discipline is self discipline.

Re-thinking how we train, educate and operate could make a greater contribution to the Army's effectiveness, to genuine Transformation, than any number of weapons systems.

The ability of our soldiers to think for themselves becomes particularly important when dealing with the unexpected and in coping with unconventional warfare.

Soldiers who can think for themselves are much more likely to survive.

- **How one fights – the strategies, plans, tactics, techniques and procedures used.**

This report emphasizes the importance of armor and other physical precautions in warfare because they are factors we can control. But, that said, it is important to emphasize that how one fights – regardless of one's equipment – is more important. History is replete with accounts of less well equipped forces, often numerically inferior as well, routing an enemy.

Brains and speed of action, rather than brawn are often the keys.

The US Army's track record in this regard is decidedly mixed and has a tendency to stress mass (brawn) over maneuver (brainpower). Today, one should include technology as part of mass despite considerable evidence that brainpower, even without many resources, can inflict considerable damage either to this country or to this nation's armed services. The Cole incident, 9/11, and the current terrorist campaign in Iraq are but three examples.

The Army's anti-intellectual bias, and pervasive lack of intellectual honesty, does it no service in relation to learning from the past and thus improving tactics, techniques and procedures (TTPs). A vast number of tactics, techniques and procedures paid for in blood in Vietnam were forgotten or ignored after the war because the leadership did not want to be reminded of a war they had lost.

This is not arrogance. It reflects a truly frightening streak of stupidity and a disdain for the welfare, the very survivability, of the average soldier.

- **Rules of Engagement.**

These rules tell a soldier what he may and may not do in his particular sphere of operations. That makes them critical in relation to survivability.

Unfortunately, they tend to be politically driven because of the media repercussions of innocent civilians being killed etc.

The key issue is whether they are adequate for the circumstances. A good example is the use of mortars by Iraqi insurgents against our forces but our failure to react even though we have near instantaneous counter battery radar which can pinpoint the firing positions – yet we are not firing back for fear of hitting non-combatants.

In turn, that allows our enemies to mortar our soldiers at will without fear of reprisal short of being surprised by a patrol. It also means that citizens who see the mortar teams at work have scant incentive to inform because they are not in danger.

It is never wise to hand the enemy the initiative.

- **Intelligence.**

Army intelligence is quite good at identifying large units or pieces of equipment to bomb, shoot at, or otherwise destroy – but is impressively bad at getting fully to grip with capabilities and intentions or really anything to do with unconventional war. The fact that such major shortfalls are tolerated goes back directly to the quality of the Army leadership.

- **Our offensive capabilities.**

Survivability tends to be thought of as defensive – the ability to withstand. In fact, it should refer to the ability to survive, whatever be the reason.

To shoot first, to destroy the enemy before he destroys you, makes a major contribution to survivability.

MIAI/2 Abrams tanks score high in both offensive and defensive capabilities.

The turret mounted stabilized 25mm chain gun on the Bradley, that can rapidly slew to precisely destroy a target in a fraction of a second, helps to make that vehicle a highly survivable weapon because it can outrange and outshoot AK47s and RPGs as it proved again and again in Iraq.

In contrast, the un-stabilized .50s and M19s mounted on Strykers do the minimum to enhance that vehicle's survivability particularly at close range or on the move. Further, the crew must leave the protection of the vehicle to re-load the weapon (a frequent requirement in a firefight).

This makes no sense and is not survivable behavior.

- **The innate defensive capabilities of our equipment.**

If you cannot prevent, you had better be able to endure and survive the first hit, or even multiple hits.

The M1A1/2 Abrams tank is the best in this regard. It is not indestructible but it is impervious to many weapons and can take multiple RPG hits and survive.

The Bradley Infantry Fighting Vehicle is the second most survivable vehicle in this regard though may be bested by the Thunderbolt (which is not yet in service).

The Stryker is unproven operationally though seems likely to be highly vulnerable if faced with serious combat.

Current supply trucks and other support vehicles are soft targets which has to make one wonder – is there a better way?

- **The ability to maneuver freely, or otherwise ensure positional advantage, regardless of the restrictions of the terrain.**

Despite much talk about the importance of maneuver, the US Army has a long history of being mainly attrition based – of destroying the enemy with massed fires rather than undermining his will through doing the unexpected.

The Army's ability to maneuver freely is not helped by an excessive orientation towards wheeled vehicles which, since they lack the off road capability of tracked vehicles, tend to make the force road bound.

The purchase of wheeled Stryker vehicles is a demonstration of this road bound thinking.

A further manifestation of the problem has been the unwillingness of the Army to develop routine logistical support by air, both rotary and fixed wing, at an operational level.

- **The ability to operate at a substantially faster op tempo than our enemies.**

  If you can confuse the enemy by getting inside his decision making cycle, you can defeat him at vastly less cost than by behaving predictably.

  Speed of decision making and action, in other words, is fundamental to survivability. However, despite all our technology, our ability to operate at speed is heavily dependent upon the caliber of the leadership – where we have problems. To act with speed means that you have got to be able to think fast.

  The Army's deliberate decision making process is slow and ponderous.

- **Mindset – an unceasing awareness of the importance of survivability at all levels from the Administration to Congress though the Army leadership down to the individual soldier.**

  The Army is so set in its ways and so bound by rules, regulations, custom, practice, cronyism and careerism that it is incapable of reforming itself.

  Further its profound lack of intellectual curiosity, its unwillingness to debate, its general defensiveness and its obsession with rank ahead of common sense means that, generally speaking, it has absolutely no idea what to do except to do what it always does.

  Its mindset is, so to speak, frozen.

  If this rigidity is to be thawed out and changed to the benefit of this nation, and its soldiers, it will require civilian direction from the highest level together with the active support of Congress.

  Our Founding Fathers made civilian control of the military fundamental to the Constitution for very good reason.

  Why is it not being exercised, particularly in the face of some very questionable leadership from some of the Army generals? ❖

The *actual mindset* of a senior Army general as of December 2003
Note. This says it all.
Subject: Headgear (original grammar and spelling)

Our Army and Soldiers are at WAR. As such, effective immediately, The Aviation Center will discontinue the wearing of various colored class hats. The Aviation Center will adopt the Army Standard headgear which most openly reflects the mindset of a deployed and mobilized Army. The headgear for all initial entry Soldiers is the BDU cap and the beret is for those having completed initial entry instruction. Commanders will execute within *you own formations* with a not later completion date of 19 December

We are all clearly members of the Army's Team. Our formations reflect the attitudes and values of our *Brotheren* in the front line.

3. Lessons from combat

The prevalence of automatic weapons and RPGs raises questions about the types of vehicle we should have on the battlefield.
We would argue that minimum standard should be that all vehicles exposed to combat be RPG resistant. A HMMWV, even if armored against small arms – which is the standard – provides inadequate protection.
RPGs are not just a likely threat. They are inevitable

There is nothing like experience, when it comes to combat, providing you live long enough to learn.

The best lessons from combat are derived from recent After Action Reports written by those who were there.

What do they show?

They show truths, like the key importance of armor in avoiding casualties, which are self evident in war, but have tended to be forgotten over decades of relative peace.

They show that we don't take survivability seriously enough.

They show that you have to be able to take the first hit.

They show we still do not understand the importance of speed, maneuver, and sheer momentum, in breaking the will of an enemy.

They show that our infantry orientated urban combat doctrine is deeply flawed.

They show that our logistical system "is broken."

They show that we don't fight as we train – though we should.

They show that there is very little wrong with out soldiers, but considerable cause for concern about our generals.

A disturbing example of one of the many failures of the Army's logistical support during, and after, Iraqi Freedom.

"Entire situation became utter chaos…" Associated Press Nov. 28 2003

Soldiers with the Army's 3rd Infantry Division charged into Iraq in April short of the ammunition their commanders had said was necessary to invade, according to the division's postwar evaluation of the fighting.

It was one of a number of major supply problems encountered by the 3rd Infantry before and during its 21 day dash to Baghdad from Kuwait according to the internal review, a 293 after action report created by the division's senior officers and troops.

During the run-up to the war, division commanders requested additional ammunition be delivered to front-line units.

The request was approved, *but the troops could not obtain all the ordnance despite months of war preparations.*

"Every attempt to gain the ammunition assets resulted in some agency or another denying requests, short loading trucks, or turning away soldiers" the report said. "The entire situation became utter chaos. …The division crossed into Iraq short the ammunition it had declared necessary to commit to combat.

- **Despite episodes of very brutal fighting, which reflect to the very great credit of our soldiers, Iraq II was not a major war.**

  This finding is born out by the extraordinarily low casualty rate – for war (while fully accepting that each individual casualty is a personal tragedy).

  This is not to undercut the importance of fierce fire fights, often including armored forces in urban areas. Rather it is to recognize that a series of tense firefights does not derive the demands on combat power that a real war has in the past, and would in the future.

  On occasion, we lost more people in minutes in World War II, Korea, and Vietnam than we lost in the entire Iraq II.

  Being aware of this is important, indeed essential, because otherwise we will tend to think that Iraq II validates our doctrine and current tactics, techniques and procedures when actually there are few grounds to be complacent.

- **Major war or not, the volume of enemy fire was so intense on numerous occasions that only heavy armor prevented serious casualties. We can still be tactically surprised.**

  This is an important finding because current Army doctrine says we can kill from afar so that heavy armor is becoming redundant. That is the argument that backed the plan to turn nearly one fifth of the active component of the Army – six brigades – into Stryker Brigades armed with wheeled armored vehicles that cannot withstand RPGs, let alone more serious weaponry.

  The evidence, despite an entirely out-classed enemy (outclassed on a scale that is hard to conceive – the Iraqis had no air cover, armor that was out-gunned and outranged etc., and we made more use of surveillance sensors than at any other time in history) is entirely to the contrary.

  We can still be tactically surprised.

- **If this had been major war – if we had been up against a world class enemy – we could have been in trouble.**

  This is a hard lesson to accept but the facts support it.

  - Our advance on Baghdad was much slower than it should have been.
  - MANPADS could have eviscerated our rotary air.
  - Our road-bound approach left us vulnerable to ambush.
  - Our logistical support was extremely poor.
  - Our intelligence was inadequate.

  The dominance our Air Force would render defeat on the ground unlikely but anti-aircraft technology is not standing still and the casualties inflicted on our ground forces could make the price for an intervention too high.

  We do not have to be defeated in the classic military sense to lose.

- **Accurate pre-emptive or return fire is invaluable in that it takes the initiative from the enemy. Shoot on the move (stabilized) weapons are highly desirable.**

  The advantages of being able to out-range and out-shoot the enemy with speed and accuracy were proven again and again and helped to contain the threat from ambushers armed with RPGs.

  Perhaps the best examples of this capability were provided by the turret mounted, stabilized, 25mm Bushmaster cannon used by both the Army in Bradleys and the Marines in their LAVs.

  This raises the question of why the Army, flying in the face of all the evidence, is refusing to install either a turret or a stabilized weapon on the new Strykers.

  We would appear to be regressing in our capabilities.

- **If you remain road-bound, and thus predictable, you will be ambushed.**

To be road bound and predictable is to invite ambush, and soft vehicles are entirely vulnerable to ambush.
Note the burning tires. If a wheeled armored vehicle is so attacked, the burning tires heat the armor and, effectively, cook the crew inside

Roads are easier to drive on so peace-time armies have a natural tendency to gravitate towards them. Unfortunately, they are choke points too and a warfighting army should know this and go off road when possible.

Of course, that can only be done when your vehicles are off road capable. Here, the Army has failed to think things through and has become excessively wheels oriented.

There is little sense in having a highly maneuverable off road tracked spearhead, which currently requires very frequent re-fueling, if your logistical tail cannot travel the same route, let alone keep up.

- **Convoys, being softer targets, and (as matters stand) road-bound, will be ambushed.**

There is nothing new about convoys being ambushed but what was surprising in Iraq II was the confusion it caused and the fact that, initially at least, our convoys were not adequately protected.

There are clear grounds for re-thinking the very nature and TTPs of our logistical support.

- **Soft vehicles, such as the unarmored HMMWV, are excessively vulnerable and the armored HMMWV is still only protected from small arms.**

  Elsewhere in this document we raise the issue of whether the HMMWV, a good light truck, is being made into something it is not.

  It is not a fighting vehicle. It is not survivable.

- **Despite an unparalleled amount of electronic surveillance, the potential for tactical surprise is little different from that experienced two centuries ago.**

  Hostiles still jump out of the bushes and from behind the rocks and other cover.

  This is not to say that satellites and UAVs are useless. They bring great benefits, particularly to the bigger picture. It is merely to stress that our enemies are not only ingenious, but tend to learn and adapt much faster than we do, and this becomes particularly apparent at the tactical level.

  Our enemies, in the main, are not stupid.

  The close-in enemy, particularly when operating in small groups, retains the ability to ambush, to surprise, to kill or maim, to do the unexpected.

  Given our enemies' increasing ability in relation to electronic warfare, to jam, to disrupt, to deceive, that will remain.

- **Our enemies' weapon of choice, apart from the Improvised Explosive Device, is the RPG.**

  Increasingly, this is fired in volleys – as was the practice in Chechnya. Since active explosive armor is only effective once, when hit, this dictates the need for passive armor than can withstand multiple RPG strikes.

- **There is a rising threat from heavy caliber rifles such as the Barrett .50 equipped with special purpose rounds.**

  This US technology has leaked (a concern in itself). It means that vehicle commanders and similar are now more vulnerable and require a higher level of protection than 7.62mm (the norm in armored HMMWVs).

  This again supports the RPG minimum standard. Small arms protection alone is absolutely not enough.

Clearly, there were many other Lessons Learned but the essentials relevant to this report may be summed up in some of the conclusions of the US Marines as described in a National Defense Magazine article of September 2003.

Let us quote an extract.

'During an April meeting of Marine general officers, the consensus was that if the Corps had been fighting in Iraq with a MEFFV-like force "We probably would not have won," Beal said at a Washington DC conference…

Survival based on "overwhelming net-fires and a lot of direct stuff" is an iffy proposition, Beal said. Lighter vehicles simply don't have the firepower to take over cities, for example.

Any tank replacement would have to be at least as survivable as the M1, Beal suggested.

Reports from the field indicated that many of the Marine M1 tanks came back with lots of pockmarks from rocket propelled grenade shots and some friendly fire hits, but the crews survived.

"…Survivability is going to be a real key factor."'

Then there is the particularly trenchant report of 1-64 Armor who were part of the spear point that took Baghdad.
It's un-ambivalent conclusion:
"Send only vehicles that can sustain RPG hits into urban combat zones."

Let us quote an extract.

*'**Issue: Current Army Urban Operations Doctrine does not support operations conducted by this unit.***
'Discussion: The current doctrinal manuals on Urban Operations do not address how best to utilize armored forces in an urban environment.

The enemy faced by this unit hid his tanks and vehicles under camouflaged covers, beneath bridge overpasses, inside of buildings on narrow streets, and under low trees.

These enemy systems were not seen until they were only meters away. No degree of IPB could compensate, alert, or prepare any US force for the massive numbers of RPGs stored in houses, shacks, lockers, and cars.

The only way to counter RPGs fired from covered and concealed positions was to absorb the hit, identify the source of the fire, and respond with massive overwhelming firepower.

Tanks and Bradleys repeatedly sustained hits from RPG's and ground directed anti aircraft fire that dismounted infantrymen, HMMWVs and other light skinned vehicles could not sustain.

Bradleys successfully protected the infantrymen inside while at the same time delivering a massive volume of fire against dismounted enemy, trucks, tanks, and armored vehicles.

The firepower and shock generated by tanks and Bradleys could never have been matched by dismounted infantry. Without the use of these systems initially, the enemy would have caused many more casualties.

The current doctrine recommends clearing the built up area with dismounted troops prior to any armored vehicles entering.

This Task Force proved that this is not a requirement and is not necessarily the best initial course of action. By moving armored vehicles along a pre determined route and destroying any enemy forces whether dug in, in buildings, or on roof tops with massive overwhelming fires from M1A1 tanks and M2A2 fighting vehicles, an entire line of communication can be opened up allowing access not only into the built up area but through it also.

Once the line of communication is open, clearing operations with dismounted forces are much easier.

A key to this is the overwhelming psychological effect the firepower of these weapon systems have on the enemy once the initial raid is conducted, almost all remaining enemy forces will withdraw from the initial shock. This initial shock of overwhelming firepower facilitates the attacks of dismounted infantrymen into the built up area.

Recommendation: The BCT submit to the United States Army Infantry School and the United States Armor School an update to the current urban operations doctrine. Additionally, send only vehicles that can sustain RPG hits into urban combat zones.'

That is about as clear as it gets. ❖

Serious questions needs to be asked about how the Army organizes its manpower. Are fiefdoms more important than combat power? Are jobs for generals more important than roles and missions? The evidence would say, 'Yes!'

- The Army Active Component numbers slightly in excess of 480,000. Only about 51,000 are rated as infantry. Why so few?
- Logistics have about 51,000 as well. Signals have about 45,000. Neither worked well during Iraqi Freedom. Extensive use of contractors (mainly former military) did not help either.
- An extraordinary number of Army troops are dissipated around Army commands whose functionality – to be charitable – ended at the close of the Cold War.

4. The main threats now

This fatality, caused by a mine exploding under an M113A2, is fairly typical of a preventable death which could have been avoided at little cost. Anti mine kits, blast resistant seats (which absorb the shock of quite powerful mines), and advanced armor kits for the M113 have been available for years but have not been purchased, and still are not being requested, even though the M113 is in combat now and will remain so for years.

The main threats our forces face today are no less lethal for being predictable.

They are:

- **Rocket Propelled Grenades (RPGs)**
- **Small arms (mainly AK47s)**
- **Improvised Explosive Devices (IEDs)**
- **Car Bombs**
- **Mines**
- **Shoulder fired anti-aircraft missiles (MANPADS)**

The minimum acceptable standard of protection – RPG.

The optimum solution would be to protect against all the above threats but such an approach is neither technically nor financially possible. Instead we take the view that the minimum acceptable standard for vehicles exposed to such risks should be up to the limit of RPG resistance with an additional heavy emphasis on

resistance to mines and IEDs. Such a standard, by definition, includes resistance to small arms and medium automatic weapons.

We take this view because of the ubiquity of the RPG. One Army colonel who returned from Baghdad last summer stated that you could not walk down the street without encountering RPGs. "They were everywhere."

Such weapons are inexpensive, simple to operate and widely available in every country where US forces are likely to have to fight so they are virtually certain to be encountered in both combat and stabilization operations. Further, they are the terrorists' weapon of choice and are becoming available in increasingly advanced versions.

What vehicles should be protected? Most.

There are some situations where a conscious decision is made to trade ease of deployability against the desirability of protection. Fast Attack Vehicles and other vehicles made for Special Forces are an obvious example. These are excluded from our comments.

The matter of what vehicles should be protected now becomes more complex. Traditionally, the fighting vehicles of the heavy force (tanks and infantry fighting vehicles) have been armored but the balance of vehicles left substantially unprotected.

We would argue that such an approach no longer makes sense and is based more on historical accident and previous technical limitations that current military rationale.

- **There is no such thing as a front line anymore.**
  We are now in an era of Global Expeditionary Warfare where, more and more, we are likely to find ourselves in less than friendly environments.

- **Support vehicles regularly find themselves exposed to combat.**
  There is nothing new in this. It was the same in WW II, the Philippines, Korea and Vietnam. Only our relative lack of preparation should be surprising – as is the lack of change we have made in our logistic tail.

- **Soft vehicles are the natural targets of our enemies.**
  Eliminating, or minimizing, soft vehicles would substantially enhance combat power.

- **Support vehicles should not detract from the combat arms but should have the capability of defending themselves.**
  Currently, soft vehicles, because they require protection, sap combat power.

- **Casualty lists show that support troops are virtually as vulnerable as combat arms.**

This is particularly the case in stabilization situations where traditional convoys are inevitably vulnerable to guerilla attacks. ❖

Extracted from: 'Shortfalls plague Guard's mission'
By Wayne Wolley, Newark Star Ledger November 30 2003

If the entire Army National guard went to war tomorrow, one soldier in five would go into combat without a rifle. Furthermore, almost a quarter of the National Guard's nearly 350,000 soldiers is untrained in his or her military job.

At a time when the nation has turned to its soldiers as never before, the National guard isn't being given the equipment and training it needs to go to war. Yet Pentagon planners are counting on the National Guard to supply 56 percent of the Army's combat power (in Iraq).

The Army National guard lacks $11 billion of the $40 billion in equipment oit needs to wage war and is short of everything… Much of the equipment it does have is older than the soldiers who operate it.

Lt. Gen. H. Steven Blum, chief of the National Guard Bureau, the Defense Department agency that overseas the guard, told a meeting of the National Guard Association on September 15 how upset he was about the Guard's equipment in Iraq.
"We're sending soldiers without body armor. We're sending soldiers in soft-skin Humvees. That must stop."

The Army National Guard gets roughly $9 billion of the Army's $90 billion for fiscal 2003 which ended September 30.

The National guard fights a continuous battle with the US Army which historically has given money first to active-duty units and then to the guard almost as an afterthought…

Some equipment shortfalls hamper the Guard's ability to mobilize for missions in Iraq. The National guard is short nearly 20,000 of the 95,000 SINCGARS the Defense Department says it should have.

5. The issue of troop numbers in Iraq and the real issue: the competence, or lack of it, of some Army generals.

Troops numbers are vastly less significant than the competence of the Army leadership

Much talk about troop numbers. Little critical examination of the generals' conduct of the war and the aftermath. Why not?

The issue of troops numbers has been widely debated from the time the invasion of Iraq was mooted yet there has been surprisingly little critical examination of the actual management of the war and the subsequent reconstruction period.

The competence of the military leadership is a very real issue.

This focus on troop numbers implies that numbers are the only determinant of significance in the conduct of military operations, an assertion that is palpably not true.

Indeed, it is dangerous because it distracts from assessing the real issues such as the competence of the military leadership, the quality of our intelligence,

the validity of the policies that were followed, the structure of our forces, the cohesiveness of units, the relevance of their training – and so on.

All of these matters affect survivability so need to be discussed, and to continue to be examined critically, if the survivability of our troops (let alone the success of the mission) is to be optimized.

Arguably, the most important issue that needs to be examined is the competence of Army generals. There is every evidence that some have a case to answer.

Extracted from an Inside the Pentagon interview with Marine Corps General Mattis by Elaine Grossman

In keeping with Marine Corps doctrine, Mattis said he prefers leading through "command and feedback" rather than traditional "command and control."

"And you get your best feedback by . . . going out and sensing what's going on. That's when you really know what's happening," Mattis told ITP. He said he could not effectively command "as the generals did in World War I, sitting back at a chateau in France and getting a telegraph key clicking to them."

He said he would often fly by helicopter or travel in a small convoy to wherever an important battle was taking place.

"I get up there and I sense what's going on from the commander face-to-face," Mattis said. "If he's dead tired, that helps me to understand what they're facing. But those human aspects are much more important to combat then all of the mechanical [questions like], 'What level of supplies does this unit have?'"

Mattis offered two other principal reasons, one philosophical and the other tactical, for leading from the battlefield rather than from a command center in the rear.

First, "basically war is something that requires courage and it's in the province of fear," he said. "And if you don't move forward yourself, you lose your moral authority to order others to go."

Mattis says "the No. 1 authority you have [as a commander] is moral authority. The No. 1 power you have is expectation. If they expect to see you and they see you, and you expect to see them moving forward, then that moral imperative is what really takes us forward."

Second, from a purely practical standpoint, Mattis doesn't trust that the sensor and communications systems will always function as needed in the heat of battle.

"Why shouldn't we sit back [behind the battlefield]?" Mattis asked. "All that fancy gear will break down."

He pointed to last month's Hurricane Isabel, which roared up the East Coast and caused extended power outages throughout the Washington area.

"We sit here in the most technologically advanced country, in one of the most technologically advanced parts of that country," Mattis said. "And a silly

hurricane comes through [and] we have [computer] servers in every building here, and we have people right now who don't have the power to send a message across the street or to the next floor up.

"And do you think [there won't be similar failures] under the stresses of combat, where an enemy is trying to interrupt those communications, where low-cost alternatives exist [like using] jammers that you can't even find because they're so small and they're hidden inside a box of trash next to a road you're driving down?" he continued. "There's a million things that can go wrong."

Rather than assume he can track and make sense of virtually every movement on the battlefield -- as some advocates of "network-centric" warfare imply -- Mattis says he provides his troops clear "commander's intent" about the battle's underlying objectives, leaving the rest largely to them.

"It's all about commander's intent, to me," he said. "Commander's intent does not mean that I have to be monitoring every minute. Do I like to have good situational awareness? Yes, I want the best technology and the best capability I can get. But there is no way that I think that you can take the place of that timeless commander's intent."

The criticality of leadership accountability.

If a corporation fails to deliver on its forecasts or otherwise gets into trouble, the first person that the board, shareholders and media look to is the Chief Executive Officer.

Granted, he may not be entirely responsible, for a host of other factors including the board's policies may be to blame, but he will still be expected to get results regardless of the circumstances or constraints.

Achieving success is fundamental to his role as leader and he is rewarded or penalized accordingly.

We all regard this as normal and beneficial because most of us have a reasonable understanding of human nature and realize that incentives and dis-incentives do work. Indeed, keeping our leaders both incentivized and accountable is self evident commonsense, and fundamental to the way this country works.

Leadership in the Army is arguably even more critical in times of war because the consequences of incompetence are so serious. National security is put at stake, lives are lost, and the longer term results can be incalculable.

The timidity of Union generals during the early years of the Civil War demonstrated this well. There have been numerous examples in every war since.

Historically, the conduct of our generals has been monitored closely – and bad generals relieved.

Historically, the conduct of our generals has been examined very closely and poor commanders were relieved.

Such stern action was not occasional but was frequent because the dire consequences of leaving incompetents in charge was well understood. Further, it was also appreciated that a peacetime Army, because it does not fight and yet needs organizing, tends to produce careerists and bureaucrats ahead of warfighters. Accordingly, during war, pruning was needed at the top to allow warfighting talent to surface.

Such policies were essential, and are at least as essential now, yet, for the moment we seem to have abandoned them.

This is both unwise and grossly unfair to the troops because there is great truth in the saying, "There are no bad soldiers, only bad generals."

We still have both good and bad generals but are too many of the bad ones in critical positions?

The evidence is that we have some very good generals and some very bad ones, and one can make a good case that too many bad ones are in critical positions.

If 'there are no bad soldiers, only bad generals', why don't we make Army generals accountable?

A series of interlocking reasons and circumstances have allowed this highly undesirable situation to come to pass. Actually, some of these reasons are commendable in themselves, and others are quite understandable, but the consequences of the totality are lamentable.

Here are some of the reasons why, currently, accountability is lacking.

- **In war, there is a natural desire to support the troops uncritically.**

  It is important not to confuse the troops and the generals. The troops are rarely, if ever, the problem and should be supported to the full. In fact, that is exactly why a close eye needs to be kept on the Army generals. Bad leadership has quite a track record in getting soldiers killed.

- **Members of Congress either don't know enough, or feel they don't know enough, to criticize military detail. Also, they do not want to be accused of being unpatriotic.**

  The records show that the services are generally incapable of reforming themselves and the Constitution mandates civilian oversight so the missing element is lack of knowledge.

  This probably requires reform of the respective Armed Services and Appropriations Committee Staffs who are currently too oriented towards the services and the defense contractors to remember they actually work for the Members. As a consequence, few of the Members are briefed adequately on military matters, let alone the Army.

- **Neither the President nor the Secretary of Defense wants to be seen as being 'at war with the Army.'**

  However understandable, this is putting politics ahead of the welfare of the soldiers and is a pattern of behavior that needs to be re-thought.

- **The generals of the fully professional Army have mastered the art of securing such professional alliances in Congress as to make many of them near untouchable by their civilian masters.**

  Their breasts are heavy with awards. Their shoes gleam. Who would quarrel with such heroes? The fact that most generals have never seen real close combat is irrelevant. Inside the Beltway, to acquire a weapons system is a heroic act too.

- **The media, who often know the real truth, are reluctant to criticize the generals because they need the generals to give them access.**

  No access, no stories and no related perks like helicopter rides. Lack of access, or, at least, cooperation is used routinely to keep recalcitrant journalists in line and it does work.

  Now, one could argue that the media should show more initiative and do investigative journalism but that is not easy on a routine basis with deadlines to meet, newspapers to sell, and an Army system that likes to classify data at the drop of a hat.

- **There is further influence upon the media by defense contractors and publishers. Defense contractors employ most retired generals. Publishers do not want to lose their advertising money.**

  Most of the specialized media that covers the Army needs advertising revenue to pay the way so that puts a further pressure on the media. Further, this pressure is used to the point of journalists losing their jobs. Now the solution might seem to be the non-specialist press but defense contractors advertise in these publications also – and then there is the fact that the non specialist press have only a limited interest in the Army.

- **The Army goes to great lengths, to an extent that is not adequately understood, to cover up mistakes and enhance exploits.**

  Individual soldiers will tell you the truth in a heart beat and, typically, are refreshingly candid. However, the Army culture, as taught to, and absorbed by the officer corps, is that the truth does not exist of itself but is precisely what the Army wants it to be, even if flatly contradicted by the facts.

  Evidence, sadly, all too often, means nothing. All that matters is that the Army spin on a situation, as determined by the general officer corps, or elements in it, be advanced.

This Army attitude goes back to Vietnam (perhaps a great deal earlier) and is underpinned by the widely held view that the Army did not lose the war there. The American media did.

The American media betrayed the US Army.

Since the Army's evidence would this show that the American media cannot be trusted, all necessary obfuscation and deception can legitimately be used. After all, they are – as a minimum – an enemy.

This culture of lying constantly, because nothing must appear to the discredit of the Army, and everything must be given a positive interpretation, has a corrosive effect upon the integrity of the officer corps and makes it very difficult for an officer to have his values survive unscathed as he gets promoted. Yet the tragedy is that many young officers start off their careers with a burning commitment to serve and to do the right thing.

We have the finest young men and women in this country and it is a tragedy to see their idealism and commitment so corrupted over time.

This is a very sad commentary on leadership, given that many generals rose from institutions that live by mottos like 'Duty, Honor, Country,' or some similar ethic.

What happened to so disrupt the ethical foundations of the general officer corps?

- **The Army promotional system for officers sieves out original thinkers (with a fine mesh) in favor of those who will go along to get along.**

To be original is to sin. To be original and successful is to be damned. To be original, successful in combat and to speak out is to be damned utterly.

- **The Army has a profoundly anti-intellectual bias. Competitive exams do not play a part in being promoted. Intellectual curiosity is minimal.**

Within the Army culture, to read and study is perceived as being akin to having a social disease despite the fact that many successful military icons of the past – Generals Macarthur and Patton come to mind - were extremely well read and clearly helped by their study. Indeed, common sense would dictate that only by reading and study can an officer become fully conversant with a profession where history, and a wide cultural understanding of the world, is of such particular significance. For instance, a soldier who had studied guerilla war, for instance, would be vastly better placed to deal with the insurgents in Iraq at this time. The parallels with the past are striking.

This anti-intellectual bias shows up in the promotion system as well. Whereas the officers of many other nations are winnowed through rigorous competitive examinations as they endeavor to progress up the promotion ladder, the US Army system is based upon the opinions of one's seniors and

whether the candidate has checked the appropriate boxes (as opposed to how well he has done).

As can be clearly seen, this system enforces conformity and discourages the soldier with an original cast of mind.

Let the writer introduce some satire here to try and convey the mindset of a great many US Army generals – and wannabe general officers. Of course whether this is satire, or close to the bone, is open to debate…

'A fact is not a fact unless a general says it is a fact, and in the US Army, that is a fact.'

Higher ranks always know more, and generals know more than anybody.
By definition, according to Army general officer corps values, a colonel or lower cannot know more than a general, and, if he thinks he does, he is certainly entirely unfit to ever become a general. Why? Because he is a threat to the status quo; and ignorant. If he wasn't ignorant, he would know to keep his mouth SHUT!

But supposing this colonel is right, and is proven to be right?
Even if this upstart is right, he is wrong - because he does not understand that the downside of even questioning the status quo outweighs any advantages that his suggestions might bring. The Army isn't a democracy, you know. It's more akin to – well, the Soviet Communist Party. They might have been wrong on a few things but they certainly understood discipline.
If this colonel is proven to be right, understand and remember: That is why command influence was created. Command influence outweighs proof any day of the week. Besides a fact is not a fact unless a general says it is a fact and in the US Army, that is a fact.

But supposing this colonel's ideas benefit the soldiers?
Don't start getting sentimental about the soldiers. They come and go and they wouldn't know what to do anyway without us. The general officer corps is the real Army. We lead, we provide stability, and we control the agenda.

What about Congress?
Congress, as they should be, are in awe of us. Why? Because we look great in our medal encrusted uniforms – and, above all, we're generals. So, by definition, we have to be right.

- **General officers, whether serving or retired, constitute a club with *great* benefits and a code which condemns speaking out publicly against a fellow general.**

  The operative word here is 'publicly,' and the lack of moral courage demonstrated by such self serving gutlessness is nothing short of stunning. And it is a sad indictment of the general officer corps that they share the same code as the Mafia ('Omerta' – silence) for much the same reason – their own advantage.

  Some general officers will, however, sometimes speak out privately providing what they say is on background. Unfortunately, this is not adequate in fostering debate and accountability.

- **General officers go to great length to perpetuate the notion that military wisdom and knowledge are the exclusive property of generals.**

  Thus, more junior officers, such as colonels and majors, are automatically neutered. No junior officer can know more than a general. It is so written.

  It is also entirely untrue. In fact informed observers of the Army very quickly learn that real talent tends to hit a ceiling at the colonel level.

- **The Army is structured in such a way that it is very difficult to pin down who is responsible for what, but very easy for credit for the same deed to be claimed by a number of general officers.**

  Lack of accountability is built into the system.

  Everyone switches chairs every two years, or more often, and anyway, all the work is done by Field Grade officers, colonels and majors.

  If there is a problem, it is their problem.

  If there is a success, it is, of course, to the credit of a general, in fact probably several generals since the general officer corps works by consensus.

  The impact of failure is dissipated by it being near impossible to pin down accountability.

  The impact of success is magnified because generals re-enforce each other under the guise of false modesty.

  Of course, I cannot claim the credit for our magnificent advance on Baghdad. I had great colleagues and soldiers.

  False modesty is so endemic to the system, and yet is so transparent, the informed observer cannot but squirm after a while. It becomes nauseating.

- **Generals, and, indeed colonels, get awards for almost anything – or nothing – and who would have the nerve to question such war heroes.**

  Ordinary souls have to be nominated for awards. Generals have evolved mechanisms to nominate themselves. Being close to combat, let

alone distinguishing yourself in combat, is not a prerequisite for being given a combat award if you are a general or a colonel picked to be a general. It is more of a club badge.

Overall, award inflation is now so rife in the Army as to have reached a level where many medals given to officers are meaningless. This deplorable situation has continued since Vietnam and is an insult to those soldiers who really do deserve awards and recognition.

- **Incompetent generals are almost always promoted thus sowing doubt that they could have been incompetent. Yet precedent clearly shows promoting such people puts lives at risk.**

At a minimum, one is, perhaps, expected to think that incompetent commanders cannot be quite so inadequate as the evidence would seem to dictate if the club of generals supports them.

Such an assumption would be entirely false, but, of course, that is the way the generals want you to think; and the image of the club is preserved.

The use of smoke and mirrors is fundamental to the operation of the general officers corps though more in relation to Congress, the Office of the Secretary of Defense, and the American public than the enemy.

The rationale that the reputation of the Army has to be protected at all costs is used for the most egregious behavior from promoting idiots to suppressing acquisition scandals.

Kicking an incompetent upstairs happens in all walks of life. However, in most situations having the wrong person at the top does not have lethal consequences. In the Army, during a time of war, it can be, and not infrequently is, disastrous.

Unfortunately, the notion that the quality of the general officer corps has a direct bearing upon the survivability of the troops does not seem to carry much weight.

- **The US is a sufficiently strong economy to cover up for many serious Army mistakes by just throwing more money at the problem.**

One could argue that if Osama bin Laden had not appeared he would have had to have been invented as otherwise the Army's serious management problems would have surfaced.

In fact, the extra funds allocated for Afghanistan and Iraq II have covered up all kinds of examples of mismanagement which would eventually have shown up.

Even so, the costs of Iraq II do not bear close examination.

- **Since 9/11, we have fought two countries who either could not or would not put up serious opposition. We could not lose (in a conventional military sense).**

That situation could change.

Regrettably, one could make a case that the situation is changing.

Is there any evidence that some of our Army generals are less than competent, or otherwise lacking? Many think there is plenty. This is not a secret.

Before getting to specifics, it is worth noting that the fact that we probably have the poorest crop of Army generals that we have had in decades is widely known within the media and the Pentagon in general. Further, there is little private dispute about that observation. The lack of talent at general officer level is self evident on a daily basis.

This writer heard that fact from a serving four star general.

"We can't sell our generals," he said to open the discussion. "The other services won't accept them."

He then quoted the example of Supreme Allied Commander Europe, a job which went, for the first time in history, to a Marine. There was much more and it was worrying. Phrases like "Risk averse' were much used.

However, it is not written about for the reasons mentioned previously and because of the Administration's unwillingness to act (if they won't, why should a journalist put his or her careers on the line – yes, it is that dangerous). Also, Secretary of Defense Rumsfeld (Republican) is less than popular with many journalists (Democrats) so there is a reluctance to support him, even by implication, by writing anything critical of the Army generals; and it makes for better journalism to cast story after story as yet another episode in 'Rumsfeld versus the generals.'

Would it were that simple.

The end result is reminiscent of the story, 'The Emperor's New Clothes.' Everyone knows the Emperor is naked but the status quo suits everyone just fine so no one will say a word.

On the other hand, it is not good to be naked when you are at war.

Let us list just some of the evidence that all is not well with some of the generals, and, arguably, has not been well for at least a decade.

We shall not go into detail. These are pointers for further inquiries. The basis of this report is that further inquiries are necessary. All statements are relatively easy to verify and, in the main, will already be known by the Pentagon press corps.

Note. This is not a blanket condemnation of all Army generals.

It is, instead, an expression of extreme concern about the prevailing culture in the general officer corps, and about some Army general officers in particular.

Fortunately, if the good does not outnumber the bad in quantity, and it doesn't, it does in quality. Unfortunately, that is not good enough. The troops deserve better. **VOR**

- **Iraq I (the 1991 Gulf War) was not the incredible victory it was made out to be.**

  The Iraqis were totally overmatched from the beginning. They had no airpower to speak of yet they were up against the most formidable air power in the world. They faced the most formidable landpower in the world and troops from a large coalition which included the British, who are formidable just by themselves.

  There was little structured opposition from the Iraqi Army and, as a consequence, little close combat. Most coalition vehicles scarcely dented their basic loads of ammunition.

  Yet the Republican Guard were allowed to get away and perpetuate Saddam.

- **Blackhawk Down displayed great heroism by the soldiers yet was a badly run operation where the importance of armor was gravely underestimated. Further, key lessons learned from that catastrophe, are being neglected today. History is repeating itself.**

  Mogadishu vividly demonstrated the lethality of RPGs (though we had been encountering them since Vietnam) and indicated strongly that wheeled HMMWVs were less than ideal for urban combat.

  One might have thought that the lessons learned would have been acted upon, yet, a decade later very little had been done to counteract the globally pervasive RPG threat, and the Army's latest vehicle, the Stryker, was wheeled, oversized for urban combat, incapable of dealing with barricades and entirely vulnerable to RPGs.

  Further, HMMWVs are being used as the vehicle of choice for stabilization operations in Iraq.

  Not surprisingly, these light trucks are being destroyed and soldiers are being killed in them nearly every day.

- **Army combat power was cut by 25% percent in the Nineties.**

  Despite this, the global Army Command structure was maintained intact thus preserving a myriad of commands and jobs for general officers to no advantage for this country.

- **Throughout the Nineties the Army developed a reputation for being risk averse. They more sat on a problem than solved it. And they refused to re-structure for increased combat effectiveness.**

  Force protection became more important than the mission and a bunker mentality emerged. This mentality spawned Task Force Hawk – when a simple operational request for a couple of dozen Apache helicopters grew into an absolutely botched deployment of a 5,000 soldier task force.

  Prospective anti-terror missions were refused. In essence, though the Cold War was demonstrably over, the Army continued to act as if its sole real role was to fight World War III along Fulda Gap lines – where Army heavy armor faced off Soviet forces in Germany for nearly half a century.

  Note. This is not to say that the Army no longer needs heavy armored forces. Quite the contrary. Armored forces are as relevant today as yesterday, and will still be tomorrow.

  But they need to be re-organized and operated differently, such as they were when Colonel Dave Perkins commanded his armored forces into downtown Baghdad during Iraq II – a tactic that flew in the face of Army doctrine.

- **Throughout the Nineties, the Army centralized more and more. Local initiative was discouraged.**

  The watchword became control by the generals and even more control by the senior generals.

  Control of assets gravitated up the chain of command. Central control became good. Local initiative was considered bad.

  This makes complete sense if one accepts the logic that the more senior the general, the greater his military wisdom. Otherwise, it is the rough equivalent of castrating your local commanders.

  Assets that had belonged at divisional level were taken over by corps. The 82nd Airborne, to give but one example, lost both its Apache attack helicopters and its air-droppable Sheridan tanks.

  The promised replacement with the M8 Armored Gun System, although a major development success and Type Classified, was cancelled.

  The 82nd Airborne ended up less heavily equipped than in had been half a century earlier. They were stunned – and still are.

  Combat power was a steady loser to centralization and careerism.

  The feeling within the Office of the Secretary of Defense developed that the Army leadership did not want to fight.

  The Army leadership had come to regard the existence of the Army, *their Army*, their empire (complete with fiefdoms in their gift – incentives for lesser generals), as an end in itself.

  Both their thinking and behavior were astonishingly akin to a cross between feudalism and the Communist Party (where all are equal but some are more equal than others).

- **Once again, the Army did not step up to the plate when it became clear that action had to be taken in Afghanistan after 9/11.**

  Vast and unrealistic numbers, which would take an inordinate time to deploy, were proposed to invade the country.

  The failure of the Soviets was much quoted.

  The existence and potential of the Northern Alliance was ignored.

  In the end, the CIA, Special Forces and the Marines executed the initial mission. They were willing to act with immediacy, and were highly successful.

  The Army continued to drag their feet.

- **Operation Anaconda was badly planned and grossly mishandled by the Army commanders directly in charge.**

  Subsequently, despite clear evidence, and an independent report, that the Army commander had done a poor job, he was promoted.

  Osama Bin Laden escaped.

  The war continues.

- **The initial Army plan to invade Iraq was so vast in numbers of soldiers required, and so unrealistic, that Secretary Rumsfeld burst out laughing. And the Marines stepped forward – yet again.**

  The Army's standard way of avoiding missions has been to demand such large forces that the mission becomes, for all practical purposes, impossible to mount.

  In this case the Secretary called their bluff and the Marines, despite not being equipped for a deep maneuver of this magnitude, stepped up to the plate.

- **The plan that was finally used to invade Iraq (scarcely a difficult task given the disarray of Saddam's forces and the US's overwhelming military power) devoted very little time to what might happen after major hostilities were over.**

  This was inexcusable given that this was a known area of concern. Further, the Army leadership knew that the security and stabilization operation was uniquely theirs.

  It should also be realized that the Army had plenty of time in which to plan. Strong signals as to National Command Authority's intent were given as early as fifteen months ahead of the actual invasion.

  There was considerable historical precedent as to what needed to be done – including the importance of using special teams to seize enemy records to enable hard core members of the B'athist regime to be identified and this eliminated from any post war government.

  Nothing of the sort was done.

All of this makes one intensely curious about the cultural differences between the Army and Marines.

Certainly, one difference is that the Army think of themselves as big, and far too much work to change, whereas the Marines think of themselves as small, flexible and ready and able to do whatever it takes to complete the mission. Of course close to a couple of hundred thousand Marines is not that small but we are talking mindset here.

The Marines will task organize at the drop of a hat (sorry, cover). They will change, adapt, improvise and do everything else necessary to get a result because they have a profound sense of purpose and don't need a general to tell them what to do. In fact, they will kill you, if that what it takes, but they will do it with vim, vigor and some style. And they will also act quickly.

Extreme violence is a given. Marines believe in aggression. It wins wars and saves lives – unless you are on the receiving end.

The Army cling to their existing divisional structures in the firm belief that preserving the status quo, specifically their own fiefdoms, is far more important than any short term mission.

In the end, they may well kill you too – after approval by the chain of command - but you may also die of boredom first.

The Marines have a can do attitude and encourage their people to get on with it. They truly believe in the concept of 'A Few Good Men.' Indeed, they practice it.

The Army are curiously fatalistic, love deliberative decision making process (indeed, they teach it), and hate initiative. And they truly do not believe in 'An Army Of One' despite the fact it is their recruiting slogan.

One might well think that such a confusion is illustrative.

A reasonable person might think they lack confidence. Another might regard their attitude as defeatist. A third might think that possibly ignorance could be playing a part.

Army generals, as a whole, are just not that educated.

To do anything new in the Army is all too hard. Besides the structure that made me a general has to be right.

There are reasons why the Army is the way it is, and why it does not change, and they start at the top.

VOR

- **The execution of the invasion plan displayed a lack of robust confidence by the Army leadership.**

  The pause that took place five days into the campaign was unnecessary.

No serious opposition had been encountered. No serious casualties had been incurred. No serious opposition was expected. Air dominance was total. Overmatch in all categories was total.

Informed observers on the spot commented that the Army approach was timid. Conflicts with the much more lightly armed Marines were reported.

The Marines were led from the front.

The Army were led from the rear.

The Marines had no interest in pausing, and just wanted to press on. They knew that a pause would leave them more vulnerable if static and massed (weapons of mass destruction were, at the time, thought to be a very real possibility) and would allow additional defenses in Baghdad to be constructed (as was the case).

They also knew that a pause would give the leaders of Saddam's regime additional time to flee or go underground (as was also the case).

The pause also raised the status of Saddam's regime. It gave the impression that Saddam's troops were heroically resisting the invaders despite overwhelming odds (which was absolutely not the case) so also implied that Coalition Forces could be successfully resisted.

This, in turn, laid the groundwork for guerilla warfare.

- **The period after the end of major hostilities in Iraq was marked by near total inaction by the Army leadership for about a month.**

Instead of instantly dominating Baghdad and other occupied areas, and sending out the message that the US was now totally in command and would not tolerate civil disobedience, looting or any other such behavior, the Army, in effect, withdrew into fortified positions and did nothing.

To quote a senior CENTCOM officer, "We've been playing catch-up ever since."

- **The Army prides itself on its logistical capabilities (getting supplies to the troops) yet there is widespread agreement that Army logistics both during *and after* Iraq II were a disaster.**

The Marines seized an airfield and used their own C-130s to ensure continuity of essential supplies.

One might well ask why the Army did not do the same thing.

The indictment of logistical support was especially vehement in after action reports by those directly involved in the fighting. This is all the more worrying because the Army has had secure bases in neighboring Kuwait for years, yet, in Operation Iraqi Freedom, lead maneuver forces did not secure bypassed forces, and supply lines were left unprotected.

- **The Army also prides itself on intelligence (commented on elsewhere in this report) and was about as well placed to have**

accurate information on Iraq as one can be in relation to one's enemy.

The fundamental flaws in Army intelligence both during and after the campaign are a matter of record.

Note. See extensive Center For Army Lessons Learned (CALL) report on this subject.

There were good reasons why Secretary Rumsfeld bypassed serving Army generals to select the new chief of Staff of the Army.

The above list of Army deficiencies, which clearly reflect directly on the Army leadership, is not close to being comprehensive, yet it still demonstrates very clearly why Secretary of Defense Rumsfeld felt it necessary to pass over the ranks of serving Army generals to find what he considers the best candidate to carry out the comprehensive reforms that informed observers consider necessary. Whether he has made the right choice or not only time will tell but it demonstrates something of the scale of the Army's problems that he felt he had to go outside.

The much discussed issue of the troop numbers that critics felt would be required in Iraq both for the invasion and for the stabilization period was a distraction from the more serious problem of a lack of competence in the Army general officer corps.

Competent Army Leadership is fundamental to the survivability of our soldiers. We do them no service by refusing to monitor it critically and to press for action if required.

The current practice of being blindly supportive of the Army leadership, regardless of their competence, makes it very difficult for the Administration, and particularly the Secretary of Defense, to take the necessary remedial action.

Since Army leadership problems are rarely discussed, it makes any move by the Secretary of Defense seem capricious and arbitrary rather than justified. The public have no context. As a consequence, the political repercussions are likely to be negative. The inference comes across that dismissing generals is somehow unpatriotic.

The fact is, however, that dismissing incompetent generals and promoting genuine talent may well be the real demonstration of patriotism, and of moral courage (a depressingly rare virtue in the Army – in strong contrast to physical courage).

General Marshall sacked over 50 generals and literally hundreds of colonels to release the talent required to fight WWII.

General George Marshall is one of this country's greatest patriots and is widely acknowledged as such. In 1940, when he was Chief of Staff, he realized that the quality of the Army leadership, promoted in peace, and more influenced

by cronyism and club-ability than combat, was entirely inadequate for the coming conflict.

As a consequence, he sacked over fifty general officers and literally hundreds of colonels – in an army half the size of the present one. Further sackings continued throughout World War II. Where they did not happen, and there are a number of notable examples of this, soldiers died unnecessarily.

Relatively junior officers such as Eisenhower and Patton were promoted.

The results speak for themselves.

When WW II was over, and after George Marshall had retired (he was soon to become Secretary of State) it is fairly clear that the Army reverted to some very bad peacetime habits.

Command, once again, lacked the metrics to judge success. Enter the Korean War in 1950 and the disaster of Task Force Smith.

We are at war again and there is much evidence that similar drastic action to that of George Marshall is required again.

Whether the same moral courage and integrity exists now is a good question. ❖

An extract from 'Marshall' by Leonard Mosley

Marshall had never been afraid of busting an officer, no matter how high his rank, when he had failed on the battlefield. Eisenhower once sent home a well-known general for grave military incompetence and apologized, knowing he was one of Marshall's old friends and colleagues.
Marshall had immediately reduced him in rank to colonel and cabled Ike:
"IF I'D BEEN IN YOUR PLACE, I WOULD HAVE DONE IT SOONER."

6. The role of Congress and civilian direction in relation to survivability (and other military matters).

"War is too important to be left to generals... " and so is its aftermath. The Founding Fathers mandated oversight for very good reasons. Unfortunately, right now it is entirely inadequate. That has to change.

Relatively few Members are knowledgeable about the Army. Even fewer exercise informed oversight.

One of the more disturbing findings into the matters discussed in this document is how unaware Members of Congress are of them. Though hundred of billions of taxpayers' money is being spent, relatively few Members are either knowledgeable about, or concerned with, the Army.

Actions such as those by Congressman Duncan Hunter , Chairman of the House Armed Services Committee, to hold an extensive hearing on October 21, 2003, to investigate information about lessons learned in Iraq, which ran counter to the spin coming from the Pentagon, should be applauded. His initiative was to bring Dr. Stephen Biddle, Dr. Andrew Krepinevitch, and Dr. Robert Scales (Maj Gen USA Ret) to testify for over three hours on their assessments regarding key warfighting issues in Iraq informed political debate and influenced defense expenditures.

Congressman Jim Saxton's sustained investigations into the Stryker, which led to his deep expressions of concern, are also commendable.

Our military needs much more of such oversight.

There are various reasons for Congress's otherwise generally ineffective oversight, and other shortfalls, and they are worth examining briefly.

- **Few members, anymore, have direct military experience.**
  Those members who have had direct military experience have had it, in the main, a long time ago.

- **Members are incredibly busy.**
  Members have inadequate time to read, study and analyze these complex issues for themselves.

- **Members depend heavily upon their own staffs and the staffs of the relevant committees.**
  Their own staffs tend to be overworked and inexperienced. Committee staffs, not infrequently, have their own agendas and do not necessarily give the unvarnished truth to the committee members.
  Furthermore, the General Accounting Office (GAO), which is chartered to investigate issues for members, has been woefully short in relevant analysis on the requirements and performance of the Stryker program. They have also allowed themselves to be inappropriately lobbied by the Army.

- **The Department of Defense's accounting systems, by their own admission, are in chaos, are numerous, are irreconcilable and fail to yield accurate and reliable data.**
  In short, there is no way of knowing, to a reasonable degree of accuracy, exactly what is going on in money terms.

- **Funds allocated under one heading are, not infrequently, spent under another heading.**
  Yet there is no accountability.

- **Defense contractor lobbyists are major players in underwriting Congress.**
  This creates automatic, unceasing, yet undeclared conflicts of interest for the members.

- **The services, who are heavily tied in to the defense contractors, have their own agendas.**
  These do not necessarily coincide with the National Interest. Further, the veracity of the various service leaderships can be less than total.

- **General officers and acquisition officers are excessively influenced by a desire to retire well at the expense of a defense contractor.**

Very few retired general officers do not, currently, have such an arrangement. This does, of course, constitute a major conflict of interest and scarcely constitutes integrity. It is a severe problem.

- **Congressional investigative arms, such as the GAO and CBO, and the Department of Defense's own Operational Test and Evaluation, are much more political than is generally appreciated.**

  That makes their efforts a selective feast – and frequently less than informative.

- **Members have a natural tendency to want to be uncritically supportive of the military in time of war even at the expense of oversight**.

  Unfortunately such patriotic impulses are not just open to abuse, but are abused. Generals wrap themselves in soldiers, acronyms and obfuscation. Accountability withers.

- **There is a lack of civilian oversight and, one might argue, the necessary detailed understanding at Department of Defense level**.

  This is despite the commendable initiatives of the Secretary of Defense.

  Unfortunately, they are inadequate.

  The Secretary seems to fail to understand that the Army is a hierarchical organization with a corrupted general officer culture that is highly resistant to change (because it is not in their perceived self interest), and which requires specific, informed, and un-ambivalent direction, combined with ruthless action, if required changes are to be achieved.

  There are few signs that the scale of the problems with the general officer corps is understood, and even fewer that remedial action is being taken.

  The malaise that is currently affecting the general officers corps is already impacting on the War against Terrorism.

  Soon, it may jeopardize the President's chances for reelection. ❖

7. Wheels versus tracks – the survivability aspect

Wheels, even when armored, tend to be less survivable, and largely road bound

Tracks can carry the weight of arms and armor needed, and don't need roads

"If it has wheels, shoot at it. If it has tracks… you will die"

It has been reported to this writer that the advice given to Iraqi insurgents in training, gained from hard won experience, is as follows:
"If it has wheels, shoot at it. If it has tracks, leave it alone because it will shoot back and you will die."

We are now in the business of Global Expeditionary Warfare. That means no roads, or lousy roads – which means tracked vehicles.

The wheels versus tracks debate is important because it impacts directly on survivability.

Mobility (which leads to what the Army call 'positional advantage' hugely relates to survivability). In turn, survivability, leaving out the myriad of other issues, is arguably most affected by who, where and how you are going to fight (whether it be full war or stabilization operations).

The premise behind this report is not only that we are at war now but that sooner or later, and probably sooner, we are going to have to fight an enemy that will be a serious opponent so we should prepare accordingly. The Taliban and the Iraqis were *not* serious opponents (which is not to say that has not been some serious combat as far as the soldiers directly involved were concerned). North Vietnam was. Iran, North Korea or China most certainly could be; and there are many other grim possibilities.

This nation is now in the business of Global Expeditionary Warfare.

The one likely common denominator is wherever we have to fight is likely to be characterized by difficult terrain, poor or non existent roads and inclement weather. In short, such locations are going to be logistically very difficult. It would be nice to be able to avail of the paved road network in Western Europe but unless things deteriorate dramatically, that it is not likely to happen. We are much

more likely to find ourselves in Indonesia, Africa, Iran, the Caspian Basin, China or some other access difficult and demanding area. The ground will vary from sand, to scrabble, to volcanic rock, to snow, to swamp and we will need the capability to cope with all of these alternatives.

The word 'all' should be emphasized.

We need to be able to cope with the widest possible spread of terrain and to be able to switch from one type to another without delay or concern.

The Stryker and data-less analysis. Operational requirements changed to cover inadequacies. No standards and a sea of waivers.

The trouble with the recent debate on wheels versus tracks, initiated by the former Chief of Staff's decision to set up Stryker Brigade Combat Teams, based upon the eight wheeled Stryker vehicle (originally the LAV III) was that it was decidedly fact deprived.

It was not a scientific choice. It was a notion. Further, many of the assertions (which were neither backed by data, nor demonstrated in testing) made by the Army on the behalf of the Stryker could not be disproved until the vehicles themselves arrived. By that time it was too late to do much about it because the procurement of Stryker bypassed the conventional procurement process so the normal checks on inadequate performance did not cut in.

Stryker floats on a sea of waivers.

Worse yet, the Army changed the operational requirements when they could not be met and then chose to operate in conditions of complete secrecy.

It is preposterous, and unprecedented, that Army officers working on the program are required to sign Confidentiality Agreements.

This rendered any attempt to have a factual debate meaningless.

Taxpayers' money but no accountability.

Such a lack of analytical integrity, and intellectual rigor and honesty is depressing and decidedly not in the National Interest because it means that, in effect, there is no accountability.

The Army are not held accountable for the inaccuracy of their statements to Congress.

The defense contractor is not held accountable to the Army for failing to meet the standards because the Army changes them.

The Army Leadership is not held accountable for major errors of judgment because the Defense Department is concerned about potential political problems in Congress.

The basis of our Constitution is accountability but in this case no one is accountable; and it is taxpayers' money.

It is a depressing story and it does nothing to aid rational decision making about wheels versus tracks. Indeed, the performance of the wheeled Stryker itself will not because it is so flawed it may undermine the fact wheels may have advantages in certain situations. The question of whether a tracked or wheeled

vehicle is more suitable concerns not just the principle but which specific vehicle is selected – and how it is equipped.

The decision as to whether wheels or tracks should be chosen for a specific purpose has to be based upon data. Those findings, in turn, needs to be evaluated against a set of objectives.

There is a great deal of data available on the performance of wheels versus tracks. The specifics are too detailed to list here but the general findings (taken in this case from a January 2000 joint US/UK DPA/TACOM study regarding the Future Scout and Cavalry System or TRACER) are very straightforward.

- **Survivability of (Recon) soldiers requires ballistic protection and mobility in *all* weather conditions in the *full* range of combat.**
- **Strategic mobility (between wheels and tracks) is equal.**
- **Tactical mobility on hard dry surfaces favors wheels.**
- ***Mobility off road favors tracks.***
- ***Survivability favors tracks.***
- **Fuel and RAM slightly favors wheels**

The joint US/UK report's conclusion: Tracked solution best

General Shinseki's response to tracked recommendation by joint US & UK working group: Shoot the messenger.

The reaction of the US Army under former Chief of Staff General Shinseki was to ignore the findings, terminate the joint program, and order the wheeled LAV III which, much modified and made subsequently heavier became the Stryker.

No data based rationale for this decision was ever put forward.
General Shinseki's actions, based upon the best facts available, and the stated agenda, were inexplicable.

Generally available data supports the US/UK joint study.

Furthermore, as reported in detail in our earlier report 'Stryker and The Reality of War' of August 2003, strategic deployability and RAM costs actually favor the tracked M113 or MTVL (a much enhanced and lengthened M113) over the wheeled Stryker.

Wheels versus tracks in urban combat and stabilization operations.

Wheeled vehicles are generally quite adequate for police work or where the level of threat is no higher than that from occasional small arms fire, but are less than adequate when the level of threat is more severe – such as when RPGs, mines, Improvised Explosive Devices and barricades are likely to be encountered.

The reasons for this are straightforward and have been well illustrated by events in Somalia, Chechnya, Israel, Iraq and elsewhere:

- **Tracked vehicles are more maneuverable in narrow streets, and other confined spaces, because they can pivot turn in their own axes.**

  All of us know how difficult and time consuming it is to turn a wheeled vehicle in a confined space. It is vastly more difficult to do this under fire yet such is the requirement for wheeled armored vehicles in an urban environment and it is no small reason why so many get trapped and destroyed.

  In contrast, a tracked vehicle, such as the M113, turns by operating the tracks in opposite directions so that it can turn in its own length compared to more than 50' turning radius for the Stryker.

  Not only is this capability much better suited to urban combat, but it is much faster.

- **Tracked vehicles are vastly superior at dealing with obstacles such as barricades.**

  Urban barricades can be as simple as overturned vehicles, but are more likely to consist of vehicles chained together, cement filled barrels and so on. The idea is to inhibit our ability to maneuver and to channel our forces into kill zones where they are vulnerable to RPGs, satchel charges and so on.

  Wheeled vehicles cannot cope with this. They don't have the torque to push aside barricades or the sheer power and grip to climb over them.

  In contrast, there are few barricades that tracked armor cannot deal with.

- **Tracked vehicles are better able to carry the weight of armor needed to withstand RPGs and similar threats.**

  Weight is much more critical for a wheeled vehicle than a tracked vehicle because tracks are just vastly better at spreading weight due to their vastly larger surface area in contact with the ground. Since up-armoring inevitably involves adding extra weight, the advantage here for tracks becomes even more compelling. In contrast, up-armoring wheeled vehicles has an immediate effect upon performance.

  Virtually all armored vehicle gain substantial weight over time due to up-armoring and other desired improvements. Such increases can be in the

order of 20% to 50%. This consistent tendency has to be catered for in the core design.

- **Tracked vehicles, and particularly tanks with their heavy firepower, have a well proven intimidation factor and an unparalleled ability to end the fight.**

  Our enemies have a pretty fair idea of our capabilities and vulnerabilities and where they do not, they learn fast. However, one thing they do not have to learn is that fighting it out with our tanks and Bradleys is well nigh impossible.

  Nothing equals a tracked armored vehicle for intimidation value because its inherent lethality, mobility, and survivability capabilities are real and our enemies know this.

- **Tracked vehicles, the record shows, minimize casualties.**

  Body armor helps, and good training helps even more, but infantry remain extremely vulnerable in combat in a world where automatic weapons and Rocket Propelled Grenades are the norm to say nothing of mortars, artillery and other destructive firepower. In contrast, although US tracked armored vehicles are not invulnerable, their crews normally survive even if the vehicle is disabled or destroyed.

  When infantry are hit, the casualties tend to be human.

  When tracked armor is hit, the casualties tend to be machines.

  Wheeled armor is not nearly as survivable as tracked armor because the inherent limitations of wheels mean that such vehicles tend to be less lightly armed and armored, to be less maneuverable and to represent larger targets because of the space demands of wheels.

  Exactly that situation exists with the eight wheeled Stryker.

Ironically, given the evidence, the eight wheeled Stryker has been much touted by the Army as being optimized for urban combat despite poor maneuverability, poor performance in dealing with barricades, inadequate visibility in relation to the close fight, poor offensive firepower, and vulnerability to RPG fire.

This makes no military sense.

The perceived advantages of wheeled vehicles. Note 'perceived.' Conventional wisdom is not necessarily true.

These perceived advantages are simply stated:

- **Familiarity.**

  This claim is hard to argue with.

As a practical matter, since most of us learn to drive, and drive, wheeled vehicles, the fact is that military wheeled vehicles are more familiar and thus, initially, easier to adapt to.

On the other hand, few soldiers today have a problem adapting to the driving of tracked vehicles.

The twin lever system has been abandoned to be replaced by the wheel, automatic transmission is now general and the advantages of being able to turn in one's own track length is widely appreciated – especially in relation to urban combat.

- **Cost. Currently, tracked vehicles are less expensive.**

There is a widespread impression that tracked vehicles are more complex and therefore, automatically, more expensive than wheeled vehicles of broadly similar purpose.

Actually, that is not true on either count.

Firstly, tracked vehicles are *less complex mechanically*.

Secondly, current costs state that they are *less expensive*.

A comparison of the costs of the wheeled Stryker with the tracked MTVL illustrates that point. The wheeled Stryker, depending upon specification, is between two and four times as expensive as the tracked MTVL yet it yields no extra interior volume under armor.

One proviso: part of that cost relates to the pricing policies of the relative suppliers.

- **Comfort. Wheels win on road. Tracks win off road.**

This used to be no contest in favor of wheels – on a well paved road.

On the other hand, band tracks (composite reinforced rubber tracks) are vastly more comfortable on road and if not quite as relaxing as wheels on road, are certainly very acceptable. But the real issue is about where you need to go.

In combat 'need' and 'survivability' are closely related.

Off road, band tracks must be regarded as superior to which must be added the advantage that they can traverse much terrain that is literally impassable to wheels.

Tracks can go where wheels cannot.

If you want to be able to maneuver for positional advantage, then tracks provide the ability to go where you want regardless of whether it be on or off road.

Given such an imperative, tracks win out every time.

Positional advantage helps you avoid being killed while being better able to destroy the enemy.

That, long experience shows, is a great deal more comfortable than being killed.

- **Speed. Road speed is not the issue. Combat speed is.**

  Broadly speaking, wheels are faster than tracks *on road* – though one needs to draw a distinction between theoretical speeds and actual performance while on operations.

  If road was the only speed criterion then the Army would drive Ferraris.

  They do not because Army vehicles need certain functionality which, in turn, affects the speed. Also, there are reconnaissance requirements, the need to keep movement synchronized, and so on, all of which conspire to make actual speeds vastly lower than theoretical top speeds. This does not mean that speed is not important – it is vital, and currently under-appreciated - but it helps to keep the context and the myriad of constraints in mind.

  A significant constraint is safety.

  The fact that a vehicle can achieve a certain speed does not mean that it is safe to do so because stability and the ability to maneuver and brake have to be borne in mind. These are not minor issues if the vehicle is, for instance, armored and thus heavy.

  Mass is hard to stop.

  In practice, for all these reasons, the speed of many Army vehicles is governed. Then there is the final fact that the ability of commanders to control ground forces, who move particularly fast, is limited – even with real time communication. That means that commanders like to limit their forces to what they consider manageable speeds.

  To come out with some specifics on all this, the advertised top *road speed* of the eight wheeled Stryker is advertised at being slightly over 60 mph. That contrasts only slightly with the tracked MTVL where the top road speed is more like 55 mph.

  Off road, tracked vehicles tend to be faster both in absolute terms and because they utilize terrain which is literally impassable to wheeled vehicles. They can take the short-cut. They are not limited by the road system or the need to find compatible terrain.

  Clearly, if one relies on roads alone, wheels have an appeal.

  On the other hand, if you want to have tactical flexibility and go where the enemy will not expect you, and thus significantly enhance your survivability, tracks are preferable.

  Then there is also the truly fundamental fact that roads, as we know them, scarcely exist in many parts of the world where we are likely to have to fight.

- **Compactness. Tracked armored vehicles are *smaller*. In fact the Stryker is over 42% larger than the MTVL, yet provides no more volume under armor.**

  Note. The MTVL is 100” wide by 72” high by 232” long; while the Stryker (before SLAT armor has been added) is 105” by 85” by 275”.

The exterior volume of the MTVL is 996 cubic feet while Stryker is 1,420 cubic feet or 42.6% larger.

Larger as a target; larger to ship. Same volume under armor.

Wheeled vehicles are widely considered to be more compact that tracked transport. This flawed belief is probably based upon the fact that tracked vehicles are normally large – not for any innate reason, but because if you have a large vehicle you are more likely to need tracks because tracks are better at spreading weight, particularly off road.

However, there is no truth in the basic premise that wheeled vehicles are innately smaller than tracked vehicles. On the contrary, wheeled vehicles are a much bigger target.

In fact, volume under armor being equal, *tracked vehicles are normally substantially smaller* than their wheeled equivalents, a point well documented in our earlier report 'Stryker and the Reality of War.'

- **Load carrying/ armor carrying ability. The ability to spread weight favors tracks.**

As trucks demonstrate every day on our freeways, wheeled vehicles are highly effective at carrying heavy loads at relatively high speed on smooth hard surfaces.

However, weight for weight, a tracked vehicle is inherently better to support that weight because tracks have more surface area in contact with the ground and thus distribute weight better. Also, a tracked suspension can support more weight than a similar class of wheeled suspension.

For example, a tracked 40k pound MTVL carries 12,000lbs of cargo and mission equipment, while a wheeled 40k pound Stryker carries only about half that amount.

This advantage is of less benefit on paved roads, but is highly significant when it comes to off road terrain and, particularly, soft surfaces – whether sand or earth or wet or boggy ground. In such locations, wheels tend to sink in and get stuck while tracked vehicles, except in exceptional circumstances, are unaffected.

- **Tracked vehicles are inherently more capable of being up-armored. And up-armoring is almost always a requiremelt over the life of an armored vehicle.**

This ability to spread weight means that tracked vehicles are inherently more suited to carry the heavy weight of armor. Further, there is virtually always more flexibility to up-armor.

- **Weapons stability. Tracks yield superior accuracy.**

Wheeled vehicles are pretty much as stable as tracked vehicles where small caliber and medium weapons up to heavy machine gun level are involved.

However, above that the laws of physics come into the picture and the well demonstrated fact is that, weight for weight, tracks are superior to wheels when it comes to handling larger calibers because they more efficiently absorb recoil and transfer momentum to the ground.

This is particularly important when it comes to the larger calibers such as 105mm because there, the recoil is significant as is the need for accuracy. Wheels do not permit the same level of accuracy as tracks at that level and, as a result, undermine the ability to get a first shot kill at longer ranges.

- **Noise. Enter the silent tank.**

  One of the objections to tracked vehicles has been their distinctive acoustic signature.

  Not only are conventional tracks noisier than wheeled vehicles but they also identify themselves, within broad limits, by type.

  Tanks sound like tanks and can be heard from a considerable distance – or such used to be the case.

  Band tracks virtually eliminate track noise completely, and when used in conjunction with hybrid electric drives, cut down the acoustic signature dramatically.

  Further, the new Thunderbolt Armored Gun System, seen at the October 2003 Association of the US Army exhibition in Washington D.C., can actually operate in completely silent mode off batteries for several kilometers.

  Silent running is not the primary purpose of a hybrid electric engine but it is a useful tactical capability of particular advantage in internal security situations.

Both wheels and tracks have been developed a great deal in recent years. The main innovations with wheels are:

- **Changes in the nature of their construction.**

  Steel belting, which strengthens the tire structure, would come into this category. Oddly enough, tires that are designed to be adjusted by a central tire inflation system – such as that operated by the Striker – are single walled tires because of the flexibility required.

  The downside of that capability is that such tires are less robust.

- **Run-flat tires**

  These are essentially tires with a solid core that acts as an emergency, albeit smaller diameter, wheel if the inflatable exterior of the wheel is damaged.

They are heavy and expensive but they do work for limited distances at a reduced level of performance, particularly off road. Unfortunately, they are also very difficult for soldiers to change in the field.

They are essential on the Stryker because it does not carry a spare wheel and because tires, even heavy duty military tires, still remain extremely vulnerable both to terrain and to enemy action. This was particularly evident in Afghanistan with Marine LAVs, and is also a serious problem on the poor roads in Iraq.

- **Central tire inflation systems**

  Such systems allow individual tires to be inflated and deflated remotely by the driver – so he does not have to leave the safety of the vehicle.

  This allows different terrains to be coped with in a superior manner compared to constant pressure tires. However, the end result off-road still does not compare with tracked performance and the flexible walls required in such tires render them innately more vulnerable.

  A further problem is that the tire inflation mechanisms increase the already considerable vulnerability of the wheel well area (the long established target area of choice, as determined in such environments as Afghanistan and Chechnya, because tires burn, armor is lighter there, and complexities such as hydraulics are exposed).

  Furthermore, the reliability of the Stryker's Central Tire Inflation System is notoriously poor. It is the kind of complication you do not want in a combat vehicle.

- **Associated improvements in suspension which allow wheels to achieve a little more traction.**

  Suspension in wheeled armored vehicles is particularly important because of all that weight concentrated on a very small surface area. Unfortunately, it also adds complexity.

The main innovations with tracks are:

- **Improved construction of conventional track to yield vastly improved track life.**

  Conventional track life used to be measured in hundreds of miles. It has now been improved immeasurably to the point where track on an M113 recently recorded 12,000 miles without serious wear.

- **The introduction of completely new rubber and composite band tracks which are lighter, faster, significantly quieter, more durable, and easier to maintain.**

Band tracks are one of the most significant developments since the invention of the tank because they save weight (perhaps 2,000lbs on a light tank), allow tracked armored vehicles to roughly equate to the road speed of wheeled armored vehicles, eliminate the noise associated with traditional tanks, and, being much lighter and without the moving parts of conventional tracks, are vastly easier to maintain. They have been tested on military vehicles up to 30 tons in weight.

- **Associated improvements in drives and suspension.**
  The most significant development in this category is the hybrid electric drive which not only decreases space requirements and yields more than adequate electric power, but also decreases fuel consumption significantly.

Despite improvements in both wheels and tracks, tracks win hands down when it comes to overall all terrain maneuverability.

The main results of these improvements have been to enhance the performance of both wheels and tracks, but not to a level where they can now be considered remotely similar.

True, wheels are now better than they were at off road performance, but the basic laws of physic still mean that wheels, which have higher ground pressure and less surface area in contact with the ground, cannot come close to matching the overall performance of tracked vehicles across a spread of terrain.

Further, the performance of tracks has improved also both in functionality and in durability.

True, there are some terrains where performance is broadly equal, such as where hard, dry ground is involved, but where the going is less ideal (which covers most of the world), tracks invariably dominate. And it is for exactly those more demanding scenarios that military planners must set their requirements.

Further, band tracks, are now a well tested innovation, and minimize the difference in performance and comfort between wheels and track on roads.

As to weapons stability, it is no contest because tracks are inherently more stable.

Has the US Army become more road-bound, both literally and mentally, than is healthy for optimum survivability?

It is worthwhile remembering that the army's main preoccupation since WW II, up to about 1991, was to contain the Soviets. There, the main landpower methodology was based upon armor supported by essentially road bound logistic trains.

This approach had worked in World War II, though at a great cost in casualties, and, certainly, it helped to deter the Soviets. However, whether it is the optimum approach for the future is open to question.

To be road bound is to be predictable, and not to be optimally survivable – especially in countries where there are few roads.

To focus on wheeled vehicles is, inevitably, to be road bound. ❖

Sourced from the commendable 'Armored Combat In Vietnam'
By General Donn A. Starry

By early 1965, when major US ground force elements were committed to combat, the Vietnamese and their US advisors had accumulated nearly three and one-half years of experience in using armor in the varied conditions found in Vietnam.

However, despite this wealth of background knowledge and experience, the initial US commitment of armor to Vietnam was characterized mostly by hesitance to act and ignorance of the situation.

It is notable that the first commitment of armor to Vietnam by US forces – the US Marine Corps tanks that landed with the 9th Marine Expeditionary Brigade at Da Nang on 9 March 1965 – was a mistake.

The Military Assistance Command Vietnam (MACV), which had requested the Marine reinforcement, was unaware that the Marines Table of Equipment (TE) included heavy armor (M-48A3 MBTs).

Most of the reluctance to commit armor appears to have been a result of the perception that Vietnam was a 'jungle' and that armor was 'unsuitable' for use in guerrilla war. **As the Stryker fiasco demonstrates, sadly, data-less analysis is still in vogue in the Army**.

It wasn't until 1967 that a complete terrain analysis of Vietnam, titled *Mechanized and Armor Combat Operations, Vietnam*, challenged the accepted view of armor in Vietnam.
The analysis rated 46 percent of the country as a whole accessible year round to armored vehicles and over 80 percent of the coastal plain, piedmont, and central plateau regions as accessible year round. The study also found that tanks could maneuver in 61 percent of the country during the dry season and 46 percent during the wet season, while APCs (tracked M113s) could maneuver freely over 65 percent of the country year round.[4]

This study also confirmed what the troops in the field had already learned, the mobile firepower of tanks and APCs (tracked M113s), when properly supported, gave US forces a decisive edge against lightly equipped Viet Cong and North Vietnamese Army forces.

8. The cult of the infantryman

Infantry, no matter how good, are exceptionally vulnerable.
A seamless integration with armor is required.

A dangerous myth.

During a recent visit to Fort Benning, the home of the infantry, the then Vice Chief of the Army, and a light fighter by background, commented that the infantryman was the very soul of the Army.

His motives were understandable but he was wrong. In fact, he was perpetuating a dangerous myth.

The heart of the Army is *the soldier* but the word 'soldier' should not be confused with 'infantryman.'

They are not interchangeable terms.

The reality of modern war and, for that matter, modern security and stabilization operations, is that a soldier needs all the expertise, intelligence, firepower, mobility and protection he can get to achieve his mission – let alone to survive.

During WWII, infantry comprised just 14% of the US Army. They took 70% of the casualties.

Infantry, virtually always, comprise the vast bulk of the butcher's bill. Unfortunately, that is not a myth. It is a fact.

Unprotected infantrymen die.

Combat is brutal and the modern battlefield is a firestorm where the unprotected infantryman is extraordinarily vulnerable and tends to die in large numbers.

World War I was an infantry war and such soldiers died in the tens of millions.

World War II was at least as vicious but soldiers under armor took dramatically less casualties than their infantry counterparts.

Much the same finding held true in Korea, Vietnam and most recently in both Iraqi wars.

Armor works. It is not perfect but it is vastly better than no protection.

Armor works. It is not a total solution but it is the best we have got right now and it works even better when supported by intelligence, airpower and, where possible, naval support.

Jointness is the real key.

Combat power is the requirement.

Intelligence is the fundamental.

The cult of the infantryman is dangerous because it perpetuates the emotionally appealing notion of personal combat while ignoring the reality of the lethality of modern weapons. It is made worse because of the near tribal hostility within the US Army of the various branches, and, in particular, between the 'Airborne Mafia' and the 'Heavy Force.'

This is juvenile. Lives are at stake. Under such circumstances, such petty behavior is contemptible. It is gang warfare courtesy of the United States government.

This is not to denigrate the infantryman, because infantry are essential in a great many situations, and are entirely admirable in their courage, but instead to make the point that although tradition is a fine thing, we need to focus on what works instead of the mythology.

Combat demands pragmatism.

The facts indicate that unprotected infantry are excessively vulnerable except in special situations (such as Special Forces operations – and they will use whatever is available). As a consequence, we need to apply some intellectual rigor here and overcome the institutional inertia of the Army. The stakes are too important. The barriers are too petty.

Required, a seamless integration of armor and infantry

What is required, in the main, is a seamless integration of armor and infantry and cavalry. This, in turn, suggests that there is a strong argument in favor of abolishing the Branch Schools such as Fort Benning (Infantry) and Fort Knox (Armor) and establishing a new structure.

Our existing way of doing business dates back to before World War II.

To change, every sixty years or so, can scarcely be described as rushing it.

The point here is not that armor is better than infantry but merely that, when at war, we need to focus, quite ruthlessly, on what works, and do away with the branch tribalism and resultant blinkered thinking that so preoccupies the Army both in peacetime, and, sadly, in wartime too. ❖

Army and Marine combat effectiveness compared.

Extracted from 'Spirit, Blood & Treasure' Edited by Don Vandergriff, from the section written by John Tillson 'It's the Personnel System.'

Nothing was so unfair as what happened on the east side of the Chosin reservoir around 1 December 1950, when the Army 31st Regimental Combat Team was destroyed with only 1 in 10 of the 3,300 soldiers coming out capable of continuing to fight, and not a single organized unit able to go on. All of the Army artillery, vehicles, and crew served weapons were left behind as were nearly half the troops, captured, dead and wounded.

On the west side of the reservoir, with the same equipment, same ratios to the Chinese forces, same weather and terrain, the Marines fought their way out of the Chinese envelopment with almost all their artillery and vehicles, all of their wounded. Their losses overall were horrible – about 50%, but only two companies out of the two whole regiments had ceased to function as effective combat units.

The principal difference between the Army and the Marines was that the Army assigned officers to battalion and above on the basis of career "equity," whereas the Marines assigned field grade combat command to officers who had previously commanded in combat at the same or next lower level. For example, only one in four of the Army battalion commanders had previous combat commands, whereas two out of three of the Marine commanders did.

Combat command in war and combat training in peacetime are not "general management." At Chosin, the Marine leaders had specific technical competencies that the Army leaders didn't. It is not that the Army didn't have leaders who had them, it's that the Army didn't assign them to command.
"Wouldn't have been fair."

Note. The Army's indifference – one might almost say hostility - to the extraordinary value of combat experience, which had equally tragic results in Vietnam, *has continued to this day,* as the selection of generals to command Iraqi Freedom demonstrates. It gets soldiers killed, undermines the mission, and is inexcusable.

9. Intelligence

Total situational awareness through technology is a noble aspiration but nature, human nature, and the enemy all have votes. Then it gets elemental. Tactical surprise and the Close Fight are not going to go away.

"You spend so much and get so little." Israeli general.

The US spends more on intelligence than the Gross National Product of many countries (the official figure is classified and $35 billion is probably a low estimate) yet Iraq II can scarcely be considered an intelligence success.

Yet good intelligence is fundamental to survivability.

If your know your enemy's capabilities and intentions, you can take preventative action.

This truism applies both in war and during stabilization operations.

For many soldiers there is a not a great deal of difference between them. Arguably the latter can be more dangerous.

There is an old English joke about a clergyman going to stay with a friend who received a bad egg for breakfast. When asked how his food was, he replied, being very polite, that it was "Good in spots."

Such may charitably be considered the case in relation to intelligence in Iraq II and the aftermath.

We would be less kind if commenting on human intelligence alone though there is some evidence that the soldiers on the spot are learning.

They have to.

Military action should be intelligence driven

Military action, whether it be full blooded war, or the messy period that inevitably follows, or a Fourth Generational Campaign, or variations in between, should be intelligence driven; yet that is not the way the Army culture works.

It needs to be changed.

Certainly, the makeup of enemy forces – which results in targeting –gets great attention, but other complexities, such as cultural intelligence, receive much less attention. Human intelligence, based upon human relationships, which take time and empathy to cultivate, is sorely neglected if, indeed it is actually understood.

Is US Army culture compatible with intelligence?

Rank based US Army culture tends to focus on the immediate, physical and formal, and to denigrate the cerebral, yet intelligence is very much a cerebral activity, which develops over an extended period, with the informality and warmth of human relationships playing a major role.

Time plays an even more important role.

It takes time to build up trust.

The vital importance of time in developing a source is absolutely not understood by the Army, particularly in the context of the imperative to ticket punch to get promotion. Other concerns include a profound anti-intellectual bias, a tendency to focus on keeping one's superior happy as opposed to delivering the unvarnished truth, and the divisive nature of the Branch system. One can then add in an obsession with secrecy, a consistent tendency to stovepipe and the widespread Army problem of poor communication skills.

There is a real cultural problem here, with a long history of mistakes, which does not bode well for the future. Consider our intelligence failures from Vietnam to the fall of Iran to Somalia to our current problems in Iraq.

We seem to be forgetting a great deal, remembering less, and learning little.

A reasonable person could well argue that an understanding of, and appreciation for, intelligence is antithetical to the Army's current way of doing business.

This is an issue we have to resolve.

Iraq is one place where we should not have had an intelligence problem – but we did, and we have.

Ironically, Iraq, more than just about any other place, is one country we should have mastered every which-way, from an intelligence point of view, before we invaded.

Consider the facts.

We had been at war with Iraq as recently as 1991 so should have had a very clear idea of their combat capabilities. We had been over-flying them since the same date. We had substantial forces next door in Kuwait and Saudi Arabia, and substantial presences in Jordan and Turkey. We had access to the UN inspectors who were looking for weapons of mass destruction. We had access to those involved in the food for oil program. We had media going in and out.

As if that was not good enough, we had tens of thousands of Iraqi refugees living in the US and access to thousands more living in London and elsewhere.

We trained a bunch to act as interpreters and otherwise help us during the invasion.

Yet for all that, we failed to understand the cultural climate during the invasion and failed absolutely to take decisive preventative action after the invasion for about a month.

In fact we gave every sign of not caring that much. Our behavior reeked of arrogance, indifference and ignorance. It set the worst possible tone and must have helped our enemies immeasurably.

Nobody is perfect, but that was not good. So what is an intelligence driven operation? Well, clearly that varies but it is worthwhile flashing back to WW II to find out how matters after the invasion were handled then.

The main difference is that instead of focusing on targeting, on destroying the local Nazi/B'aathist headquarters, the main pre-occupation was on securing the records. Seizing the Nazi records meant that you could identify who was who and hopefully end up with a translator who had not been a senior Nazi official only weeks previously. Knowledge was not only power but kept you alive.

This is not rocket science but it does illustrate the difference between a target driven campaign and intelligence. Targeting is certainly necessary. Intelligence wins wars and secures the peace.

We have a long way to go on the latter. In fact we are still at the stage where we don't know what we don't know, and, worse yet, we don't know the kind of things we absolutely need to know.

Some would call that ignorance. It is no way to win a war. It is no way to survive. ❖

Extracted from 'Maneuver War Handbook' by William S. Lind

Conflict can be seen as time-competitive observation-orientation-decision-action cycles (Boyd Cycle or OODA Loop). Each party to a conflict begins by observing. He observes himself, his physical surroundings and his enemy. On the basis of observation, he orients, that is to say he makes a mental image or "snapshot" of his situation. On the basis of this orientation, he makes a decision. He puts his decision into effect, i.e,. he acts. Then, because he assumes his action has changed the situation, he observes again, and starts the process anew…

10. Supply convoys, supply lines, survivability

Wheels burn! The vulnerability of road bound supply convoys should scarcely come as a surprise. Is there a better way? Absolutely!

Supply convoys have been attacked since the dawn of time so their vulnerability in Iraq was, and is, predictable. So why were we not better prepared?

The Marines pride themselves on every marine being a rifleman, and train accordingly.

It is not a boast; it is a way of thinking and acting, and it is profound.

In contrast, the Army divides itself into those who in Combat Arms and those who are not. The implication here is that only those in the Combat Arms are likely to have to have to fight – which is clearly a mistake. There is also the implication that those who are not in the Combat Arms are not real soldiers. They are, so to speak, civilians in uniform; and what can you expect of a civilian?

What we have here is a failure of the Army leadership and a classic demonstration of a flawed and arrogant mindset.

In contrast a marine is a marine.

Historically, the Army has great experience in running supply convoys through hostile territory and built up great expertise in so doing. Probably, the

best example of a hostile environment was Vietnam. There the Army evolved a mass of techniques to protect convoys and overall were highly successful at the task. They used rotary air cover, tanks, M113s converted to carry multiple machineguns, armed and sandbagged trucks, tracks to go off road where necessary, built new roads where desirable, and generally took the initiative from a very competent enemy.

One has to wonder how, and why, so many hard earned lessons were forgotten over the years.

One has to wonder about the leadership culture which would let this happen.

One has to wonder about their professional education and, indeed, their professional competence and commitment.

One has to wonder about their concern for the soldiers they lead. A reasonable person might think there should be an involvement here because neglect means the death or injury of these same soldiers.

This is basic stuff.

Logistics, the supplying of what the fighting troops needed (sometimes desperately) was widely regarded as a failure in Iraq. Now why should this be?

There was a time when a unit looked after its own needs on the reasonable assumption that it was best motivated to do so and also best capable of knowing its requirements. Your neighbors don't know when you are out of sugar. You do.

Many would regard that approach as mere common sense.

In the Nineties that common sense approach was changed. In the spirit of centralization, responsibility for seeing the sharp end was supplied became the responsibility of brigade, division and corps. You would not tell them what you needed. They would supply you with what they thought you needed.

So easy in the fog of war! Then again, perhaps not.

Predictably, because supply had no direct stake in the outcome, the results were disastrous. 3ID, for example, who led the assault on Baghdad, did not get any spare parts for its tanks and Bradleys for a month after major hostilities had stopped. Similar stories are legion. The blunt phrase, "Logistics are broken," featured in after action reports.

Sometimes the language was a great deal stronger.

Frankly, it was entitled to be. The fact that the richest, most powerful nation in the world cannot supply its fighting troops adequately despite having bases in a nearby friendly country is worse than a disgrace. It is an indictment of both concern and competence. It justifies harsh military punishment.

Those involved were promoted.

In the current Army culture that is invariably the reward for incompetence because there is no accountability and a protect-the-members-of-the-club mentality dominates.

Management of logistics apart, how could we supply our troops in a more efficient, speedy and survivable manner?

- **We should assume all convoys will be attacked both in war, and during stabilization, and plan and act accordingly.**

  Based upon what is happening in Iraq's Sunni Triangle right now, that is not much of a reach. However, such thinking should have a profound effect upon the type of vehicles used routinely for supply.

  If a vehicle cannot take a hit (at least a small arms hit) and fight back, should it be used?

  Do unprotected trucks and tankers make sense in a war zone?

  Is the vulnerable HMMWV the best kind of vehicle under these circumstances?

- **We should cut back on the amount of supplies required by reorganizing our forces and using more reliable fuel efficient hybrid electric engines.**

  The working principle should be 'do we need all this stuff?'

  In practice the Army tends to do (to bring with it) what it has always done because that is the safest way for a young officer to stay out of trouble. Initiative is rarely rewarded. Mostly, it is a career breaker. However, the reality is that many of the logistic tables date back decades and do not reflect our changing circumstances adequately.

  That is a polite way of saying that all too often the Army does not know what it needs today so has a habit of bringing everything that it thinks might be needed – which is one of the reasons why logistics drag is such a problem.

  A further point to note is that many Army vehicles are so heavy, and have such awful fuel consumption, that they are only marginally more than self sustaining.

  There is vast room for improvement here.

- **We should integrate air supply into the normal Army way of doing business in the field and thus decrease road/ground dependence.**

  Several years ago, the Marines carried out a thousand mile plus deep strike exercise during which their LAV battalions were entirely supplied by air.

  There was no logistics tail. Beans, bullets, maintenance and everything else were either embedded in the units or brought in by air.

  The marines found that even with their very limited C-130 capabilities (there was a competing exercise at the same time) they could more than cope.

  Clearly the Army should be thinking this way also but here we enter the eternal problem of Army/Air Force relations and the Army's obsession with being Army oriented to the exclusion of much needed capabilities.

- **We should remove supply convoys' road dependence by using off-road capable tracked vehicles for combat essential supplies.**

  We are not suggesting that every supply vehicle be tracked. However, we are suggesting that sufficient supply vehicles be tracked to make sure that the sharp end does not have to stop, or become road bound, because of logistic drag. Essential supply vehicles should be able to go where armor goes and keep up with that armor even if it is moving at speed across rough terrain. That would seem to us to be just common sense.

  It will also allow armor to have vastly greater tactical flexibility. Currently, we are operating more slowly than in WWII because we cannot sustain momentum.

  A quick examination of the potential of currently available tracked vehicles will show that they are capable of carrying much greater loads than is generally realized across virtually all terrain.

Based upon an MTVL (the lengthened and upgraded version of the M113) hull, the Universal Carrier can handle a payload of 20,100 lbs (about 10 tons) and is C-130 transportable.

- **We should escort convoys with tracked armor, whether Abrams and Bradley, or, Thunderbolt and M113A3.**

  Clearly every convoy does not need to be escorted by tanks but in situations where that is desirable, the Thunderbolt is viable because of its hybrid electric engine, low fuel consumption and overall flexibility.

It can pivot turn, blow away a building, go off road at speed, and withstand RPGs.

It can carry its own infantry.

The merit of the M113 – on the assumption that it is up-armored (and preferably be upgraded to the RPG proof MTVL version) - is that is has an excellent record in convoy escort because it can carry a phenomenal amount of firepower, allows for excellent situational awareness, and has excellent off road performance. Also, we have them in large numbers so should be putting them to better use.

The ACAV version of the M113, widely used in Vietnam, carried a .50 and two 7.62mm machine guns behind gunshields in addition to grenade launchers and other optional firepower. It also allowed for excellent situational awareness and had generous crew space. Furthermore, these M113s themselves can pull large logistics trailers and reduce the reliance on unprotected trucks.

Such capabilities contrast favorably with HMMWVs used in the escort role.

- **We should apply many of the practical and timeless lessons learned in Vietnam.**

Vietnam was about the most difficult place imaginable through which to run convoys. The Viet Cong were skilled, resourceful and determined.
Yet, for all that, the Army became remarkably successful at keeping the roads open though the intelligent use of armor and the application of a mass of tactics, techniques and procedures which we seem to have forgotten over the intervening years.
Its time to remember again. These lessons were hard won by brave men and they worked.

11. M113 Family of Vehicles

Two basic models of the M113, and a variety of versions, remain in service. The M113A2, as shown in Iraq above, is under-powered, lacks a spall liner and numerous other features and needs to be either updated or retired. The invaluable M113A3 is the more modern model but still needs up-armoring. M113s are due to remain in front line service for decades. Their crews deserve better protection.

The neglected, but highly successful, bastard child. Effective in combat, loved by the troops, unloved by the generals, savagely neglected, but operationally essential for decades to come. Last, but not least, the M113 FOV is the world's most widely fielded range of armored vehicles.

The M113 Family of Vehicles (FOV) is, perhaps, the best example of how a whole class of vehicles can become neglected, in survivability and other terms, because of the politics of the Army acquisition system, the complexities of Congress, the limitation of resources, the perceived absence of a real and immediate threat, the ignorance of most of us, and the normal human desire to seek the next Big Thing (even if what you have today still works, is essential, and you have no alternatives).

The M113 was initially neglected because the Army wanted the Bradley – so resources went into the Bradley. Then the Army wanted the Stryker – so available funds went into the Stryker. Now the Army wants the Future Combat System – so the FCS dominates the budget.

The Next Big Thing may have either wheels or tracks, but it certainly has legs.

That leaves the M113 as the bastard child – and savagely neglected.

Survivability of M113 soldiers evidently of little concern to Army generals. Post retirement jobs more important.

It also speaks volumes about the deeply flawed priorities and values of the Army Acquisition Corps and the low priority that survivability tends to be given by a disconcerting number of Army generals who have tended to be overly focused upon their retirement employment with defense contractors. Every divisional commanding general cannot but have been aware of the scale of the problem yet none have taken any remedial action.

The evidence is that the wellbeing and survivability of soldiers transported by M113s has been regarded as of little consequence yet we have about 15,000 of the things.

This is not a minor matter.

Is this carelessness, corruption or plain incompetence – or all three? Clearly, it is wrong.

Perhaps, none of this would matter if we were at peace and the M113 was being phased out, with a replacement in the works, and no longer being used operationally. But, the fact is that we are at war, the M113 is due to be around for several decades more, no replacement is in the pipeline, and the M113, and its crew, is very much in harm's way each and every day.

The M113 is fighting now and tens of thousands of American soldiers' lives are being inadequately protected every day.

How many Army M113s were used during Iraqi Freedom? A staggering 1,302. Of this 1,302,

- **M113A2:**

  448 were the entirely obsolete A2 model.

  The A2 model is not only obsolete in terms of age – it dates back to 1979 – but After Action reports in Iraq I (the Gulf War in 1991) made it clear that, apart from its other limitations, the A2 was too slow to keep up with the other vehicles, and, in particular, with the M1A1 Abrams tank and Bradley Infantry fighting Vehicles.

  In effect, the A2 model slowed down the whole divisional advance capability both because of its lack of performance and because the US Army has a habit of advancing only as fast as the speed of its slowest vehicle (a habit that is regarded as somewhere between unwise and foolish by other highly regarded military powers but which has a hold on the thinking of our current crop of generals nonetheless).

  The A2, apart from being under-powered, was also found to be lacking in numerous other ways. Literally hundreds of improvements have been made to the M113 FOV. Above all, it lacked survivability.

  The A2's limitations were scarcely surprising. It was an excellent vehicle for its time, but, as the decades passed, the knowledge base increased and technology improved.

Also, the requirements increased. The A2 had been powerful enough to keep up with an M60 tank but the M1A1 Abrams was in a different league both in terms of acceleration and top speed.

- **M113A3:**

854 were the much neglected A3 model.

The upgrade from the A2 to the A3 specification was very significant because it meant the M113s could now keep up with the M1A1/2tanks and Bradleys, but they were also more soldier friendly, and more survivable.

Overall, what does the conversion of an M113A2 to A3 involve?

Conversion is vastly more economic than a simple overhaul because it results in what is effectively a new vehicle with considerably enhanced capabilities and lower operation and maintenance costs. Cost of conversion is about $210,000 assuming a conventional engine. Hybrid electric, extra armor and so on would cost more.

The main conversion elements are listed below.

- **New, more powerful, engine and transmission.**
- **External fuel tanks and spall liners.**
- **Improved driver controls and mine resistant seating.**
- **Four battery 200Amp electrical system.**
- **Ability to mount external armor.**
- **Water ration heaters.**
- **Driver's passive night vision.**
- **NBC equipment.**
- **NATO slave receptacle.**
- **Zero hours, zero miles conditioned vehicle.**

Maintenance becomes a nightmare when different models of the M113 (plus numerous variations in detail) are mixed. Yet, the Army refuses to resource conversions even to standardize the fleet, let alone provide more performance and survivability.

As Iraq II and its aftermath have just demonstrated, the Army is still not too good at delivering the right part to the right place at the right time. In fact, many recent combat veterans would argue that logistical support has become worse.

Mixing up endless variations of the same vehicle just makes the situation worse and also undermines readiness.

Some basic facts about the M113 Family of Vehicles (FOV). Situation would be laughable if survivability was not directly undermined by this neglect.

- **M113 FOV comprises the majority of vehicles in heavy units.**
- **About 15,000 M113 variants in US Army as a whole.**
- **Minimum of 3,000 M113 variants require conversion now to pure fleet active combat brigades alone.**
- **Army expects M113s to remain in service until 2032 (FCS delayed until 2012). Most vehicles will be over 40 years old at that point, and many older.**
- **M113s are deployed overseas and are actively in the fight. Amongst other uses, they provide mortar fires, command and control, smoke, mine laying, engineer and medical evacuation missions.**
  They can also carry stabilized 25mm gun turrets, missile systems, and advanced sensors and target designators.
- **No overhauls of the M113 fleet have been funded since 1994 and there has been no R&D program for 17 years.**
-
- **Average M113 fleet age is over17 years.**
- **M113 fleet has no effective proponent. The Infantry School used to be the proponent but infantry now fight from Bradleys. No Army agency tasked to monitor M113 fleet so no one does.**
- **The M113 program was officially terminated in FY02 by General Shinseki, the Army Chief of Staff at the time.**
  This extraordinary action meant that no survivability initiatives for the M113 would happen despite the M113's planned combat service for three more decades.

What is the M113 degree of survivability now?

This is an early model Vietnam era M113 modified to be an ACAV. Capable of delivering massive firepower from its .50 cal and two 7.62mm machine guns (a grenade launcher was optional at the rear) it was used with great success for convoy protection, amongst many other combat duties. Its ability to go off road and cross the most difficult terrain was found to be of great tactical advantage. An M113 convoy did not have to be road bound. Potential ambushers could be out-maneuvered. The much upgraded M113A3 model is vastly more powerful than its early predecessor and could be used today in exactly the same way. It is worth contrasting the devastating firepower and maneuverability of the M113 ACAV with either the Stryker or an armed HMMWV.

It depends upon the model.

The more powerful A3, because it has a blast resistant seat for the driver and spall liners (secondary internal curtain walls that absorb fragments from both incoming projectiles and dislodged metal from the vehicle itself) is significantly safer than the A2.

All are armored against small arms up to 7.62mm, and have considerable protection against artillery fragments, but are vulnerable to heavy machine gun fire (.50 and 14.5mm) and other commonly encountered calibers such as 30mm.

They are also entirely vulnerable to RPGs.

As to mine and blast resistance, the A3 is safer but would be vastly safer still if up-armored.

Heavy machine gun fire, RPGs, mines and Improvised Explosive Devices have now become commonplace on the battlefield and during stabilization operations even in the poorest Third World Countries.

14.5mm armor was developed and tested by the Army some years ago but never purchased. RPG armor, modified from type classified versions on the M8 Armored Gun System can also be put into production.

In practice, nothing is being done.

What other factors contribute to M113 survivability – both current and potential?

- **Low profile makes it a small target. To be a smaller target is better.**

  For the same space under armor, tracked vehicles are about 30 to 40% more compact depending upon the design. In the case of the M113, that translates into a noticeably smaller target than a wheeled equivalent which, for the same reasons, is harder for an enemy to acquire.

  The tracked M113 has, as it happens, 28% less volume under armor than the Stryker so one might reasonably expect Stryker to be bigger externally. However, the wheeled Stryker is, in fact, over 63% bigger in exterior volume.

  Note. The M113-Stryker ratios are 257 versus 330 cubic feet internally, and 870 cubic feet versus 1,420 cubic feet externally.

  Tracks make for a smaller target for the same space under armor.

- **Tracks make it nimble in urban combat, and excellent off road.**

  The M113's ability to turn in its own length is a great advantage in congested urban environments. As to off road performance, this is invaluable because not only are their few roads in the countries where we look like having to fight, but such roads as there are become predictable killing grounds.

  Iraq, right now, is proving this very point.

- **As the Vietnam ACAV showed, design makes the M113 an excellent gun platform.**

  The combination of the stability innate to tracks, and the hatch design and general layout of the M113, means that the M113 is ideal as a gun platform.

In Vietnam, the ACAV variants typically mounted one .50 cal and two 7.62mm machine guns protected by gun shields, and Israeli M113 variants mount up to *four* automatic weapons.

This heavy firepower approach has proved to be highly successful in both convoy work and in urban operations since it yields 360 degree coverage and virtually immediate response to threat at all times.

No sound military reasons have ever been advanced by the US Army for abandoning the ACAV variants after Vietnam. The reasons would appear to have had more to do with the perception by the Army generals that the ACAV could threaten procurement of the Bradley. Then there was also the notion that a vehicle bought as an armored personnel carrier should not have the impertinence to pretend it could fight as well – this despite the M113 ACAV's extraordinarily successful combat record in Vietnam.

It is worth noting that the M113 could have been equipped with the turreted 25mm chain gun now used by the Bradley.

Note. The Vietnam era M113 has been substantially modified and improved since those days. For instance, the original gasoline engine became a diesel engine in 1964. Many other survivability oriented changes followed.

- **It is easy to up-armor.**

Up-armoring is not the same for all vehicles. In fact the differences can be enormous because the design of the core vehicle is the determinant and such designs vary considerably.

The Stryker, for instance, because of its wedge design, large wheel wells and many protrusions, is extremely difficult to up-armor – and that is before one gets into the issue of power to weight ratio.

In contrast, the tracked, boxy shaped, M113, which was originally designed specifically for C-130 deployability, can be up-armored with ease in a few hours.

The M113A3 already has built-in armor mounting provisions.

- **It is easy to up-engine.**

Every now and then a design is produced which not only works but which is hard to better and which can be upgraded easily. The B52 bomber, older than many of its pilots, falls into that category and so does the M113. The M113 can not only be up-engined easily but can also be fitted with a hybrid electric engine with all its associated benefits of improved fuel consumption, more readily available electric power, greater ease of maintenance, and silent running.

- **It can be fitted with band tracks.**

Rubber composite band tracks allow for faster top speeds, improve the ride, decrease noise, save a great deal of weight (significant if air mobility is

required) and have proved to be agreeably resistant to mines (a chunk might be blown out but they give rather than break). They also last.

Quite why the Army have been so reluctant to fit them is yet another military mystery.

- **It can be upgraded to the full MTVL specification.**

The M113 has been such a successful design that it was only logical to capitalize on its strengths and upgrade it further.

The MTVL still looks very much like the M113 to the uninitiated, but is easy to spot if you are in the know because it boasts one extra drive wheel. It has 6 drive wheels (the wheels at ground level inside the track) instead of the M113's 5.

The extra drive wheel allowed the MTVL to be made some 3 feet longer than the M113 – a significant increase in space in armored vehicle terms, and no less than 30% extra compared with the M113.

Why have 30% extra space and about 5,000lbs more cargo capacity?

There is a host of reasons. Soldiers themselves have become bigger over the decades since the M113 was first designed; they need to bring more equipment, such as bulky MOPP (stands for Mission Oriented Protective Posture) chem/bio suits with them; anti-tank weapons such as the Javelin take up more space; and then there is the ever increasing space required for combat electronics.

It's a long list.

Then there is the comfort factor.

Other benefits included:

- **More volume under armor** than any other US infantry carrier
- **Crew of 2 and up to 15 dismounts** (a Stryker, without a turret, holds a crew of 2 plus 9). With Bradley turret, the MTVL can still carry 6 dismounts.
- **70% more payload capacity than an M113A3**. That not only means an MTVL can carry 70% more weight in pure payload but it also means that extra armor can be carried without affecting operational performance. Thus is a key point because it means that the MTVL can be armored up to the level of being RPG protected.
- **50% increase in cross country mobility** compared with M113A3
- **Improved obstacle crossing capability.**
- **Ability to mount a turret** and, in particular, the Bradley stabilized turret equipped with 25mm chain gun, 7.62mm co-ax and TOW launcher.
- **Can be made from redundant M113A2s or A2s** which keeps the costs down dramatically. 70% of the previous vehicle can be re-used. Conversion cost per vehicle using conventional diesel engine and tracks is about $400,000 per unit. Compare this with about $3 million

per average unit (GAO figures) for the less capable Stryker. A hybrid electric engine and band tracks will add to this price though the total will still be but a fraction of the Stryker.

- **Can be equipped with a hybrid electric engine** or a traditional 400 hp diesel. The hybrid electric delivers quite startling performance. The traditional diesel still provides superior performance to the Stryker based upon horsepower to weight ratios because the Stryker is heavier yet has a less powerful 350 hp engine.
- **Can be equipped with band tracks**.
- **MTVL Universal Carrier, the tracked truck version of the MTVL, can carry a payload of 20, 100lbs** (roughly 10 tons or 2,500 gallons).

What can be done to enhance M113's survivability at relatively low cost.

- As a minimum, M113A2s should be upgraded to A3s, given an anti-mine package, and 14.5mm armor (already Type Classified) – or retired from service.

- M113A3s should be fitted with an anti-mine package and 14.5mm armor (already Type Classified).

Should, and could, M113s be made fully RPG resistant? Probably not with the existing engine although protection of major risk areas is an option.

Clearly M113s should be made RPG resistant. Further, they can be – the necessary armor has already been developed.

The problem lies in the weight. A fully RPG protected M113 will reach Gross Vehicle Weight (or as much as the engine and transmission can handle comfortably) before a full combat load is added.

Power to weight is critical to both on road and off road performance so our conclusion is that full RPG armor is not the best option without a new power pack. That said, partial RPG protection could be installed.

Note. The Stryker has no intrinsic RPG protection at all and the notorious SLAT armor, installed at the last minute as a gesture towards RPG protection, not only is of dubious value in itself, but fails to cover the top and wheel well areas of the Stryker.

What would constitute the very best option in cost, combat effectiveness and survivability terms.

The best option, by far, would be to convert M113s, starting off with the A2 model, to band track, hybrid electric powered, MTVLs equipped with RPG resistant armor. That would yield highly survivable high performance armored vehicles which would be ideal for both high intensity combat and insurgency at a fraction of the cost of Strykers or similar.

The armored brigade combat teams currently fighting in Iraq have approximately 80 M113 series vehicles each. Upgrading these to a survivable and vastly more capable MTVL configuration would cost under $40 million.

Meanwhile the Army is spending more than $1.5 billion per Stryker Brigade to field less capable vehicles with less survivability.

The complete neglect of the essential M113 FOV makes no sense at all. Costs, readiness and survivability will all suffer, are suffering now. Only our enemies will benefit. One has to ask: What is the agenda here, and whose ambitions does it serve?

The M113 situation is a mess and a scandal – and a case history in military need and survivability being subordinated to careerism, ambition, and corruption.

Concerned officers who have gone to the Pentagon to endeavor to correct the M113 situation have been warned not to come back or else risk forfeiting their futures in the Army.

It also shows the lengths to which a peacetime oriented Army leadership will go to meet an agenda which has nothing to do with warfighting.

Buying new equipment builds second careers. Ensuring that what we have works, and is entirely adequate for the soldiers, does not bring the same benefits.

Our soldiers, it would seem all too often, are no more than a means to an end. That is neither right nor honorable.

The difference now is that we are at war and, if we care about our soldiers at all, we just cannot simply ignore a whole class of combat essential vehicles for the next quarter century.

Yet that is what the Army is doing right now. ❖

Inside the Pentagon interview with US Marine Corps General Mattis by Elaine Grossman

Mattis says the sophisticated technologies he and his forces used in Iraq greatly reduced friendly casualties, but were not necessary for winning the war.

"We could have had the Iraqis' gear and they could have had ours, and we still would have gotten to Baghdad nearly as fast," he said. "It would not have changed [the outcome]. Now what [the advanced gear] does is it allows us to do it with many fewer casualties."

12. The Bradley

After a near two decade gestation, and a difficult birth – to put it mildly - the Bradley has become a highly survivable Infantry Fighting Vehicle which still needs to be up-armored given the prevalence of RPGs.
Crucially, being tracked, and well powered, it can take the weight of anti-RPG armor and still retain excellent mobility both on and off road; and it can swim.
On all types of terrain, it can keep up with Abrams M1A1/2 tanks.
Though a number of Bradleys were hit and badly damaged in Iraq II, crew survivability was excellent.
Though not the definitive answer to armored warfare, it is what we have right now, and are likely to need for some time, probably decades, to come.
Why? Because it is what we have, and it has been proven to work in war.

What is an Infantry Fighting Vehicle? No one knew originally.

The Bradley had a long and controversial development primarily because it was a whole new class of vehicle – and, not unreasonably, ideas changed as it evolved.

The basic concept was to have an armored infantry carrier which could not only keep up with heavy armor – which early model M113s could not do

(although that has changed) – but provide substantial stabilized automatic firepower in its own right.

The idea was that the Bradley's firepower would be complementary to that of the Abrams in the fight as a whole, and it would also be used to support its own infantry.

The Abrams 120mm cannon would handle the heavy lifting and the Bradley's 25mm automatic cannon would add a more responsive volume of fire in the closer fight (the Bradley's 25mm cannon fires a much lighter round but its turret traverses faster and puts out a much greater volume of fire).

The concept has proved highly successful in combat.

In addition, the Bradley has proved to be highly survivable.

The Bradley's survivability owes a great deal to Colonel James G. Burton's insistence on effective live fire testing. His courage saved many lives, and cost him his career.

Although a reasonable person might think that a military vehicle should be comprehensively tested prior to combat, the Army has long had a dislike of extensive live fire testing because it tends to show up deficiencies in programs to which reputations are attached, it is expensive, and it slows up the introduction of new equipment. In short it can dull the glory of general officers.

One could argue that it makes no sense for general officers to become so attached to a program, at least until the result is proven, but that would ignore the agendas of many generals. Simply put, their motivation is to line up jobs with defense contractors so that can retire to a second career in comfort.

All this is very understandable (if deplorable in the way it is practiced), and is now, unfortunately, ingrained in the culture, but it puts the welfare and survivability of combat soldiers on the back burner.

Colonel Burton was assigned to the Pentagon at the time and, despite the bitter opposition of the Army, insisted on comprehensive live fire testing.

Congress backed him. The Bradley was modified to deal with the survivability deficiencies; and the rest is history.

It was a case where, albeit mainly thanks to the courage one man, the system finally worked.

The Bradley story stands in contrast to the Stryker where there is every evidence that the vehicle has been inadequately tested and has been pushed through regardless of the many negative findings.

It is fairly inconceivable that the Army could order a new armored vehicle without RPG protection, but such was the case. More fundamentally, command influence was used throughout the program to suppress any and all findings which would slow up the program.

So why is the Bradley now so effective?

- **It combines the ability to carry, and protect, infantry with formidable offensive firepower.**

  There is wide consensus amongst combat veterans that the Bradley's firepower made a critical contribution to both survivability and the achievement of the mission.

  The Bradley typically carries a 25mm chain gun, a 7.62mm co-ax, a commander's pintle mounted 7.62mm, a pair of TOW missile launchers plus all the offensive weaponry operated by its infantry.

  That is a truly formidable, and flexible, quantity of killing capability.

  You can kill both a lot of things, and many different things; and many of those things may be people - your enemies. Which is a good thing for us.

  The 25mm chain gun, an automatic cannon firing a range of ammunition, some of which could take out enemy tanks, proved to be particularly effective.

  It could destroy enemy armor and out-range and out-shoot potential ambushers.

  The additional advantage of having its own infantry means that not only can it add infantry firepower, such as the Javelin anti-armor missile to its own firepower, but it can also use its infantry to scout, clear difficult terrain, and so on.

  The combination of the Bradley's own firepower plus the utility of its infantry is a multiplier in itself (providing the infantry are properly trained).

- **Its optics help to compensate for its bulk.**

  No matter how large a target you are, if you can see the enemy before he sees you, and your weapons can handle the range, you are likely to win the fight.

  Day and night, all weather, stand-off capability is crucial.

- **It can go virtually anywhere. It has on road capability, excellent off road performance, and it can be configured to swim.**

  To be road-bound is be predictable (easier to kill) particularly in counties which have few roads.

  Roads can be ambushed, mined, blocked, turned into killing grounds and otherwise made to serve to serve the best interests of even a moderately intelligent enemy.

  Rivers, after bridges are blown, become a near insurmountable barrier.

  To be able to maneuver both on and off roads, at speed, and to swim across rivers too, is a fine thing and truly enhances survivability.

- **Though not as robust an M1A1/2 Abrams tank, it has proved to be extremely survivable.**

  The trick with armored vehicle design is to have the vehicle take the shock rather than the crew. Much the same principle is employed in passenger cars where vehicle crushability, despite the material loss, is much preferred to dead driver and passengers.

  Ironically, most of the Bradleys used in Iraq II were not upgraded with anti-RPG armor, yet, through good design and fine workmanship, still managed to keep crews alive despite sometimes multiple RPG and heavy caliber hits.

- **Its innate design means that it is capable of being made even more survivable.**

  Virtually all armored vehicles become substantially heavier over time (we are talking many thousands of pounds here, tons if you will). Up-armoring is an obvious tend, closely followed by up-gunning, but the additional weight of electronic equipment is now becoming a significant factor as well.

  The question is always: Can the vehicle handle the extra weight?

  The answers vary. Wheeled vehicles such as the Stryker have a severe problem with too much extra weight because all that additional load is concentrated on the small cross-section of tires.

  In contrast, tracked vehicles, which spread weight, and have a different approach to torque, are much better equipped to handle a considerably greater burden – and the Bradley is no exception.

- **It has the intimidation qualities of a tank with the added advantages of having infantry on hand.**

  As is argued elsewhere, there is a very strong case to be made for the seamless integration of armor and infantry.

  The Army has not got there yet because it has a tendency to treat its armored infantry ('dismounts') as last in the pecking order; and there is a chronic shortage of dismounts. Then there is the branch problem.

  Armor is one branch.

  Infantry is another.

  And Cavalry is not quite sure…

  Which, in an armor/mechanized unit makes the poor unfortunate dismounts something akin to turncoats.

  Armor really does not do infantry…

  But the potential is there. And the Bradley really does look intimidating.

  Furthermore, it could mount a 105mm cannon if desired – which would really make it a light tank. Why not?

- **Though fast enough to keep up with an M1A1/2 Abrams tank, the Bradley has a diesel engine and is relatively economical to operate.**

  Even when equipped with an APU (Auxiliary Power Unit) the Abrams is a fuel hog of monumental proportions and needs re-fueling every 8 hours or so whether moving or not, which is a truly terrible logistical burden.

  In contrast, the Bradley, is roughly eight times more fuel efficient and its consumption tends to relate to distance covered.

- **It is well made, reliable and has provided more protection than its core specification might imply.**

  This is a tribute to the American workers who build the Bradley.

  The combat proven fact is that care and good workmanship make a difference that is discernable when you need all the help you can get, when the alternative is your dying.

  True concern, quality, is hard to articulate. It is composed of endless details and many small things. Of inputs that are intangible.

  The combat record would suggest that the Bradley workers got it right.

What could and should be done to increase Bradley survivability?

Quite a lot. Here it helps greatly that the Bradley is inherently suitable for upgrading. It can handle the extra weight; and it can fit extra stuff in.

- **It should be up-armored to make it RPG resistant.**

  The Bradley is capable of taking passive RPG armor which can withstand multiple hits (as opposed to active armor which can only be used once).

- **The Bradley M2A3/M3A3 upgrade program should be continued.**

  The range of a weapon does not mean a thing if you cannot acquire your target day and night and through smoke, snow, rain and other adverse weather conditions.

  Iraq I showed that the Bradley's sighting systems were deficient in terms of such all embracing capabilities so this upgrade is primarily designed to remedy that fact.

  It is a most significant enhancement to both combat effectiveness and survivability.

- **Band tracks should be evaluated.**

  The Bradley is currently a noisy beast and would benefit greatly from the quieter ride of band tracks; and its dismounts would be helped by the improved ride.

Then there are the advantages of a substantial weight saving and a higher potential top speed.

- **The Bradley is a natural for a hybrid electric engine.**

  The advantages of hybrid electric have been listed elsewhere but include lower fuel consumption, less maintenance, quite phenomenal acceleration, silent watch capability, silent running for several kilometers, higher top speed, lower thermal signature, and less use of space.

  Combined with band tracks, you end up with a quieter, logistically less dependent vehicle, which would be significantly less detectable by hostiles in combat.

  The advantages for internal security are self evident. ❖

13. The Stryker ICV (& Some of Its Problems)

Poorly armored and entirely vulnerable to RPGs.

Roughly the size of a school bus. A VERY large target & a very large thermal signature. Inadequate offensive firepower.

Gun not stabilized. Controlled by RWS (Remote Weapons System) but cannot shoot on the move. To re-load you have to expose yourself. Jamming issues

Cramped, with numerous human factor problems. Lack of immediate situational awareness

Engine, height management system & other mechanical problems. Computer problems.

Underpowered & the wheels give poor off-road performance. Gets stuck. Winch not strong enough to self extract.

Wheels & wells extremely vulnerable to small arms. Vulnerable to mines.

Expensive to buy. Over budget. Frighteningly expensive to operate.

Large turning circle. Poor all round visibility. Unsuitable for urban combat.

Stability & center of gravity problems. Prone to overturn. Numerous accidents.

Bought to be C-130 deployable but too heavy. With SLAT armor, also too wide. Procured to be delivered globally in 96 hours. Not a hope of getting close in practice

The Stryker, a supposedly off-the-shelf vehicle, in its latest incarnation after the US Army has been working on it for nearly 4 years.

One has to ask:

- Is this the best the most technologically advanced nation in the world can buy for an expenditure which averages in excess of $3 million per vehicle?
- Is the Army leadership remotely serious about warfighting and ensuring the survivability of its soldiers – or more concerned with saving face after making a seriously wrong decision in selecting the wheeled Stryker in the first place?

SLAT armor – a sort of chicken cage - is a last minute , ineffective, attempt to get over the fact that the Stryker is not RPG resistant. It adds 3 feet to the width of an already too large vehicle & adds 5,200lbs to the weight of an already overweight vehicle.

Note that the vulnerable top and wheel well areas – enemy targets of choice - of the Stryker are not protected by the SLAT armor

Stryker was bought to be C-130 deployable. It is now not just far too heavy by too wide. It is clumsy and maneuverability is hampered

Tracked MTVL carries passive RPG armor without difficulty because tracks spread weight better and its power plant and suspension are designed for the task.
Stryker's were not so designed. It is an under-gunned armored car trying to be a tank. It is not a serious all terrain, all weather, warfighting capability.

Combat weight of Stryker now over 45,000lbs for infantry carrier and approaching 50,000lbs for some versions. This is the weight of an up-armored tank like the Thunderbolt but without its phenomenal 120mm firepower, advanced survivability, or horsepower (660 vs. 350)

Additional weight of SLAT armor has adverse effects on road performance & severely effects off road capability. Tracks vastly superior.

Extra SLAT weight shortens tire life, strains engine and suspension & further undermines already poor fuel consumption

Unlike most armor upgrade kits, which take only a few hours to fit, SLAT armor is not easy or quick to add. It takes 40-50 hours so is, effectively, permanent.

The MTVL, a significantly upgraded and lengthened version of the M113A3 that the Army leadership has consistently refused to test directly against the Stryker. The facts indicate that the MTVL is superior under almost every heading. And it is American made, vastly more survivable, and less expensive. So why is this?

Powerful diesel or fuel efficient & fast hybrid electric engine with silent running capability

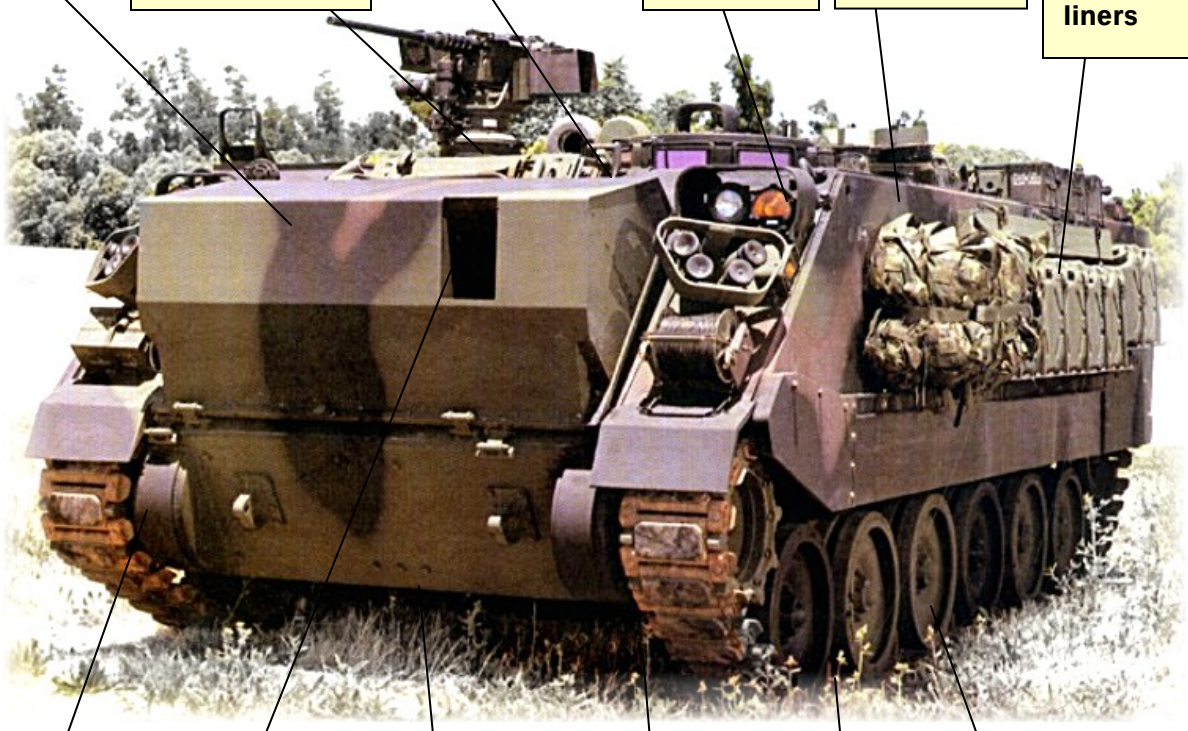
Can be easily armored against RPG threat using passive armor and still be C-130 deployable. No need for 'chicken cage'

Lower profile so smaller target than Stryker for same space under armor so more survivable

Can be fitted with Bradley turret & fully stabilized 25mm cannon

Can be fitted with state of art combat electronics

Space efficient, soldier friendly internal layout equipped for survivability with spall liners



Outstanding on road and off road performance. Can be fitted with highly efficient band tracks

Can turn in its own length. Excellent for urban combat

Low center of gravity and tracks makes for stability under all circumstances. Excellent & stable gun platform.

No vulnerable tire well areas. Tracks better protected & more robust.

Full proven swim capability unlike Stryker

Significantly less expensive than the Stryker both to buy and operate

How a perceived deployment problem turned into the Stryker.

The US Army has long been weak at deploying combat ready units largely because it has spent so much time since the end of WW II in garrisons where it could, so speak, commute to the enemy; so it rarely practiced deployment. Also, the Army did not see itself as a Global Expeditionary Force. That was the job of the Marines. The Army would only deploy if given plenty of notice and resources, and then only on its own terms.

The Vietnam War was a deployment, of course, but that was regarded as an aberration and because of that the outcome was officially forgotten as soon as possible, along, unfortunately, with a great many of the lessons learned.

The Army hates learning from its mistakes. The generals prefer to forget them.

In the nineties, the Army suffered through a series of deployment disasters where its lack of competence in this area was widely publicized. It had great difficulty getting to Bosnia, the deployment of Task Force Hawk's Apaches to Albania was widely judged to be slow and tortuous, and then the Russians – very publicly – beat us to Pristina Airport through the use of wheeled armored vehicles.

Most embarrassing.

In 1999, the new Chief of Staff of the Army, General Shinseki, decided that the root cause of the deployment problem was the fact that Army combat vehicles were too heavy.

Now he could, of course, have focused on the actual mechanics of deployment by talking to the Air Force and Navy and by coming up with new organizations, techniques and procedures, and by sorting out some of the more obvious logistical problems, but instead he chose to buy new equipment.

He chose a hardware solution to what was not, in the main, a hardware problem. And he did not need to buy new equipment. But, he chose to do so, nonetheless: and Congress supported him based largely on misinformation about Stryker's claimed, rather than demonstrated, capabilities.

He did not need to buy new equipment because the Army already had a vehicle in stock which met its specifications, the air-deployable tracked M113, but he determined to buy new equipment anyway because he wanted to show that his vision was new and different. Also, he had been very impressed by the wheeled armored cars being used by the French, Italians and others in Bosnia. They were fast, comfortable and stylish, even if they were not very suitable for war. Then again, he was not focused on warfighting (many Army generals are not even to this day); and this was a period of peace where peace-keeping, some thought, was going to be the role of the US Army for the indefinite future.

Serious combat was not on the agenda.

General Shinseki's vision (that is the word the Army uses) was to set up an interim force of wheeled armored vehicles with the first brigade being capable of being deployed anywhere in the world in 96 hours. Strategic aircraft such as

the C-17 would bring this brigade into the conflict theater and then C-130 tactical aircraft would transport the brigade's vehicles the last 1,000 miles or so.

Facts were not required. It was, after all, a vision.

All of this was initiated on the basis of virtually no data based analysis or detailed planning. Facts were not required.

It was, after all, a vision.

He christened the existing force, the Legacy Force, called his planned wheeled force, Interim Brigade Combat Teams, and promised a new ultra high technology force for the future which he called the Objective Force.

Interim Brigade Combat Teams were re-christened Stryker Brigades (and we shall stick with this term hereafter).

The vehicle chosen, after minimal research, to be 'The Stryker' was the (to be modified) eight wheeled LAV III. This was a perfectly adequate, if not exceptional, armored car that enjoyed some extra significance because the Marines had bought an earlier version two decades earlier and had used them with some success since (though also not without some problems).

The Marines' success was based upon their very realistic sense of what their vehicle could and could not do – and it was deployed accordingly.

The Army had another idea so they took their vehicle, the LAV III, and began modifying it even though it had been sold to Congress as an off the shelf purchase.

It was, they said, a temporary expedient, not a development program. Having said that to secure Congressional backing, they then proceeded to take a perfectly adequate armored car and turn it into a procurement nightmare.

The Stryker, the Army decided, was to become a range of vehicles dedicated to a whole new way of fighting.

At last count, according to the Army, over 8,000 changes have been made to the original Stryker and many hundreds of millions have been spent on the Stryker Mobile Gun system alone.

A reasonable person might regard this as scarcely "off the shelf."

A concerned Congress might think that remedial action should be the order. They have, after all, been lied to, and the hard earned funding is from the pockets of American citizens.

So what have these 8,000 changes to the original LAV III vehicle produced? A disaster and the Army Program Manager of the Year…

In truth, the end result of all this Army effort is so bad that in a just world a number of those involved in the acquisition process would currently be awaiting trial or be in prison.

The problems listed on the previous page are merely some of the issues.

Instead, those involved with the Stryker have been promoted or otherwise rewarded.

Most memorably, the Program Manager for the flawed Stryker – even though the Stryker Mobile Gun System has just failed its LUT (Limited User Test) has been named as 'Program Manager of the Year.'

There are no limits to incompetence, corruption, intellectual dishonesty, and general malfeasance when and where there is no accountability.

There would also appear to be no limits to the contempt in which the Army seems to hold its civilian oversight.

How does the Stryker conform to the stated goals of the Army and the requirements of Global Expeditionary Warfare? It doesn't come close.

The Army are coping with this mess through denial, outright lies and obfuscation – while throwing good money after bad at the issues.

- **A Stryker Brigade to be deployable anywhere in the world in 96 hours? No. A series of reports says not even close.**

  One might think, unless one understood the single service orientation of the Army, that air deployability would have been discussed in detail *before selecting a vehicle,* with the Air Force who would have to fly the thing.

  That was not done.

  The Army have ended up sending billons of dollars on a concept that was never feasible within the context of existing airlift capabilities. It was a conceit of the Chief of Staff – no more.

- **A Key Performance Parameter: C-130 deployability. No. Stryker too heavy – and heavier still after SLAT armor fitted.**

  The marines can fly their LAV 25s in C-130s so why cannot the Army do the same thing with their modified LAV IIIs?

  The answer is simple.

  The Marine LAV is armored up to only 7.62mm and weighs only about 28,000lbs. In contrast the Army initially insisted on up-armoring their vehicles to 14.5mm protection and increased the weight to 38,000lbs, a borderline weight with C-130s where any tactically significant distance becomes problematic. Furthermore, many of the Stryker variants weigh well over the 38,000lbs specified in the contract.

  The Army did not think the flying distance/weight penalty trade-off through.

  They made the Stryker far too heavy to do the job it was bought for.

  Recently, they have made the Stryker heavier still, by about 5,000lbs, by adding a sort of birdcage designed to protect the Stryker from RPGs, an ineffective mitigation approach at best. This birdcage armor takes about 40 hours to fit so cannot be added or removed with any ease.

  The Stryker is now too heavy, and far too wide, to be remotely C-130 deployable. SLAT adds about three feet to the width.

- **Roll-on and roll-off C-130 capability. No.**

It would seem reasonable for a globally deployable fire fighting force to be able to roll off and get into action within minutes of landing.

Time is absolutely critical in an air insertion operation because even though the airfield will have been secured (and that is easier said than done), serious threats may well still exist outside the perimeter. Further, aircraft, while unloading, are entirely vulnerable so time on the ground tends to be minimized in a combat situation.

Armored vehicles, which are slow to unload and not ready to fight, are nothing but targets.

Baghdad airport during Iraqi Freedom comes to mind.

The Army initially thought roll-on and roll-off capability was desirable too, but so too then abandoned this requirement on the basis that there would be plenty of time to get the vehicles ready on arrival.

This was a classic example of the Army leadership's peacetime mindset – despite the fact we at war; or they were planning for a highly co-operative enemy.

In reality the issue has become academic because the Stryker has now become both too heavy and too wide to be C-130 deployable.

However, even without SLAT armor, several key systems must be disassembled for the Stryker even to fit on a C-130 and the Air Force waiver approval, which is interesting of itself because the Army's requirement was to be C-130 deployable *without waiver*, states that the Stryker cannot be loaded at night.

The Army's proud boast is that is owns the night.

- **Full spectrum of war capable. No.**

Full spectrum of war capable means everything from intensive tank and artillery battles to peace keeping.

The Stryker, even if re-enforced with tanks and Bradleys, lacks both the offensive and defensive capabilities to cope with that spread.

Simply put, there is not a single combat vehicle in the Stryker Brigade now deployed in Iraq that can shoot on the move with precision to destroy a target.

- **Optimized for urban combat. No.**

Urban combat is notoriously vicious and invariably involves RPG and intensive machine gun fire, mines, the use of barricades, and a whole host of similar, highly destructive threats.

Dealing with urban threats demands heavy armor, massive firepower and maneuverability.

The Stryker lacks heavy armor and massive firepower – and has a turning circle in excess of 50 feet. It is not maneuverable in an urban environment, cannot engage targets at close range, and has large blind spots in its optics coverage.

- **Key direct fire support weapon, the MGS, works? No.**

  Once the Stryker Infantry Carrier lost its organic firepower, the turreted 25mm stabilized chain gun, the Stryker 105mm Mobile Gun System, or some similar, direct fire weapon became vital.

  Unfortunately, the MGS has a host of problems and is inferior to the AGS in power, lethality, survivability, mobility and connectivity.

  For example, the MGS does not even have a digital data bus.

  More fundamentally, though, the MGS just does not work.

  The Army are sending the first Stryker Brigade to Iraq without any direct fire support.

- **All weather off road performance similar to that of a tracked vehicle. No.**

  The Stryker carries a winch because it has a habit of getting stuck off road. Unfortunately that winch is not adequate for the current increased weight. A heavier winch will increase the overall weight still further.

  The Stryker's off road performance does not come close to that of a tracked vehicle. In effect, much off road terrain is barred to it.

  The Stryker is essentially a road bound vehicle and can be destroyed accordingly.

- **Reliable. No.**

  The Stryker has been plagued with reliability problems probably because the engine is underpowered in relation to the weight, and because the suspension is overly complex and inadequately robust for a 45,000lb vehicle when combat loaded.

- **Inexpensive to operate. No. Quite the opposite in practice.**

  Recent Army figures disclosed a cost per mile of $52. In contrast, the tracked M113 came in at about $3.50.

  The Army said they hope to get Stryker operating cost down to $25 a mile.

  One of the reason given for buying the Stryker was that it would cost less than the tracked M113 to operate. In reality, it has been costing ten times as much per mile.

- **Adequate offensive firepower. No.**

  The Marine LAV III has a turret mounted stabilized 25mm chain gun, similar to that on the Bradley, which provides a profound disincentive to the enemy. The chain gun can outrange and outshoot most threats.

  The Army decided their core vehicle would be an infantry carrier and therefore would not need such firepower. They removed the turreted 25mm chain gun and are now trying to make do with an RWS (Remote Weapons

System) mounted .50 cal or Mk19 which do not compare in offensive capability to the 25mm, and which cannot be shot with accuracy on the move.

- **Adequate defensive armor. No.**

  The Stryker is essentially an armored steel box, offering 7.62mm protection, up-armored with ceramic tiles to give 14.5mm heavy machine gun protection. The problems with that arrangement are already legendary.

  However, it gets worse because RPG armor is the next level up that is required and here the problem is that the vehicle is not robust enough, or well enough powered, to carry the increase in weight. As a consequence, a metal grid is being fixed in the hope it will set off RPGs prematurely.

  It is not a solution and merely serves to make the vehicles wider and heavier. Much wider and much heavier.

- **Faster than the M113. No. Not for its required mission profile.**

  The Stryker, before it added its birdcage armor and much extra weight, was advertised as having a top speed of over 60mph. In contrast, the venerable tracked M113A3 is governed to run no faster than 45mph.

  Given those facts, a less informed observer might assume that the Stryker would have to be faster.

  Not so.

  The tracked M113 turns faster and is vastly more capable off road.

  A test under the supervision of Operational Test & Evaluation rated the performance of the two vehicle as roughly equal.

  Ironically, the M113 won the road race.

  Further, the Stryker mission profile was specified to be 50% cross country, 30% secondary roads, and 20% primary roads; and it clearly lags tracked vehicles in, at least, half that profile.

- **Swim capability? No.**

  The Marine LAV has swim capability. The Army initially required the Stryker to swim, but deleted this requirement when they realized that re-engineering the vehicle's drive train so that it could swim would add complexity, weight, cost, and reduce performance and reliability.

  They, evidently, have not heard of rivers.

  Both the M113 and MTVL do swim – a capability that was demonstrated by the US Army at Fort Knox in 1999.

- **Brought in on time and within budget. No. The price of $12-15 billion is being paid by the fighting Army (the Legacy Force).**

  It is costing us in excess of $1.5 billion a brigade and the Army wants 6 brigades. Add in development costs (for an off the shelf program) associated military construction and we are talking $12-15 billion.

  That is a high price to pay for a vision that does not work.

- **Hard for the enemy to acquire as a target. No. A Stryker is about the size of a school bus and has a pronounced thermal signature.**

  To be large, and therefore visible, is inherently a bad idea for a vehicle designed for combat. Peacekeeping is another matter. There, size can help the intimidation factor – though it turns, once again, to be a negative when the shooting starts.

  To be large, inadequately armored, and under-gunned – which is the case with the Stryker – is to undermine survivability seriously.

  The Bradley is also too large but its saving graces are superior armor and formidable turreted stabilized firepower.

  The Stryker has no turret, no stabilization (it cannot shoot accurately on the move) and an entirely inadequate weapon.

Unbelievably, the Stryker was not designed to deal with the RPG threat even though it has wreaked havoc against us since Vietnam and RPGs are known to be used by all our enemies.
The above picture shows a last minute attempt to solve the problem. It does not. Note also that the top and wheel well areas – the targets of choice – remain entirely exposed and vulnerable.
This is another example of the Army's lack of concern about survivability. It does not reflect well upon the Army leadership.

The apparently smaller MTVL on the left of the page actually has the same space under armor as the wheeled LAV III (which became the Stryker) on the right but can be up-armored to RPG level to provide more survivability. Tracks intrinsically have a lower profile and can carry more weight because they have different suspensions and more track area on the ground.

Will the Stryker be of any benefit to the Army? Yes, if nobody shoots at it and if it is kept away from serious combat.

Mobility, even if imperfect off-road, virtually always helps soldiers. Between body armor, their weapons, their own equipment, their packs, MOPP gear, food, water, ammunition and the anti-tank weapons they are supposed to carry – to which one must add batteries - infantrymen have now reached the stage where they cannot, in truth, carry what they need to do the job.

On that basis, the Stryker will be appreciated, and there is wide agreement that it is a comfortable ride. So it should be fine, if cramped, in a low threat environment if one ignores the massive capital costs and the extraordinarily high running costs.

It will be a deathtrap in combat of any intensity.

In a serious shooting war, the Stryker will not be so popular because it is so vulnerable. Its offensive capability is inadequate and its armor will not stop RPGs, mines and some heavy machine guns. It is not suitable for urban combat.

It will contribute to the death of soldiers.

What is the wider significance of the Stryker?

The wider implications of the Stryker fiasco are profound and demonstrate the 'Enronization' of the process. The manipulation of process through the excessive use, and abuse, of Command Influence is used to achieve an objective regardless of the facts. To resist is to have one's career destroyed.

They demonstrate the a self seeking and corrupt careerist Army culture where the welfare of the soldier, even during a time of war, is of little import.

They show an acquisition process and Army Acquisition Corps who are out of control and free of accountability.

They demonstrate a great ignorance of Congress of the issues, a pork mentality at its worst, unhealthy relationships between certain Army generals and certain Members of Congress, a near complete failure of civilian Department of Defense oversight, and a defense contractor mentality based upon the notion that any and all opposition can be either crushed or bought off regardless of the merits of the opposing arguments.

These findings do not bode well for the health of either our body politic or the defense establishment.

- **The wrong vehicle was bought.**

  If you take the original Request for Proposals and the capabilities of the LAV III (which became the Stryker) and the MTVL as they relate to those proposals, it can be seen quite clearly that the MTVL has superior capabilities.

  The MTVL was easier to fit into a C-130, lighter for the same space under similar armor, easier to up-armor, vastly better off road, superior in an urban environment, logistically more supportable through the existing M113 network, and more survivable.

  There was a long list in its favor.

  So why was the LAV III/Stryker selected?

  The then Chief of Staff, General Shinseki, wanted a wheeled vehicle to implement his vision of being different, and it was to the career advantage of those involved in the selection process to respond to his wishes.

  Cost and capabilities were irrelevant.

- **The opportunity to acquire highly desirable capabilities was lost.**

  General Shinseki's 'vision' was deeply flawed because virtually no homework had gone into it. It was a notion, not a well researched plan.

  That said, common sense dictates that the capability of being able to deliver a brigade sized armored force anywhere in the globe within 96 hours has merit.

  It is an intimidating capability.

  It is ideal for regime change.

  It has the potential of being able to snuff out problems before they can burst into flame.

  It offers huge strategic advantages to a combatant commander in time of war.

  Unfortunately, all this potential has been swept away because the Army chose the wrong vehicle.

  As matters stand, after the SLAT armor has been fitted, not only is the Stryker too heavy to let a C-130 carrying one take off, but it is too wide even to be loaded.

  This is a ridiculous situation and represents a $12-15 billion deception of the American public.

- **Transformation of the Army was set back for up to a decade.**

  The system, that loose alliance of the Administration, Congress, and the Pentagon, will tolerate major errors but, in the main, it will not allow compensation from public finances to remedy the damage.

  A service that makes a fundamentally wrong choice normally has to live with the consequences.

  Accordingly, the funds spent on the Stryker are not available to be deployed elsewhere – which means that Army Transformation has been set back for many, many, years.

- **The Army leadership learned that civilian oversight was near meaningless. It could be neutered.**

  To quote an old joke, the Army are well known as being 'dumb' in relation to Congress. Whereas the Marines are well known for always being able to 'take the Hill (Capitol Hill)' the Army are regarded as being politically naïve and consistently less able to feed well at the public trough.

  That was absolutely not the case in relation to Stryker.

  Here the Army leadership came up with a brilliant implementation plan which had the extra benefit of neutralizing the Office of the Secretary of Defense.

  The Army secured the support of two extremely powerful and influential senators in relation to the Appropriations process by agreeing with both senators that one of the new Army Stryker Brigades would each be located in their states. Vast military construction projects – roughly a billion dollars per state for both Alaska and Hawaii would support these decisions.

  The Secretary of Defense, who had larger issues on his mind such as Iraq and Missile Defense did not want to tangle with two such powerful lawmakers.

  Thus has a very dangerous precedent been set because if our constitutional checks and balances can be neutralized so easily, we have the potential for serious trouble.

  Civilian oversight of the military is mandated by the constitution.

- **A vast amount of money was, and continues to be, wasted. The process itself, displays every sign of having been corrupted.**

  Faced with the mess of the Stryker, and entirely unwilling to admit the error (because Army generals cannot be wrong) the Army leadership is following the tried and utterly flawed technique of throwing good money after bad.

  After all, it is not their money.

  As a consequence hundreds of millions of dollars are being spent in trying to remedy, or, at least, suppress a general understanding of, the inadequacies of the Stryker range of vehicles.

This raises the question of the sources of these funds. The evidence would seem to suggest that funds, legally appropriated for one purpose, are being used for another.

The corruption of process is not just financial. To illustrate this, one has to look no further than the sorry story of the Stryker Mobile Gun System.

The Stryker MGS is being pushed on the Army year after year despite the much demonstrated fact that not only is it vastly inferior to the M8 Armored Gun system, but – despite years of effort – it still does not work. The 105mm gun and the wheeled Stryker chassis are mismatched. The software that controls the auto-loader is flawed. There are fundamental design and physical limitations that are too numerous too list.

More fundamental yet, even if the Stryker MGS was made to work properly, it would always remain inferior to the M8 AGS because it is inherently a less stable gun platform, cannot be armored adequately, and has poor off road performance (to name but a few problems).

The Stryker MGS (under a different name) competed with the AGS in 1991 – and lost. One has to ask why is the inferior system still being pushed 12 years later when the superior MG AGS is not only proven to be entirely satisfactory but is also ideal for the 82nd Airborne – because it is air droppable.

A reasonable person would have to assume that there is another agenda at work here, one that is not focused upon the survivability of American soldiers.

- **The Legacy Force (more recently called the Current Force) was, and continues to be, starved of much needed funds. The situation with the National Guard is even more serious.**

Former Army Chief of Staff, General Shinseki's, obsession with his wheeled Stryker Brigades, and the Future Combat System, ignored the possibility that our enemies might dictate when and where we would have to go to war.

To coin a phrase, the policy was 'jam tomorrow.' The ideal new Army would start showing up in 2012 and would probably be fully operational by 2020 – or perhaps ten years later. Either way, we would then be ready with our new high technology Army.

This was an arrogant policy at best because it assumed that America would not be attacked and have to go to war for at least one or two decades. And, as 9/11 showed, it also turned out to be wrong.

One might think that 9/11 would have tempered General Shinseki's plans and caused him to redistribute resources in favor of the forces that would have to fight in the near future – the so called 'Legacy Force.'

Nothing of the sort happened. The Army continued to spend on Stryker Brigades and the Future Combat system as if the World Trade Center was still standing.

The consequences of this refusal to accept the realities of the War on Terror were the neglect of the force that actually had to do the fighting in Iraq and the greater neglect still of the National Guard units who are being mobilized for stabilization duties.

Thus we have M113s not being upgraded, soldiers without the right body armor 6 months after major combat has ceased, logistical problems of major proportions, and HMMWVs being used as fighting vehicles. It is all of a piece.

Army resources, albeit vastly increased since 9/11, are finite. Funds spend upon 'jam tomorrow' cannot be spent upon the fighting force today.

- **The credibility of the Army, never high since Vietnam, has been severely damaged.**

One can debate the importance of credibility. Does it really matter?

The reality is that many organizations exist without much credibility but with effective media management operations. The media go along with this because of time, editorial, and the other pressures mentioned elsewhere. But they don't think much of it and when a major issue surfaces, they go for the jugular and rally public opinion.

Then Congress pays attention.

The Army are in the quiet time of this situation right now. They have in fact become expert at hindering and obscuring public knowledge of their activities and of hiding such disasters as the Stryker from public scrutiny. Indeed, they have culturally on the defense since Vietnam.

Unfortunately, the price to be paid for such a culture is intellectual dishonesty to the point of delusion; and that is not a healthy mindset with which to face an enemy.

The fact is that many insiders do know about the Stryker mess, and are appalled, but don't care to do much about it because they don't think the Army is that important. 'If the Army want to self destruct, well so be it,' is a common attitude.

In contrast, the Marines are deservedly held in high regard.

It is not in the National Interest for the Army, whatever their faults and mistakes, to be held in such contempt.

We are at war and our soldiers are much needed. ❖

14. The M1A1/A2 Abrams Main Battle Tank

The Abrams M1A1/2 performed magnificently in Iraq and proved highly survivable despite individual tanks being hit as many as 10 times by RPGs.
Extra work is required to make its turbine engine less vulnerable (and more reliable). Better yet it should be replaced because the bad news is that the Abrams turbine engine is such a fuel hog that the tank's operational flexibility is inhibited and the crews of the unarmored re-fueling trucks are put in harms way and create a major logistics drag.

The impact of logistics drag on survivability as illustrated by the M1A1/2 Abrams

As described elsewhere, survivability in an urban environment is hugely enhanced by the ability to take the first hit and yet shoot back accurately and destructively. Better yet, in open terrain such as desert, the preferred objective is to kill the enemy before he sees you through a combination of advanced electronic sighting systems and a turreted 120mm gun.

The Abrams M1A1/2 main battle tank can, and does, do all this, and is highly survivable, but weighs nearly 70 tons. The bad news is that is powered by

a 1500HP turbine engine that does about 8 gallons to the mile (not a misprint – we do mean gallons to the mile) and has to be re-fueled about every eight hours by highly vulnerable tankers.

In short, the survivability of the Abrams is offset by the vulnerability of the fuel tankers (which being unarmored and defenseless, also need protection). Further it means that although the Abrams is capable of high speeds, both on road and cross country, its need to halt and re-fuel so often means that its true operational speed is much less, and its combat range and choice of route is much more limited than it need be because the wheeled tankers lack the cross-country capability of the Abrams.

This high fuel consumption also means that the Abrams is less than ideal for convoy escort despite the fact that there are few things like a tank to deter potential aggressors.

The Abrams is a great weapons system but its operational utility is excessively limited by its re-fuel-every-eight-hours engine.

There are some serious turbine engine reliability problems too. And engine fires. These create more problems than you might think.

Engine breakdowns have a greater impact on combat effectiveness than may be realized. A great deal of the awesome combat power of tank units comes from the fact that they are used in cohesive units, each supporting the other.

Breakdowns mean not only that unit cohesion is undermined but also that there is the problem of how to secure a static tank, or a number of broken down tanks spread out over a distance, in enemy territory. It is not an easy issue to resolve.

It is reported that the tanks that 3ID were using had re-built engines which caused breakdown from the time the division started to leave Kuwait.

The turbine engine runs extremely hot and there have been many reports of engine fires.

The turbine also sucks in vast quantities of air so that keeping the air filters clean can be problematic in desert environments.

The heat of the engine also diminishes tank/infantry co-operation. Soldiers cannot ride on the back as used to be the custom.

Perhaps more seriously, because they cannot get too close to it, the Army considered there was no point in fitting that invaluable phone which would allow an infantryman to talk directly to the tank commander even if the tank was buttoned up. Even in these days of armored warfare, that is a facility that is still needed.

Clearly, the turbine engine issue has to be resolved. Equally clearly, the solution is the readily available 1500 horsepower diesel engine which the manufacturer offers to other customers – reportedly, with the claim that it delivers similar performance.

Kuwait to Baghdad in 12 hours…. Considering there was virtually no opposition, three weeks was way, way, too long.

To put some figures on that, it is worth realizing that the Abrams of 3ID could have driven from Kuwait to Baghdad, a distance of some 350 kilometers, in about 12 hours, even though operating well under full speed, actually at more like half speed.

In practice, the need to refuel constantly (though mainly other factors) meant that that the journey took about three weeks.

Twenty-one days to do 350 kilometers. Walking speed.

Logistics drag was a contributor to this delay although one could argue more psychologically than practically in this case.

Enemy action was another, albeit marginal, excuse. There was no serious opposition.

However, the main reason for taking three weeks to complete a twelve hour trip was an excess of caution by the US Army generals – the word 'timidity' has been used and meant - and a lack of understanding of the importance of speed, of the true value of momentum, of psychological dominance, in land warfare.

The troops did fine. The Army generals did not.

The contrast with the much more lightly equipped Marines, where General Mattis led from the front, and hated the pause because it made his Marines a fixed target (so made no military sense) was all too evident.

What needs to be done about the Abram's logistical deficiencies? Eight gallons to the mile is ridiculous…

Eight gallons to the mile is ridiculous in the context of global Expeditionary Warfare because many of the places where we may have to fight do not have readily available fuel.

The US Army appreciates the problem but TAACOM, Tank Automotive & Armaments Command, are thinking more about a new turbine engine which may save a couple of gallons to the mile (at vast expense) instead of switching to readily available 1500HP diesel engines which operate at about one gallon the mile – an eight fold improvement.

We should also look closely at the hybrid-electric engined Thunderbolt (covered in this document) and ask can it do many of the tasks the Abrams is currently expected to do in operations such as Iraq or Afghanistan. Its fuel consumption is twenty-four times better and it mounts 120mm firepower just as the Abrams. In short, the Thunderbolt is ideal for global deployability.

But switching to 1500HP diesel engines, already offered for the M1A1/2 by the manufacturers, is the immediate and requirement solution. ❖

15. The Thunderbolt Armored Gun System

Thunderbolt has the same massive 120mm firepower as the M1A1 Abrams tank but is 24 times more fuel efficient. It has a hybrid electric engine and accelerates like a drag racer. It has an autoloader so requires a crew of only 3 and can carry 4 additional soldiers under armor in the back.
It is a modified version of the already Army Type Classified M8 Armored Gun System which the Army refuses to use even though the 82nd Airborne has a standing requirement.
The Army leadership appears to view the AGS as an acknowledgement of making a mistake with Stryker. It is a story of careerism over concern for the soldiers and, sadly, it is all too typical.

Thunderbolt demonstrates what can be done to eliminate logistics drag.

The Thunderbolt goes a long way towards ameliorating logistics drag, as well as bringing a number of other important benefits to the battlefield. A much upgraded version of the already Army type classified M8 AGS (Armored Gun System), it has the same formidable 120mm firepower as the Abrams, and is highly survivable, but weighs only 20 tons in its basic form, and about 26 tons fully up-armored (RPG resistant). That makes it not much more than a third of the weight of an M1A1/2 Abrams.

The Thunderbolt's logistical advantages include the following.

- **The vehicle is light and compact enough to be transported by C-130 aircraft (though its armor upgrade would have to be added upon arrival).**

  Three fully up-armored Thunderbolts could be transported by C-17 (as opposed to one M1A1/2 Abrams, for example).

  The M8 AGS (think of it as the Thunderbolt with the smaller 105mm gun) has also been air dropped successfully. It was developed for the 82nd Airborne.

- **Vast logistical benefits from its hybrid electric engine. Fuel consumption is 24 times better than the Abrams.**
  Note: Fuel consumption is *twenty-four times better*. Now that is truly worth thinking about.

  A Thunderbolt can go 600 miles on a single tank of 200 gallons of fuel – which equates to 3 miles to the gallon – as opposed to 8 *gallons to the mile* with the Abrams. Also engine maintenance is substantially reduced because the engine is a constant speed motor with fewer moving parts.

  Fast, deep strikes now become possible because no major logistics tail is required.

  Actions supported entirely by air – thus eliminating the ground based logistics tail completely – now become possible. This, in turn, significantly increases tactical flexibility and potential operational tempo.

- **The hybrid electric engine, based upon a generator and batteries with electric drive, eliminates the need for separate generators.**

  Hybrid electric also ensures that there is more than enough electric power internally to be able to carry out silent watch and support a range of electronic equipment integrated on its digital data bus. This makes the Thunderbolt invaluable for night operations and for internal security.

- **The hybrid electric generates a minimal, thermal signature.**

  The turbine powered Abrams has a serious problem in this area. A low thermal signature not only minimizes the ability of enemy forces to detect you but also cuts down on the dangers from infra red guided weapons, both direct and indirect (such as mortars firing munitions that home in on thermal signatures.)

Other specifications of the Thunderbolt.

- **Crew of 3.**

  An Abrams has a crew of 4. The Thunderbolt is able to manage with one less because of a highly reliable autoloader.

- **Passengers 4 (or extra storage).**

  The Thunderbolt's hybrid electric engine takes up so much less space than a conventional engine that space has now been created at the rear of the vehicle to take up to 4 troops in addition to the crew.

  The operational significance of this degree of functionality may easily be appreciated.

Thunderbolt carries a crew of three – commander, gunner, driver.
Plus four soldiers can fit in back.

- **Firepower**

120mm gun and other weapons are the same as M1A1/A2 Abrams. Crew of 3 is one man smaller. Four soldiers can be carried in back. Fuel consumption is 24 times better. Thunderbolt demonstrates capabilities we could have if Army was more open minded.

  - 120mm stabilized main gun with 18 rounds in autoloader plus stowage.
  - 7.62mm M240 co-axial machine gun with 1000 rounds ready (4,500 in total)
  - .50 external pintle mounted heavy machine gun with 100 rounds ready (600 in total) or 40mm M19 grenade launcher or 7.62mm M240A2 machine gun
  - Generation 2 Forward Looking Infrared optics

The significance of the Thunderbolt. It is vastly more capable and survivable than the Stryker Mobile Gun system, and costs about the same, so why is the Army pursuing a demonstrably inferior and less protected vehicle that still does not work after 3 years of development despite being largely off-the-shelf?

The point about the Thunderbolt is that it shows what is available now for the same money so one has to ask what is the Army agenda when it comes to its obsession with such an inferior vehicle as the Stryker MGS.

Clearly the welfare and survivability of the soldiers is not paramount – nor are the requirements for global Expeditionary Warfare.

One is left with the feeling the factors motivating the Army are a reluctance to admit a mistake, the fact that members of the Army Acquisition Corps do not have to do any fighting, and some other agendas that have more to do with post retirement jobs than equipping the soldiers with the best tools for the job.

A few points to contrast the Thunderbolt with the Stryker MGS.

- **The Thunderbolt is vastly better armored.**

  The Thunderbolt works on the principle of getting dressed for the occasion. Based on the M8 Armored Gun System, the idea is to keep the base vehicle light (though it can still withstand small arms) so it can be transported by C-130 and air-dropped, but then to add armor according to the threat on the ground. That system allows the Thunderbolt to be up-armored to Level III type classified armor in a couple of hours – which means it can handle RPG impacts and similar, in fact virtually anything short of a tank round or crew served anti-tank weapon.

  In contrast, the Stryker MGS is armored only up to 14.5mm level (heavy machine gun) and is entirely vulnerable to 30mm (a common Soviet era weapon) and RPG. It cannot be air-dropped.

  The Stryker's problem is that its wheeled chassis can handle only a certain amount of weight and the MGS is already up to that limit.

  Tracks spread weight more effectively.

- **The Thunderbolt carries a bigger 120mm gun.**

  The Thunderbolt carries a 120mm cannon, exactly the same caliber as the M1A1/2 Abrams. The fact that a 20-26 ton tank can do this is fairly remarkable but relates to sound design and the innate stability of tracks.

  In contrast, the Stryker MGS is equipped with a 105mm cannon which, quite simply, does not work on a consistent basis. The reasons for the problems have to do with the higher center of gravity of the Stryker chassis, the Stryker's use of wheels, and other engineering issues associated with the failed low profile turret approach.

- **The Thunderbolt is a more stable gun platform. The critical importance of first shot accuracy.**

  In tank versus tank warfare, the idea is to have stand-off capability, to be able to shoot the enemy before he can shoot you. That demands highly accurate sighting systems and a truly stable gun because the slightest variances mean inaccuracy at ranges of 2 plus kilometers and you want first shot accuracy because the range is being closed by the second and giving away your position may well mean you will not have the luxury of a second chance.

  Cannon stability is dependent upon a host of factors of which the ability to handle recoil is probably the most significant. The Thunderbolt can do that because of a superior recoil system linked to the stability of tracks. It just sits more solidly on the ground.

  In contrast, the wheeled Stryker MGS, even with the much smaller and lighter 105mm cannon, cannot achieve the same accuracy if only because its wheels, which are designed to flex, cannot transfer recoil momentum efficiently to the ground.

- **The Thunderbolt is faster to accelerate and faster overall both on and off road.**

  The Thunderbolt can accelerate so fast the front of the vehicle can rear up. This performance is a byproduct of the direct electric drive provide by its hybrid electric engine. This power also yields benefits both on and off the road.

  In contrast, the Stryker MGS is, if anything, underpowered because its core chassis was never designed to carry the weight of its current configuration. More simply, the M8 AGS has a 600 horsepower engine, while the Stryker MGS has a 350 horsepower engine. As such, the source of the Stryker MGS's performance problems is self evident.

- **The Thunderbolt has significantly superior off road performance.**

  Tracks were invented to spread a vehicle's weight and deliver superior traction because wheels, particularly on vehicles over ten tons in weight, have a disconcerting tendency to sink into the ground and this immobilize the vehicle they are supposed to be powering.

  Band tracks have the added advantages of being inherently lighter and conforming better to the ground.

  The Thunderbolt has band tracks.

  The Stryker MGS has wheels.

- **The Thunderbolt has a hybrid electric engine and superior fuel consumption which yields twice the range without refueling.**

  Excellent fuel consumption is one of the main benefits of the Thunderbolt's hybrid electric engine. The practical results are to make it

about 24 times as fuel efficient as an M1A1 tank and several times more fuel efficient than the Stryker MGS.

The Stryker MGS has a conventional 350 hp diesel engine whose rate of fuel consumption under operational conditions is not yet known since the vehicle has not yet been fielded successfully. Regardless, even the published fuel range of the Stryker is only 300 miles based upon the liberal assumption of 5 miles per gallon – a rate that the Stryker has not even begun to approach in testing , particularly across its 50% cross country, and 30% secondary road mission profile.

Note. The Stryker engine is a Caterpillar COTS engine that is cheap, readily available and commercially maintained. It should make the Stryker much cheaper than it is. As to reliability, even the soundest engine will have a problem if the vehicle it is propelling is overweight and the power to weight ratio is inadequate.

- **The Thunderbolt can operate in completely silent mode for several kilometers.**

The Thunderbolt is effectively silent when operating from batteries alone. The tactical advantages of this capability in combat can well be imagined, as can the benefits while patrolling in an urban environment on internal security duties.

The band track equipped Thunderbolt, in silent mode, is actually so quiet that it has had to be fitted with buzzers and flashing lights for safety reasons.

The Stryker MGS has no similar capability.

- **The Thunderbolt has surplus electric power available so generators can be eliminated.**

We are now in an age where the availability of electric power, for purposes other than that of the vehicle itself, is fundamental to warfare. As a consequence batteries and generators have become mission critical items – and no small logistical problem.

The advantage of the Thunderbolt is that its hybrid electric engine is capable of producing more electric power than the vehicle itself needs which brings numerous associated benefits.

The Stryker MGS has no such capability.

- **The Thunderbolt can carry 4 soldiers in addition to its 3 man crew and is a more spacious and comfortable vehicle to ride in.**

The Israelis, who know more about urban warfare than any other nation, have designed their Merkeva tank to carry troops as well. Their thinking is that although heavy armor is essential for dominating the urban battlefield, there are some situations where you need infantry as well.

However, infantry still need to be transported in the most survivable vehicle – which is a tank.

The Thunderbolt has this facility because of the foresight of its designers and because of the extra space which resulted from switching from a conventional diesel engine to hybrid electric.

The Stryker MGS has no such troop carrying facility and, in fact, the space for its crew of 3 is notoriously cramped. ❖

Courtesy of a Dec. 13 2003 NY Times article by Clive Thompson , we advance one reason for the Army's quite extraordinary reluctance to change substantively (the Army excels in projecting the illusion of change) regardless of the evidence and the imperatives of war.

…But what if PowerPoint is actually making us stupider? This year, Edward Tufte -- the famous theorist of information presentation -- made precisely that argument in a blistering screed called The Cognitive Style of PowerPoint. In his slim 28-page pamphlet, Tufte claimed that Microsoft's ubiquitous software forces people to mutilate data beyond comprehension. For example, the low resolution of a PowerPoint slide means that it usually contains only about 40 words, or barely eight seconds of reading. PowerPoint also encourages users to rely on bulleted lists, a "faux analytical" technique, Tufte wrote, that dodges the speaker's responsibility to tie his information together. And perhaps worst of all is how PowerPoint renders charts. Charts in newspapers like The Wall Street Journal contain up to 120 elements on average, allowing readers to compare large groupings of data. But, as Tufte found, PowerPoint users typically produce charts with only 12 elements. Ultimately, Tufte concluded, PowerPoint is infused with "an attitude of commercialism that turns everything into a sales pitch."

Microsoft officials, of course, beg to differ. Simon Marks, the product manager for PowerPoint, counters that Tufte is a fan of "information density," shoving tons of data at an audience. You could do that with PowerPoint, he says, but it's a matter of choice. "If people were told they were going to have to sit through an incredibly dense presentation," he adds, "they wouldn't want it." And PowerPoint still has fans in the highest corridors of power: Colin Powell used a slideware presentation in February when he made his case to the United Nations that Iraq possessed weapons of mass destruction.

Of course, given that the weapons still haven't been found, maybe Tufte is onto something.

Perhaps PowerPoint is uniquely suited to our modern age of obfuscation -- where manipulating facts is as important as presenting them clearly. If you have nothing to say, maybe you need just the right tool to help you not say it.

16. The HMMWV

The wheeled HMMWV is a remarkably robust vehicle. However, it is a light truck not a fighting vehicle. Further, the cost of the armored version is close to $200,000, it still has no RPG resistance, its fuel consumption is poor, and it has proved extremely vulnerable to terrorist attacks in Iraq.
Further still, early model HMMWVs, the majority in Iraq right now, cannot be up-armored. Wheels are not good at handling too much weight and their suspension was not designed for it.
Is there a more survivable RPG armored, C-130 transportable, all terrain alternative for a threat environment?
Yes.

The HMMWV is a great light truck but there are serious questions as to whether it is a great warfighting vehicle; and the fact is that we are at war.

The merits of the HMMWV, when assessed as a robust method of both on road and off road transport are not in doubt. The vehicle demonstrates the fact that appropriately designed lighter wheeled vehicles – up to about 6 tons in weight - can deliver excellent off road performance (though they still cannot equate to the all terrain capabilities of tracked vehicles).

On the other hand, one has to wonder if perhaps the Army has not tried to make the HMMWV into something it is not in the absence of more creative thinking.

It is being used extensively as a fighting vehicle which, palpably, it is not.

It is a light truck. It is a transport capability.

Armoring a HMMWV and mounting a weapon on it does not make it into a survivable fighting machine. The armor is limited to small arms protection, the

gunner is substantially exposed, there is no 360 degree capability, and the tires leave the vehicle vulnerable.

Then there is the fact that the inherent design of the HMMWV is forward facing and akin to that of a civilian automobile. Its strength lies in its transport capabilities not in its combat strengths.

It is not particularly fast.

It is not postured for combat.

That did not matter during Iraq I when the Army encountered little serious opposition, and it did not matter during the Nineties when the Army was primarily pre-occupied with peacekeeping, but the current open ended war is another matter entirely.

If we are serious about combat effectiveness and survivability, we need to procure more appropriate tools for the job and cease trying to make the HMMWV into something that it is not.

Surely the HMMWV could be further up-armored and maybe given a turret to make it more survivable?

There is a low limit to how much weight wheels can take without seriously affecting on road performance, and rendering off road performance virtually impossible. Even the most advanced version of the HMMWV cannot even carry 3 tons of payload and armor.

Heavier armor would cause the HMMWV to reach that limit and you still would not have a vehicle with adequate offensive capabilities.

In fact, a turret has been proposed but it is still too small to contain what is necessary to make turreted weapons effective.

The fact has to be faced that a fighting vehicle designed for combat requires an inherently different core design.

For some missions, we need alternatives to the HMMWV.

We are not suggesting that the HMMWV be abandoned but merely that its use as a fighting vehicle be re-thought by the Army.

The following are some suggestions by type of mission.

- **Convoy escort duty**

  Here we want an affordable vehicle that allows a 360 degree watch to be kept, that deploys formidable shoot-on-the-move 360 degree firepower, that can carry some infantry and/or supplies, that can maneuver off road if necessary, that can survive RPG hits, that is mine resistant, that can break through or surmount barriers, that is as fast as the vehicles it will be escorting, that can maneuver off road if required, that is economical with fuel, and, ideally, which is C-130 deployable.

  The Army would argue that the Stryker is the answer. Unfortunately, it is expensive to purchase, lacks stabilized firepower, does not allow 360

degree coverage, is not RPG survivable, is expensive to operate and is currently too wide and too heavy to fit into a C130, let alone fly anywhere.

We would argue that a band track hybrid electric version of the MTVL would be a much superior choice – and it fits all the criteria including more affordable to buy and much cheaper to operate.

- **Internal security (chasing civilian vehicles).**

Fast Attack Vehicle.
Very light, very small, very fast, and, if correctly equipped, very lethal. Can carry a host of weaponry including anti-armor. Air transportable by helicopter & fixed wing. Excellent fuel consumption. Inexpensive.

There is always a risk when you chase a civilian vehicle in an insurgency situation because, clearly, you could be being led into a trap. That said, war is scarcely a risk free activity so for this purpose we would suggest Fast Attack Vehicles such as the Chenowth (see above) or Flyer

These are, by definition, fast, have excellent acceleration, can navigate narrow alleyways, are easy to conceal, and can be heavily armed.

They are not armored, but are so small and agile that they are very hard to hit. Also, there is very little structure to hit since most of the vehicle is frame.

They are also air-transportable by virtually all rotary aircraft so could be deployed by air to set up random check points.

FAVs were used with great success by the experimental 9th ID in the early Eighties.

However, because they were so different and seen as a threat to heavy armor, and certain items of equipment the Army was determined to procure, the unit was finally disbanded even though many of the new concepts developed by the unit worked.

FAVs, which are tiny, were, nonetheless, equipped with a wide range of weaponry including machine guns, grenade launchers and even Hellfire missiles.

A version of an FAV unit (they used light Toyota trucks equipped with Milan missiles and other weapons) actually defeated a Libyan tank army of several hundred vehicles in 1986.

FAVs are vulnerable to artillery – although they can move out of harm's way at considerable speed and are easy to conceal - and are certainly not all purpose combat vehicles but, used correctly, as in an airborne assault or by Special Forces, they can be surprisingly combat and cost effective (both to buy and to operate) and they are logistically very light.

They can be lightly armored but the normal Special Forces policy is to "armor the man, not the vehicle."

Inexpensive equipment normally has a problem finding a proponent in the Army so despite their considerable promise, very little research money has ever been spent on FAVs. This is unfortunate because lightweight tracked FAV's have, some experts argue, even greater potential because they will cope with literally any terrain (short of extremes) and have a lower profile while still retaining the speed and maneuverability advantages of the wheeled FAVs.

Regardless of the logic of a case, the Army is extraordinarily hard to change. However, it is interesting to note that the main resistance tends to come from not directly involved with warfighting such as the Acquisition Corps.

- **Reconnaissance.**

  Both MTVLs and FAVs could be used for this role.

- **Heavy weapons (Delta company).**

  Light units such as the 82nd, 101st and 10th Mountain tend to have their heavy weapons mounted on HMMWVs. This works up to a point but the weight of a HMMWV is considerable, off road performance is not what it might be, and the gunner tends to be seriously exposed.

  Both FAVs (for the 82nd and 101st) and MTVLs could handle this task in a superior manner. ❖

The internally spacious MTVL can be equipped with band track, hybrid electric drive, and even a Bradley turret if required.
Its stability makes it an excellent weapons platform and it can be up-armored with either active or passive RPG resistant armor. Outstanding performance both on road and off – and it is C-130 deployable.

17. Findings

Major findings

Most serious concerns about the caliber, competence and culture of Army generals.

The evidence is overwhelming and entirely consistent that the Army leadership, as personified in its corps of generals, subject to some notable exceptions, is not of the caliber required to safeguard National Security and to pursue the War on Terror.

The Army generals, in the main, lack character, competence, and warfighting commitment. They are more akin to intensely ambitious, but mediocre, mid level managers in a civilian organization. They do not read, they are not masters of their profession, they are intensely hostile to innovation, they are poor communicators, and few are intellectually adequate to command at general officer level.

They do not have a grasp of the issues. In fact, one of the reasons that they don't change is because they do not know – even in the sense of methodologies - how to change

To give but one of many possible examples, as the near complete breakdown of logistical support for the fighting spearhead during Iraqi freedom demonstrated, the Army leadership are not even administratively competent.

The Army system is promoting generals' aides, staff officers and careerists ahead of innovators, leaders and warfighters of character to the great detriment of the fighting force. And this sends an unmistakable message to the Army officer corps which results in many of the best people getting out at field grade rank. They do not want to work in a culture of sycophants, and they do not want to be led by authoritarian incompetents.

As the officer pool becomes more senior, the caliber drops sharply.

At general officer level, it is currently unacceptable.

The Army's lack of concern about warfighting, and lack of regard for the contributions that experienced warfighters can provide was well illustrated by their command choices for Iraqi Freedom. Although officers with priceless direct fire combat experience were available, they chose instead officers with no combat experience to command at the most senior, as well as combat unit, level. The results of this lack of experience were, and are, self evident both during the way and in the aftermath.

Research by this writer into the careers of officers with genuine combat experience (as opposed to be 'in theater) yielded the strong impression that to be a real warfighter in the Army is be saddled with a career negative.

The problems with the Army general officer culture (which clearly affects the officer corps as a whole as well) are so serious and run so deep that it is clear that only the most fundamental actions will resolve them.

Culture resides in people.

Historically, change has only taken place in the Army when substantial numbers of unsuitable officers have been removed and genuine talent brought in. Peacetime generals are rarely good in war.

The Army and the Marine Corps

It is fairly clear that the performance of the Marine Corps in Iraq II has raised serious issues about the relative warfighting capabilities of the Marine Corps in relation to the Army.

The Marine Corps, albeit equipped with significantly fewer physical assets, deployed faster, hit harder, deployed an altogether more aggressive stance, and dominated the area it captured after major conflict was over to greater effect.

It would appear to be a matter of attitude, of a determination to execute the mission regardless of resources, of speed, and of implementation.

Above all, it would appear to be an issue of leadership from the front, and of a warfighting ethos compounded by a true intellectual mastery of the business of war.

The significance of this finding is fundamental and is of great cause for concern in relation to the Army leadership.

This finding is no reflection on the caliber of the average Army soldier.

The Marine Corps still has issues with its commitment to, and utilization of, armor which need to be resolved.

The Corps appears to be entirely committed regardless of such crucially important details.

Most serious concerns about the Army's equipment procurement policies.

Our underlying concerns are that support for the former Chief of Staff's vision, regardless of the ensuing problems, seems to have been regarded, and perhaps is still being regarded, as vastly more important than keeping the force that is actually doing the fighting maintained and equipped.

We find this to be wrong.

This would be a major gamble in peacetime but it makes no sense at all in wartime – and we have been at war for over two years with no end in sight. Worse still, no serious changes were made in procurement priorities after 9/11. The Army leadership seemed to regard 9/11 as little else than an irritating distraction from implementing the former Chief of Staff's peacetime vision.

That is not rational behavior particularly where National Security is concerned. When at war, the immediate needs of the fighting force have to have priority.

Whatever the merits of the original concept – we can find no good reasons for pursuing a project such as the Stryker when it fails to meet the criteria, indeed

just about all the criteria, for which it was purchased. This suggests a careerist acquisition driven agenda which has scant relevance to the needs of the soldier.

We are further concerned about the behavior of certain Army generals and members of the Army Acquisition Corps in this matter.

This concern extends to the Army's continuing determination to purchase the flawed Stryker Mobile Gun System despite that fact that it has failed miserably in its tests and would be inherently less capable, even if worked, than the already tested and type classified M8 Armored Gun system.

We would point out that the Stryker MGS will never be able to satisfy the 82nd Airborne, for example, because it just is not air-droppable.

We are puzzled and concerned by a great many other procurement decisions which do not seem, once again, to relate to the clear and immediate needs of our warfighters.

We fail to understand why the M113 Family of Vehicles has been entirely neglected.

We fail to understand why there was not, much sooner, a major focus or up-armoring and otherwise compensating fork known vulnerabilities.

We are baffled as to why the Comanche program is being continued after twenty years.

We fail to understand why there has not been more progress on enhancing our rotary heavy lift capabilities despite every evidence that such a capability is of fundamental importance in the War on Terror.

We are taken aback by the Army's reluctance to replace the M1A1/2 Abrams turbine engines despite clear warnings in Iraq I in 1991 and much operation experience of the difficulties since.

We are disturbed by the acquisition focus on HMMWVs for combat use despite clear evidence that they are unsuited for such missions.

There are many other issues we could raise but overall we find that a serious and dangerous gap seems to have appeared between the manifest needs of the fighting force and the actual operation of the acquisition process. ❖

General findings

Re Section 1. Introduction

Survivability should be more of an issue. More can and should be done.

The acquisition agenda still seems to driving events to the absolute shame of the Army leadership.

An American casualty has special significance for our enemies.

For very good reasons, they doubt our national resolve. They think we have no stomach for the long fight.

The comfortable assumption that the Army are doing the best they can in relation to survivability is not born out by the evidence.

Re Section 2. Survivability

The essence of survivability is to save American soldiers from death and injury while, at the same time, completing the mission. It should not be confused with risk aversion.

The Army have a long tradition of mismanaging their procurement at the expense of the survivability of its soldiers.

The Army's peace-keeping focus in the Nineties, and resultant cultural attitudes, have undermined its warfighting priorities.

Known survivability issues are not being dealt with.

The Army's consistent and vehement opposition to experimentation undermines survivability.

Survivability depends, first and foremost, on the selection of the mission and the quality of the Army leadership.

Re Section 3. Lessons from combat

There is very little wrong with our soldiers but considerable cause for concern about our generals.

Despite episodes of very brutal fighting, Iraq II was not a major war.

Major war or not, the volume of fire was so intense on numerous occasions that only heavy armor prevented serious casualties.

If this had been a major war – if we had been up against a world class enemy – we could have been in trouble.

Accurate pre-emptive and return fire is invaluable in that it seizes the initiative from the enemy. To achieve that, stabilized weapons are highly desirable.

To remain road-bound, and this predictable, is to invite ambush.

Supply convoys, being softer targets, will be ambushed. Training of support troops was inadequate.

Despite an unparalleled amount of electronic surveillance, the potential for being tactically surprised is little different from that experienced two centuries ago.

Current Army Urban Operations doctrine needs to be re-thought.

Only vehicles that can sustain RPG hits should be sent into urban (or any) combat zones.

Re Section 4. The main threats now

The main threats our forces face no are from RPGs, small arms, Improvised Explosive Devices, car bombs, mines, and shoulder fired anti-aircraft missiles.

The minimum standard of protection should be against the RPG.

There is no such thing as a front line anymore.

Most vehicles, including support vehicles should be protected.

Re Section 5. The issue of troop numbers in Iraq and the real issue: the competence or lack of it of some Army generals.

There has been little critical examination of the generals' conduct of the war and its aftermath, yet historically the conduct of our generals has been monitored closely and bad generals relieved.

There is plenty of evidence that we do have a problem with our Army generals.

Re Section 6. The role of Congress and civilian direction in relation to survivability (and other military matters)

For a host of sometimes very understandable reasons, informed Congressional oversight of the Army is entirely inadequate.

There is a similar lack of civilian oversight of the Army at Department of Defense level.

Re Section 7. Wheels versus tracks – the survivability aspect.

The wheels versus tracks issue is a prime example of how poor decisions by the Army leadership have a direct impact on both survivability and the ability of soldiers to carry our their required missions.

We are now in the business of Global Expeditionary Warfare which means no roads, or lousy roads – which means tracked vehicles.

The Army's decision to wheeled Stryker Combat teams was based upon no data. In fact it flew directly in the face of the evidence of a joint US-UK working group which, after a great deal of research, recommended tracks.

Although some wheeled vehicles have some off road capability, their overall capabilities are substantially inferior to those of tracked vehicles particularly when its comes to combat power and survivability.

The performance of tracked vehicles, impressive though it was in Iraq, can be further enhances with technologies such as band tracks and hybrid electric engines.

The Army's current wheeled orientation is a serious mistake and is contributing to a road-bound mentality which restricts maneuvering capability and makes us vulnerable to our enemies.

Re Section 8. The cult of the infantryman.

Unprotected infantry are excessively vulnerable except in special situations (such as Special Forces operations).

Though the need has long been clear, the Army has failed to implement a seamless integration of armor and infantry.

The existing Branch structure is an active impediment to long overdue reforms.

Re Section 9. Intelligence

Military action should be intelligence driven.

The Army is fairly good at targeting but extremely poor at other aspects of intelligence.

There are serious questions as to whether current Army culture is compatible with intelligence.

Re Section 10. Supply convoys, supply lines, survivability

The Army's logistical support of the combat troops in Iraq was extremely poor despite secure bases in Iraq and plenty of time to prepare.

The security of supply convoys both during and after major combat has left a great deal to be desired.

The Army has long placed excessive emphasis on unarmored road bound trucks even though vastly more survivable off-road tracked alternatives were available.

Despite the lessons of Iraq I, the has failed to deal with the fuel consumption problem of the M1A1/2 Abrams tank even though its constant need to refuel impacts upon its tactical utility.

The Army have failed to integrate fixed wing air supply with its logistical systems. Further, its rotary logistical support has been less than impressive.

The lessons of Vietnam on supply convoy protection have been largely forgotten or ignored.

Re Section 11. M113 Family of Vehicles

The Army's almost complete neglect of the M113 Family, despite the fact that they were and are used extensively in combat, is a text book example of survivability being subordinated to other agendas by the Army leadership.

The Army has consistently misled Congress and the media about the M113 situation both through neglecting to supply data and by quoting the performance of the obsolete A2 model while failing to mention the capabilities of the much upgraded A3 model.

The Army's failure to upgrade the M113A2 model despite the clear lessons of Iraq I is indefensible since it put combat soldiers at risk and undermined tactical flexibility.

The Army's failure to up-armor the M113, despite mounting bolts being available and appropriate armor having been tested, is also indefensible.

The Army's failure to use the M113 for supply convoy escort duty, despite its success in this role in Vietnam, its off road utility, and its formidable gun platform capabilities defies common sense.

The Army's virtually total neglect of the M113 fleet, while still planning to keep thousands in service until 2,032 makes no operational sense, vastly contributes to maintenance problems, has a clear impact on logistical difficulties, and appears to constitute a policy which, quite deliberately, undermines National Security.

Re Section 12. The Bradley

The Bradley proved to be both highly combat effective and survivable in Iraq II.

The Bradley has the potential to be further up-graded and the case is strong that this should be done.

Re Section 13. The Stryker

The wheeled Stryker does not represent the mix of capabilities that the Army promised Congress.

Congress has been, and continues to be, deceived.

The Stryker is a perfect example of what can happen when Army leadership ego, a peacetime mentality, Army acquisition greed, lack of either Department of Defense or Congressional oversight, defense contractor excess, and a lack of concern for soldier survivability seize the agenda.

The relationship between the Army leadership and certain senators, which led to the Secretary of Defense being effectively neutralized, and the Stryker program being pushed through despite fundamental weaknesses in the vehicles, is an unhealthy precedent in that it constitutes an abdication of true civilian control of the Army.

The constitutional implications of such behavior should be self evident.

The fact that the MTVL, on paper superior to the Stryker in virtually ever way, has not been evaluated in detail and compared in field trials against the Stryker defies common sense and approaches the criminal.

The evidence is clear that the wrong vehicle was bought and that the proposed expenditure of some $12-15 billion is a vast waste of taxpayer's money.

The credibility of the Army, never high since Vietnam, has been severely damaged.

The operational capabilities of the Army have been set back for some years.

Re Section 14. The M1A1/2 Abrams Main Battle Tank

The Abrams operated commendably throughout Iraq II, and proved to be highly survivable.

Unfortunately, the extraordinarily high fuel consumption of the Abrams turbine engine proved to be a significant problem. The requirement to re-fuel every eight hours proved to be a major impediment to operational flexibility.

It is clear that the 3rd ID, which faced no serious opposition, took far too long to reach and conquer Baghdad than was needed.

The distance was drivable in much less than a day. It took three weeks.

The delay, which suggested weakness and indecisiveness by coalition forces, contributed to the insurgency we are faced with today.

It gave the enemy time, confidence, and resolve.

Re Section 15. The Thunderbolt Armored Gun System.

The combat and logistical advantages of this system are immense. This is a vehicle with the 120mm firepower of an M1A1/2 Abrams which, fully up-armored, weighs only about 26 tons, or not much more than a third of an Abrams.

The benefits of the Thunderbolt's hybrid electric engine which yields fuel consumption more than 20 times better than that of the Abrams would appear to be self evident both in relation to the Thunderbolt, and for other vehicles such as the M113, MTVL etc.

The ability to carry 4 troops, *in addition to the Thunderbolt's crew,* deserves close examination.

The motives of the Army's insistence on pursuing the wheeled Stryker 105mm mobile gun system, which does not work, when they can procure the proven M8 105mm Armored Gun system (the Thunderbolt is the M8 AGS with a 120mm cannon, hybrid electric engine, and band tracks) are suspect.

Re Section 16. The HMMWV

The lessons of urban combat in Mogadishu have been ignored.

The HMMWV is a robust light truck. However, it is not a warfighting vehicle even when armored. It is not laid out to fight and the gunner, in such a vehicle, is excessively exposed. Why HMMWV gunners do not have gun shields, as is frequently the case, is inexplicable and reflects a lack of Army leadership concern.

Armoring is not a solution. Many of the Army's vehicles are early models that cannot sustain the payload of added armor. Later models, which can support armor, have their off road performance and fuel consumption significantly reduced. Further, the armoring provides only small arms protection and no protection at all against the ubiquitous RPG.

There is clear evidence that the Army has become overly reliant on the HMMWV and has not thought through the requirements for conducting operations, such as patrolling and convoy protection, in a hostile environment.

Alternatives to the HMMWV for use in a hostile environment, such as a Fast Attack Vehicle on the one hand, or an up-armored M113 on the other, do exist.

The Army's determination to resist using such effective, available, and proven armored transport would appear to be based upon a determination to back the Stryker, and advance their own career agendas, ahead of concern about the survivability of American soldiers. ❖

The Army's Future Combat System: What is exactly is it, and what exactly are we getting for the $15 billion plus (this figure is open ended) that, it seems, we are proposing to spend on it?

There have to be the strongest doubts that the Army and Boeing have the necessary qualities to manage such a project. Further, the nature of that project – 'system of systems' is very far from clear.

- As this report is being written, it is matter of public record that the integrity of Boeing's corporate culture at the most senior level is suspect. Given that Boeing are the Lead Systems Integrator for the Army's Future Combat System, that, in itself, should be a case for concern. Probity is an issue here.

- Add in the fact that that Boeing have been developing the Army's Comanche helicopter for twenty years to no result – at vast cost – and it can be seen that there is real cause for worry. Selling a dream at up to billions per year for decades while never delivering substance is scarcely an encouraging precedent. Further the ever increasing cost of the Comanche, now up to an extraordinary $59 million per aircraft – each one vulnerable to a rifle bullet - is not a good indicator of performance.

- There is a feeling among many experts that although there are some encouraging emerging technologies which could be of great benefit to the Army in the Future Combat System, much of the other essential technologies needed to make the FCS a reality are more smoke and mirrors than substance. That is a polite way of saying that there is reason to believe that the Army are either being deceived or that the generals concerned are following another agenda.

- Many feel that a better solution in relation to the FCS would be to introduce the more encouraging technologies in small prototype quantities as they become available within the context of the Current Force and only transition in any quantity when these technologies have been experimented with in the field.

- It is our belief that the content and the management of the Army's Future Combat System should be re-evaluated rigorously. Aspects of the contract signed recently with Boeing – such as giving Boeing an unprecedented 10% charge on all funds flowing through the FCS contract – are an unacceptable waste of taxpayers' funds.

18. Recommendations

Congress must re-assert informed civilian control of the Army.

This is an immensely difficult issue because the very people that Senators and Representatives hire to be their staffers tend to be former Army officers, or similar, who have already been substantially molded by the system and whose loyalties are more attuned to the service they have recently left or to the defense contractors they plan to work with.

In short, working as a staffer is seen, in the main, as a transition job where one's fundamental loyalty is less to Congress than to one's career. As a consequence, to fit a variety of personal agendas, much is kept from senators and representatives which scarcely helps to keep them informed.

We are advised this was not always the case and that something over a decade ago, staffers had a different orientation and a much greater commitment to the concept of genuine civilian control.

Then there is the problem that staffers are primarily pre-occupied with process to the exclusion of the kind of detailed research and original thinking that could keep the members better informed and which could restore the initiative to Congress.

There is no easy solution to all this. The results will depend upon the various Armed Services committee chairmen and their understanding of the scale of the problem. Members are not being told what they need to know.

There is a strong case to be made for overhauling the makeup of the committee staffs, increasing the numbers, improving pay and conditions, and splitting the functionality of the staffs between process and research.

The members must mandate that they be kept fully informed.

Process should not dictate the agenda.

The Secretary of Defense must exercise tighter control of the Army.

In the 21st century, the Army are displaying many of the faults that were in evidence during the Civil War, close to a century and a half ago.

We still have generals who are reluctant to fight, unhealthy relationships with Congress that violate both the spirit and letter of the constitution, careerism, a lack of understanding of maneuver warfare, inadequately prepared troops, appalling logistics, and suspect procurement policies.

President Lincoln would feel quite at home. Unfortunately, we are missing a Grant.

To achieve reform, the Secretary of Defense needs to have a greater understanding of the detail of how the Army operates, and should operate; and he must re-introduce the concept of accountability, and the penalties for lack of performance.

He must set precise goals and take action when these are not achieved.

The culture of the Army leadership must be drastically altered. The leadership and management of the Army must be fundamentally reformed and made accountable.

This problem is immense and needs to be tackled both top down and bottom up simultaneously.

Culture resides in people so the only way to change culture is to remove people. That both eliminates obstacles and sends a clear message to the survivors that change is on the way and must be accepted.

A substantial number of generals, perhaps 20% of the current corps needs to be sacked. That would equate to about 60 though that may not be enough. The Army are extraordinarily resistant to change and currently have, unfortunately, way more than 60 mediocre generals.

Officers of demonstrated talent should be promoted from the colonel level and below. Artificial procedural restraints on promotion ("He never commanded a brigade") should be by-passed. Combat experience should be valued highly. Intelligence, original thinking and creativity should be valued. The warrior mentality should be actively encouraged. Diversity should be encouraged.

We need a spread of talent to cope with a complex world. We don't need a homogenized conformist Army that looks neat on TV. We need a thinking, listening, learning, adaptable force than handle combat, cultural complexity and Fourth Generational Warfare with equal ease. We want smart officers who are good leaders who are not afraid to question the system.

The promotion system needs to be re-thought from top to bottom and should start with all officer candidates serving in the ranks before being promoted.

The intent and implementation of rank needs to be studied.

Rank in armies has arguably existed since near the dawn of civilization – current ranks are based on the practices of Louis XIV's forces – but the use of rank to suppress any and all initiatives which do not please the leadership is an abuse. The notion that wisdom equates to rank is ridiculous, repressive and destructive of the very human spirit the Army needs to tap into.

Business, recognizing that it now has a more educated workforce, has flattened hierarchies, cut out unnecessary administrative echelons of administration, and taken important steps to tap into the brainpower of its employees over the last couple of decades. The results have been excellent.

The lessons for the Army are clear, but they have not needed them. If anything they have become more authoritarian. This is ironic because, man for man, the Army's most successful soldiers are Special Forces – soldiers who are mission oriented to the point where rank, in the conventional Army sense, is decidedly secondary.

The Army's financial controls need to be totally overhauled to the point where financial control is a fact not a name. Congress cannot control the Army if they do not have accurate financial information.

Though these aspects have not been subjects in this report, it is also clear that the Army needs to be re-structured and their personnel system completely overhauled to yield unit cohesiveness.

The roles and missions of the Army and the Marine Corps needs to be re-examined to determine their most appropriate responsibilities.

Culture is so hard to change that one cannot look optimistically upon such success being possible in the Army, no matter how desirable.

Accordingly, based upon attitude, responsiveness and performance in combat, it is self evident that in an age of Global Expeditionary Warfare, there is now a substantial case for switching resources from the Army to the Marine Corps. They seem to be able to do more with less and do it faster – and they certainly do not have the same cultural and leadership problems as the Army. Further, they also have an expeditionary mindset so take naturally to global deployability.

In practice, they are utilized as fast-to-deploy combined arms forces which get to the battlefield in the most efficient and speediest way possible and can be trusted, to put it bluntly, to get a result (and not to mess up).

They are not as light as they appear (though not as heavy as one would like) because of their integrated air support

They are also better at force packaging than the Army and combine arms as their fundamental way of doing business – which the Army, which has never established good relations with the Air Force, does not.

This makes the Marines strategically more important than is generally realized and raises profound questions about whether they be better resourced and utilized more.

It will be argued that the Marines are not heavy enough to sustain the fight and have inadequate logistical support.

It is certainly true that the Marines have never been as comfortable with armor as they might be. However, that is easily remedied and the Marines utilized armor commendably in both Iraq conflicts.

As to the Marines' supposed logistical weaknesses, the fact is that they performed better in Iraq II than the Army.

The Marines are also accused of being unable to sustain a mission over time. Indeed, their preference is to get in and out but, as their performance in Vietnam showed, they have been effective over much longer periods when required to be so.

It is our recommendation that the roles and missions of the two services, together with the resources allocated to them, be re-examined.

The concept of survivability, in its broadest military sense, must be integrated into the system.

Survivability, in its broadest sense, means mission first, so casualties are in no way incompatible with a unit which places a high priority on survivability. It simply means that the basics are all in place and that unnecessary casualties are avoided.

The basics are whatever a unit going into combat should reasonably have. They include M113 upgrades, up-armoring kits, Interceptor body armor, the capability of off-road maneuver and so on.

Currently, the basics are not in place which is another way of saying that units, in many cases are not fully combat ready. In fact, 3rd ID invaded Iraq without the ammunition it had requested being made available.

That in turn raises the question of why the Army leadership allowed this to happen and why the Commanding General agreed to invade under these circumstances.

Survival basics include a general officer corps which knows it business, makes use of all relevant warfighting experience, and which cares passionately about the welfare of the troops while also making every effort to complete the mission.

Survival basics means that you want committed professionals as officers not sycophantic careerists focused on the next promotion.

Survival basics means that you want officers who lead from the front and share the same risks as the troops.

A greater understanding of the importance, implications, and requirements of US landpower must be developed if the Army is ever to become the instrument of policy we require.

Airpower is a wonderful thing, and US airpower is even more wonderful , as well as being absolutely vital for National Security, but we still have to face the awkward fact that we can bomb our enemies, with great precision these days, into the stone age without winning.

In earlier decades, before precision was invented, we used mass, but it still represented large quantities of explosives landing in anti-social fashion. Precision bombing is an important refinement but it is not a stand-alone solution.

Doubters should contemplate the track record. Consider WWII, Korea, Vietnam, Afghanistan, Desert Storm, and Iraq II. In every case, we have ended up having to put troops on the ground and, in every case, those troops have had to fight.

Airpower can set the conditions, and help during combat, but it cannot achieve an end state. Only landpower can achieve resolution – which is no reflection on airpower. It is merely a statement of reality and an acceptance of the fact that people live on the ground and have become adept at hiding on it or under it or otherwise using its features to deceive..

Then there is also the fact that airpower is not always there when you need it, vulnerable up to about 15,000 feet to hand held missiles, and potentially vulnerable to longer range missiles from our more sophisticated enemies. In short, it is brilliant, but it has its limitations.

Cost, distance and weather are but three of those limitations. Its vulnerability to deception, as was well demonstrated during the Serbian air campaign, is an important fourth.

What this means in practice is that US landpower has to be capable of the full spectrum of war, survivable without air support for limited periods, and also capable of the full spectrum of peace-making from combating insurgency to patrolling without serious threat in a peace-keeping situation. And it has to be able to do this globally without ever quite knowing how the situation will develop. Somalia, bear in mind, started as a humanitarian mission and ended in a bloodbath.

That means that at all times the US Army have to be prepared for war and to train and equip themselves accordingly.

That may seem self evident in the context of being an army – after all, what other purpose does such a force have? – but it has not been self evident to the US Army since the fall of the Soviet Union, or, arguably for some years before that (since few really believed that war with the Soviets was likely).

Enter an Army with a peacetime mindset who do not really believe they need to be ready for war but which is a wonderful career opportunity for those who think 'Honor, Duty, Country' is merely a slogan, and integrity a sign of naiveté.

Thus we have fighting units stripped of combat power, vast investments made in the entirely vulnerable HMMWV, combat equipment such as the M113 neglected, support troops left untrained, logistical support semi-ignored, the National Guard left inadequately equipped, combat specialist left in the reserves, no preparation made to deal with the RPG, a threat we have faced since Vietnam: and finally, the purchase of the wheeled Stryker, an armored car little more advanced than the M113 battle taxi that was introduced 40 years ago.

To add insult to injury, that peacetime mentality of the Army was left unchanged by 9/11, unchanged by Afghanistan, and continued even after preparations for the invasion of Iraq were well in hand.

It continues to this day.

This is a military culture in serious trouble.

Additional recommendations regarding matters relating to an Army at war.

- **The Army should buy no vehicles that do not enhance warfighting capabilities (Effective firepower, all terrain mobility, utility, soldier comfort, and survivability).**

- **The Army should minimize its use of HMMWVs, whether armored or otherwise, in combat zones.**

- **RPG and mine resistance should be the minimum standard for vehicles that might go to war.**

- **The Army should abandon its road-bound orientation and optimize the very considerable operational advantages of being all terrain (in most weather conditions) capable.**

- **Tracked vehicles should be re-established as the vehicles of choice and band tracks should be used where possible.**

- **Support vehicles should be armored, defensible, and off road capable where possible. Essential combat supply vehicles should be tracked.**

- **The Army Branch System, which creates artificial barriers between the warfighters, should be abolished.**

- **Armor and infantry integration should be made seamless.**

- **The Army should be re-structured along the lines described by Colonel Doug MacGregor in the book, 'Transformation Under Fire.'**

- **The Army personnel system should be re-structured along the lines described by Major Don Vandergriff.**

- **The M113 fleet should be upgraded with consideration being given to going straight to the lengthened MTVL.**

- **The Stryker buy should be frozen at the status quo.**

- **The circumstances surround the acquisition of the Stryker, including close relationships between both serving and retired Army generals and the manufacturers of the Stryker, should be investigated.**

- **The Stryker should be independently evaluated under a comprehensive range of combat relevant field conditions, including live fire testing against RPGs, against state of the art, fully up-armored, MTVLs. This evaluation should include air assaults, including combat landings, over tactically significant distances by C-130. It should pay particular attention to all terrain maneuverability under a wide cross section of conditions including snow, boggy ground etc.**

- **The Stryker Mobile Gun System should be cancelled and replaced by either the M8 Armored Gun system or the upgraded version of the M8, the Thunderbolt.**

- **The Army should move to hybrid electric engines without delay.**

- **The M1A1/2 Abrams should be re-engined with diesels. Its upgrade program should continue.**

- **The Bradley should be up-armored and its upgrade program should continue.**

- **The Army should cultivate a culture of innovation and experimentation and actively encourage and promote their independent thinkers.** ❖

Conflict of interest and its kissing cousin, corruption, permeate the Army acquisition process. Such issues are complex because Army officers are entitled to retirement jobs where they can put their expertise to good use – but we would argue that the existing system is being abused to the detriment of National Security.

It is also our finding that defense contractor cultures vary considerably. All are profit driven and commercially aggressive, as they should be – as they must be if they are to survive. More than a few care deeply about the work they do and the results of their ingenuity, advanced technology, and fine workmanship show up to the great advantage of our soldiers on the battlefield. In short, we need them. They are essential for National Security.

Unfortunately, the culture of some encourages behavior that has to be stopped.

19. Conclusion

The myths we live by in peacetime become dangerous self delusion during a time of war.

It is exceedingly difficult to face the truth, so an active, and very understandable, tendency in the human condition is to armor ourselves with myths, clichés, platitudes, slogans, and conventions – all hooked up to a certain complacency, a comfort zone, which may have little to do with the facts, but a great deal to do with emotional button pressing.

We have the finest Army in the world.

The Army have the best equipment in the world.

Further, in organizations like the Army, this tendency is exacerbated to the point where the truth is subordinated to the need of being accepted by the group. Most people want to be team players. The system rewards team players. Team players are expected to go along to get along, to play by the rules, *and never to challenge the status quo..*

Team players are promoted.

Innovators are squeezed out.

Our general officer corps consists of selfless, dedicated men whose only concern is to serve their country.

Spend time around the Army and you will hear such statements made again and again in speeches – normally at the price of interesting content (interesting is too close to provocative and Rule Number 1 is never to question the system).

Such self deceptive behavior may appear to protect us, at least in the short term, in the struggle of life, but it is better classified as dangerous self delusion during a time of war.

During wartime, we need to face reality.

And we are, quite undeniably, at war; and, as yet, absolutely not facing reality.

We have a fine Army for conventional war but it needs re-thinking for the challenges that face us now.

The evidence, only some of which is included in this report, is that we have a fine, albeit strategically inflexible, army in the context of traditional conventional war against an ill-prepared enemy, but which is wrongly structured, inadequately trained, and incorrectly equipped for the kind of complex, global, open-ended wars we are going to have to fight in the future – indeed, which we are fighting now.

There are major concerns about the General Officers Corps. The system is geared to the careerist.

Further, serious questions need to be asked about the caliber, competence and integrity of the Army leadership and, in particular, the general officer corps.

Their inadequacies during Iraqi Freedom were notable and their performance since the end of major combat has been less than stellar.

Then there is the issue of integrity.

Questioning the integrity of the general officer corps is considered to be akin to sacrilege by these people, but an examination of the retirement jobs of generals over the last two decades will reveal a pattern of blatant conflict of interest, which not only speaks for itself but which undercuts the very values the US Army is supposed to stand for.

To preach one set of values but practice another is, at best, to be hypocritical.

To be in a leadership position and do this, while befitting financially while in a conflict of interest situation, is morally corrupt even if not legally so – and it sets a dreadful example for the officers corps as a whole.

That, in turn, winnows out those with higher standards and encourages the remainder to be careerist.

And so the cycle continues with the standards at the top ratcheting inevitably downwards because the generals who practice this behavior tend to want conformists they are comfortable with, rather than real talent. Unfortunately, those people who are selected as being that non threatening type tend to be a little less bright than the principle; and so this cycle continues downward.

It is an observable pattern.

Fortunately, there are notable exceptions – the Army contains some terrific people - but whether enough of them survive the long hard climb up the promotional ladder while keeping their integrity is doubtful.

Simply put, the system is geared to the careerist.

Warfighting is not the primary concern of many in the general officer corps. Acquisition politics is; and it is corrupting.

Such a culture means that whatever the slogans, warfighting, the mission and the welfare of the soldiers are not the primary concerns of the generals - which leads, in turn, to the survivability issues covered in this document.

They are a symptom of the malaise that currently affects the general officer corps. They also demonstrate the extraordinarily corrupting influence of the current acquisition process.

War, and the ever growing costs of the military, are two fundamental reasons why immediate reform is an imperative.

Reform is essential for very practical reasons.

We are not going to come out of the current War On Terror very well unless we can re-organize the Army to make it more effective.

Certainly, we know that we can break things and kill people in a conventional conflict against a weak enemy, but our ability to cope with that other kind of war that follows major combat is definitely open to question.

Then there is the matter of how well we would do if faced with a more formidable enemy such as China, or even that undefined scenario rival, 'peer competitor. Here, there are many reasons to have cause for concern.

We also need to consider the crippling costs of throwing money at Army problems instead of fixing them.

Our citizens care about having a strong Army, but they have many personal priorities too – and the enormous and ever growing costs of the military are beginning to impact upon them.

The Army cannot reform itself.

Since generals run the Army, and since generals are no small part of the problem, it is clear that the Army is incapable of reforming itself.

That is not to say that all generals are resistant to change, or that many do not recognize the problems, but merely to state the simple truth that the track record of reformers, some very eminent generals, operating from inside the Army has been miserable.

The system intrinsically resists change because the status quo, albeit nothing to do with warfighting, is so comfortable.

It is good to be a general; perhaps, too good.

That leaves this Administration, operating through the good offices of the Secretary of Defense and Congress, with the aid of an informed American public, to do the job. The constraints on action have been described elsewhere. In the National Interest, they need to be overcome. They were before with Goldwater Nichols and the results of that legislation were extremely beneficial. There is precedent for external action.

An informed American public depends upon the media. Not enough are truly knowledgeable, but some of those who are, are exceptional. It is to be hoped that they will have the courage, and the editorial support, to deal with these thorny, but exceptionally important, issues.

They will save lives, and do this Nation a great service.

November 2003 comment of a senior, and very talented, US Army officer who had just returned from extensive tour in Iraq:

"Our generals (in Iraq) are just not competent. They're doing what they know, and all they know is the Fulda Gap."

Note. 'Fulda Gap' refers to the main mission of the US Army since the end of WWII – the defense of West Germany against a Soviet invasion. The Berlin Wall came down in 1989. The Soviet Union no longer exists.

End.

Appendix 1: To read or not to read *books*? That is *not* a question if you are an Army general officer. Mostly, they don't read *books*.

Worse still, reading books is seen by many as culturally offensive. Books contain ideas, possibly even new ideas, and they threaten the status quo. They can be a career breaker – a block to a further star and that second career.

The Army's self destructive bias against reading – and a Marine general's comments on its obvious advantages.

The Army's cultural anti-intellectual bias is so blatantly wrong, counter-productive and disturbing, and represents such a serious threat to the survivability of our soldiers and the wellbeing of the Army as a whole – let alone its missions - that we felt it deserved specific attention.

We were pondering how best to do this when the following extraordinary e-mail arrived (not from General Mattis, himself – but via the Internet grapevine).

For sheer, blunt, practical, commonsense, it is very hard to beat.

The Mattis e-mail, and its excellent introduction by 'Pat.' Who is 'Bear'? Sadly, we cannot help you.

This insightful message from Gen. Mattis, the MEF cdr in Iraq speaks volumes of the the real "revolution in military affairs" as it has affected the peculiar Marine Corps subculture. This "transformation" was really set in motion by a most unlikely personality; a tobacco chewing, hard assed mustang Commandant, Gen. Al Gray, who made the study of war in books even more important than jogging. In Mattis and Kelly you have the paradigms of our officer corps of the future who recognize their primary responsibility is not only to succeed in battle, but to cherish the lives of their Marines in the process. Pat.

Bear:

The problem with being too busy to read is that you learn by experience (or by your men's experience), i.e. the hard way. By reading, you learn through others' experiences, generally a better way to do business, especially in our line of work where the consequences of incompetence are so final for young men. Thanks to my reading, I have never been caught flat-footed by any situation, never at a loss for how any problem has been addressed (successfully or unsuccessfully) before. It doesn't give me all the answers, but it lights what is often a dark path ahead.

MajGen Mattis's e-mail continues:

With TF 58, I had w/ me Slim's book, books about the Russian and British experiences in AFG, and a couple others.

Going into Iraq, "The Siege" (about the Brits' defeat at Al Kut in WW I) was req'd reading for field grade officers. I also had Slim's book; reviewed T.E. Lawrence's "Seven Pillars of Wisdom"; a good book about the life of Gertrude Bell (the Brit archaelogist who virtually founded the modern Iraq state in the aftermath of WW I and the fall of the Ottoman empire); and "From Beirut to Jerusalem". I also went deeply into Liddel Hart's book on Sherman, and Fuller's book on Alexander the Great got a lot of my attention.

Ultimately, a real understanding of history means that we face NOTHING new under the sun. For all the "4th Generation of War" intellectuals running around today saying that the nature of war has fundamentally changed, the tactics are wholly new, etc, I must respectfully say... "Not really."

Alex the Great would not be in the least bit perplexed by the enemy that we face right now in Iraq, and our leaders going into this fight do their troops a disservice by not studying (studying, vice just reading) the men who have gone before us.

We have been fighting on this planet for 5000 years and we should take advantage of their experience. "Winging it" and filling body bags as we sort out what works reminds us of the moral dictates and the cost of incompetence in our profession. As commanders and staff officers, we are coaches and sentries for our units: how can we coach anything if we don't know a hell of a lot m! ore than just the TTPs?

What happens when you're on a dynamic battlefield and things are changing faster than higher HQ can stay abreast?

Do you not adapt because you cannot conceptualize faster than the enemy's adaptation? (Darwin has a pretty good theory about the outcome for those who cannot adapt to changing circumstance -- in the information age, things can change rather abruptly and at warp speed, especially the moral high ground which our regimented thinkers cede far too quickly in our recent fights.)

And how can you be a sentinel and not have your unit caught flat-footed if you don't know what the warning signs are -- that your unit's preps are not sufficient for the specifics of a tasking that you have not anticipated?

Perhaps if you are in support functions waiting on the warfighters to spell out the specifics of what you are to do, you can avoid the consequences of not reading. Those who must adapt to overcoming an independent enemy's will are not allowed that luxury.

This is not new to the USMC approach to warfighting -- Going into Kuwait 12 years ago, I read (and reread) Rommel's Papers (remember "Kampstaffel"?), Montgomery's book ("Eyes Officers"...), "Grant Takes Command" (need for commanders to get along, "commanders' relationships" being more important than "command relationships"), and some others.

As a result, the enemy has paid when I had the opportunity to go against them, and I believe that many of my young guys lived because I didn't waste their lives because I didn't have the vision in my mind of how to destroy the enemy at least cost to our guys and to the innocents on the battlefields.

Semper Fi,
Mattis ❖

Appendix 2: Actually, a few – a very few – Army general officers do read.

In fact, there has been some truly remarkable writing about the current problems of the Army – and much of it has from within the Army though rarely from officers above the rank of colonel (that is a *very* important distinction).

Further, much of this has come not from military academics but from soldiers with extensive direct fire combat experience. Most have written books – the professional magazines are depressingly conformist – although some have spanned the media.

These people know what they are talking about. They have killed and seen their own men killed, maimed and injured. They know the reality of war. They know that change is essential. It has made scant difference.

The Army's leadership's willingness to read seems to stop at consensus driven, aide filtered and prepared, politically correct, PowerPoint. They also appear to have a reflex antipathy towards talented, more junior, officers – still men of decades of experience - who dare question their perfection and/or the status quo.

The reaction of Army general officers and their aides (who hope to be generals too) is rarely based upon the facts of the issue because the evidence shows that they rarely understand the facts of the issue (There is a recurrent intellectual problem here). Instead, the first, second, and third reactions are to denigrate the officer concerned, eviscerate his career, and then force him out of the Army.

Such behavior has served the generals well. It has been disastrous for the Army.

A perfect example of data-less prejudice – or how thinkers are pilloried. Just one case out of many: Col. Douglas Macgregor.

Agents of change are rarely popular, and Macgregor's ideas have elicited enormous resistance from Army officials -- both active and retired -- who believe the service's structure is sound and should not be fundamentally altered on the basis of periodic calls for change.

But the colonel's outspoken demeanor is also an unmistakable factor in a lingering aversion to his ideas, which made him particularly unpopular with Shinseki and his lieutenants.

One Army officer called him a "puke colonel" and said many are offended by his "arrogance."

Continued from previous page.

"Transformation Under Fire" has riled some service officials with its view that the Army culture has come to reward sycophants and punish bold leaders.

"I wouldn't say [Macgregor's work is] any less valuable or any more valuable than the work that some other people have done," said another officer last week.

But Macgregor's ideas are strikingly in tune with several objectives Schoomaker has laid out since becoming chief, including the central notion that people are more important than hardware or doctrine.

Service officials insist TRADOC is now giving Macgregor's force concepts a fair assessment and running them through combat models -- though defense experts warn computer simulations are a poor substitute for real-life operational experience and may underrate the value of standing readiness and force synergies.

Schoomaker has given TRADOC "guidance to embrace Doug Macgregor," said another Army officer last month. "There may have been sensitivities under the former chief, but not the new chief."

Still, the assessment isn't over until the "graybeards" have weighed in, and a great many retired Army generals are notoriously averse to sweeping change. Inertia within the active-duty component is almost a given, as well, typical of any mammoth bureaucracy.

"There's some old school people who think if it ain't broken, don't fix it," said one Army officer. "We hang the pendulum in the middle and see how it works out."

Elaine M. Grossman

Inside The Pentagon, December 11, 2003

A limited reading list.

It is a truism of the consulting business that the solutions to most (business) problems can normally be found from within the ranks of the businesses or organizations concerned.

It is equally true that some endemic cultural flaw, or personnel issue (jealousy would be a leading contender), is normally what prevents such solutions being implemented.

The Army, in the main, conforms to these findings and has the answers but is incapable of implementing them because of its repressive general officer culture.

The books listed explain most of the main problems and their solutions in highly readable detail.

What is missing is the implementation process. The Army's response to constructive criticism is, sadly and typically, to do nothing.

It has been a real tragedy that such magnificent, perceptive, informed thinking and writing by the courageous Army officers concerned has, in almost every case, led to the truncation of their careers.

This is bad for the Army, worse for the Nation, and is morally wrong. The Army leadership should be bitterly ashamed for its malevolent subjugation of its talented thinkers and writers over many, many, years.

The Secretary of Defense should be equally ashamed for not remedying this continuing injustice. He has the power and he should set the tone and promote, and otherwise reward, such Renaissance warriors.

The generals may not need them. The Nation does.

Spirit Blood And Treasure
A Collection of Essays on The American Cost of Battle in the 21st Century edited by DON VANDERGRIFF
Published by PRESIDIO 2001

This book contains a series of quite excellent essays including John Tillson's notable work on the Army Personnel System. John Tillson, by the way, earned two Silver Stars ands two Purple Hearts for his service in Vietnam and retired a Lieutenant Colonel.

The other authors are equally notable in their different ways.

Lieutenant Colonel Greg Wilcox USA Ret., for instance, served no less than three tours in Vietnam and was the AirLand Battle Future study leader in 1980-82 and introduced the concept to NATO.

Jonathan Shay, author of *Achilles in Vietnam: Combat Trauma and the Undoing of Character* has also done outstanding work on stressing the importance of unit cohesion.

Chuck Spinney, arguably the inheritor of the John Boyd mantle, whose consistent examination of defense issues is probably unsurpassed, writes about that still unresolved area, Close Air Support.

He then adds a second essay on *Exiting the Defense Death Spiral.*

Retired Air Force Colonel Chet Richards, also a close associate of John Boyd, writes a trenchant essay on *Reforming the Marketplace: The Industrial Component of National Defense.*

His opening quote, attributed to Colonel John Warden, is telling. "If we were designing the F-22 today, there's no way it would look the way it does – we know so much more about electronics and stealth aerodynamics now."

That directly supports the notion that the Army needs to develop faster, field small quantities faster, experiment in the field more, and focus more on evolution that mass based revolution.

All in all it is an impressive, albeit sobering, list of papers.

Colonel John Rosenberger. 'No good deed goes unpunished.'

Colonel Rosenberger, a combat veteran from Desert Storm in 1991 – where he served as the G-3 in the 3rd Infantry Division - has not, as far as we know, written a book. Nonetheless he belongs in this courageous group because his experiences constitute yet another example of what happens to officers who try and shake up the status quo in any way.

His crime in the eyes of the Army's establishment - others would call it an act of moral courage - was to write a really masterful paper on his findings as commander of the 11th Armored Cavalry Regiment, probably the most highly trained armored unit in the US Army, who make up OPFOR (the enemy) at the Army's National training Center in the Mojave Desert.

In it he pointed out, amongst other things, how easily a high technology Army could be defeated, or at least badly hurt, by an astute enemy using readily available materials linked with clever tactics, techniques, and procedures.

His comments were not academic. They derived from his very real experiences fighting – albeit with lasers rather than live ammunition - brigade after brigade of US Army troops in the Mojave. He and his unit soon learned that even the most advanced technology units, such as the digitized 4th Infantry Division, could be fooled.

His paper was a heads up that too much reliance on technology was not an adequate answer and it was omniscient in relation to subsequent developments in Iraq. It also gave a warning that the readiness of our troops was declining.

Subsequently, he was asked to give testimony to the House Armed Service Committee and the following is a summarized extract from the hearings at that time. His evidence is both compelling and damning because as commander of OPFOR, he was uniquely positioned to see how a substantial cross section of the Army fought in practice.

Extracted from testimony of Colonel John Rosenberger to the House Armed Services Committee in 2000.

- The performance and combat readiness of brigade combat teams … had substantially declined during the previous 5 years.
- Commanders, staffs, and soldiers at every level – platoon to brigade – displayed a decreasing level of knowledge, skill, and the ability to plan, prepare, conduct, and sustain combat operations.
- There had been a steep decline in the ability of battalions and brigades to defeat the enemy.
- Commanders and staffs, for the most part, were not adequately trained.
- Battalion and brigade commanders displayed a declining level of tactical competence , battlefield intuition, and mastery of the science and art of warfighting.

One might well ask what happened to Colonel Rosenberger for highlighting such important defects in the Army.

Normally, command of 11 ACR is an automatic ticket to a general's star. Colonel Rosenberger was passed over for promotion and, although still a serving officer, remains a colonel.

Transformation Under Fire:
Revolutionizing How America Fights
DOUGLAS A. MACGREGOR, Author
Published by Praeger 2003

This remarkable, intelligent, and compelling book is a must read for anyone remotely interested in the US Army. It covers, sometimes with some humor, and always with perception, where the Army is, where it needs to go, why it needs to go there, and how to get there – and its chapter on 'Leadership and Change in a Cultural Revolution' is worth the price in itself.

And how can you resist a book with a chapter headed, 'Why The Hell Do We Still Have Troops In Iceland?'

In short, it outlines the challenges and the solutions (the latter in sufficient practical detail to be implemented).

This is not a theoretical book. It is a call for action, indeed, a virtual manual for change *providing one has the intellect to understand the concepts.*

It would appear that is a significant qualification.

Note. The Army's creed is that it does not have problems, only challenges – even if they look to most reasonable people remarkably like problems.

Colonel Doug Macgregor is already well known for his previous best selling seminal book, 'Breaking the Phalanx,' published in 1997.

What is less well known is that he was decorated for his command and active combat involvement in the Battle of 73 Easting, in the 1991 Gulf War, and also carried out one of the most successful rotations ever in the history of the National Training Center (Rand Corporation). He may be a thinking soldier, but he is also a practical, combat seasoned, blooded, warrior.

An Army general officer in the Pentagon recently described him as a 'puke colonel.' Such are the rewards in the US Army for courage under fire, academic excellence, innovative thinking and writing, superb leadership and communication skills, and three decades of exemplary Army service.

In fact, Colonel Macgregor has excelled in two wars. He was General Wesley Clark's highly regarded Director of Joint Operations at SHAPE during the Kosovo crisis.

'Breaking the Phalanx' was initially widely praised by the Army leadership and statements were made that it would become policy.

After the new Chief of Staff of the Army, General Shinseki, took over in mid 1999, and espoused his own vision, Colonel Macgregor became persona non-grata within the US Army's leadership although his thinking has proved to be highly influential internationally, and he has established a substantial grass roots following in the US Army's officer corps.

'Transforming Under Fire,' published in September 2003, is, by common consent, an even better book and the sheer logic of his arguments, one again, is pointing the way towards the future.

How the new Chief of Staff of the Army responds has yet to be seen, but the Army's obsessive institutional dislike for original thinking is already manifest and quite vicious. Further, it continued to be far from clear that the Army leadership understands what he is saying. Although his concepts are profound, albeit fundamentally simple, and are well explained, they demand a conceptual leap which – it is truly frightening to report – may well be beyond the intellectual grasp of those currently in command.

That is neither a jibe nor a joke but a simple statement of the unpalatable reality.

The Army does not have good people at the top right now.

Colonel Macgregor remains a serving officer, but he has been denied command, blocked from the Office of the Secretary of Defense (as being too controversial) and has been sidelined to the National Defense University.

His first book, Breaking the Phalanx, although a best seller in its class, and still highly successful, was never distributed on post through the army's bookselling system. Officers who wanted to buy the book had to source it through commercial channels and pay a higher price.

The pettiness and vindictiveness of the Army leadership over such matters does nor reflect well on that great institution.

The Path To Victory
America's Army and the Revolution in human Affairs
DONALD VANDERGRIFF, Author
Published by Presidio 2002

Major Don Vandergriff, also still a serving officer, has done a quite astonishingly good job in explaining the background to the US Army's quite awful personnel system and in presenting coherent arguments for change.

Although his subject may seem to be arcane, he communicates clearly and simply the eternal truth that 'Machines don't fight wars. People do – and they use their minds' (John Boyd).

He also explains how the Army's self destructive Personnel System came into being, and he gives insight into the politics of why the administrators have proved so reluctant to change it despite a long available and ever increasing mass of evidence that it has been the equivalent of a death sentence for all too many soldiers.

He points out the numerous disadvantages of the Army's Individual Replacement System, where individuals are rotated out of synch with the unit and points out that units, where personnel have not truly got to know each other, have a proven track record of being less effective in combat and of getting soldiers killed.

His work has achieved, or has appeared to achieve, a substantial degree of resonance with the Army leadership, but it is noticeable that although some lip survive is now being paid towards reform of the Individual Replacement Systems, officers continue to be rotated independently – as if their continued presence is not integral to reform of the personnel system. Or that officers are not necessary - an attitude which, in itself, speaks volumes.

It will be noted that the officers' promotional system is what underpins the general officer corps.

Although Major Vandergriff 's work in no less than two books has already had a demonstrable impact upon the Army, and has been widely praised, it is noticeable that he has been passed over for promotion despite his considerable success as a trainer and leader in other areas.

To display such talent and to be so rejected sends a clear message to other serving officers that to appear to rise above one's peers in any way is to terminate one's career.

The Army leadership's actions and the track record once again would appear to confirm the view that mediocrity – and being a general's aide - is the surest path to promotion.

Phantom Soldier
The Enemy's Answer to US Firepower
H. JOHN POOLE, Author
Posterity Press

'Gunny' Poole was an Army colonel who, forced to retire, then re-enlisted in the Marine Corps and became a gunnery sergeant. Now retired again, he demonstrates that he is no ordinary man. However, his retired status means that he is beholden to no one so cannot have his career wrecked like Colonel Macgregor and Major Vandergriff.

Suffice to say that he knows more about war than most soldiers – and most generals - and that it shows in this chilling book.

The book is terrifying because it shows, in clear detail, that if we have to fight a peer competitor again – and in particular an oriental enemy – we could be in serious trouble because we still don't use our brains to fight and depend far too much on massive firepower – which can be, and has been, countered.

Gunny Poole gives full praise to the courage of our troops but also explains we would not be much better prepared today to take Iwo Jima than were in WW II.

He points out that we were fought to a draw in Korea, lost in Vietnam and still have not adequately absorbed the lessons of these conflicts. He argues, in a nutshell, that our troops are inadequately trained and certainly are not adequately encouraged to use their brains to best advantage.

He is skeptical of our ever increasing emphasis on technology ahead of the human dimension – though he is not against technology - and he makes a persuasive case which contrasts all too well with the cultural complacency of the Army leadership who prefer to act as if Vietnam never happened (and, therefore can teach us nothing).

Gunny Poole makes it painfully clear that Vietnam did happen, that we were outfought, and that something like it could happen again despite all our firepower.

His book supports the underlying thesis of this report that if an inadequate enemy like Iraq can give us so much trouble, we would be well advised to take a close, and intellectually honest, look at the current way the US Army is led and does business. ❖

The Army and Vietnam
DR. ANDREW F. KREPINEVICH

Dr. Krepinevich is living proof that there really is a life after the Army if you are talented enough. He has thrived since he has left the force and is currently Executive Director of the Center for Strategic and Budgetary Assessments, an independent defense think tank; and he is also a member of the Department of Defense's National Defense Panel.

He retired as a lieutenant colonel after a twenty-one career but it is the view of many that the Army would have been wiser to keep him in and promote him further despite his rash act of writing an insightful book about Vietnam.

This writer can confirm from personal knowledge that it is, by the way, an excellent book.

The lessons of his Vietnam book could be applied today.

Here is an extract – see box – from what one web review says.

Dr. Krepinevich's book raises the question: Have Army generals become any more open minded since Vietnam? One cannot feel reassured by the evidence.

"Krepinevich documents the deep and growing division between the American military and civilian leaders over the very nature of the war being fought. More troubling is the division within the US Army itself. Through extensive research in recently declassified material and interviews with officers and men with battlefield experience, he shows that those engaged in the actual combat understood early on that they were involved in a different kind of conflict. Their reports and urgings were discounted by the generals who pressed on with a mid-intensity war that brought devastation but little success."

The above list scarcely scratches the surface. Further recommendations and details will be posted over time to the Cochrane Institute web site at www.cochraneinstitute.com

The name of Mark Lewis, in particular is worth noting. A former Ranger with eleven years experience in the Army, he left because he felt he could achieve more if working outside.

Currently he works for IDA, the Institute for Defense Analysis, so his extensive and impressive body of work work tends to appear mainly in the form of IDA reports. ❖

Appendix 3: We've talked about intelligence (and the lack of it).

Now, so do the Army and Marines. It is not a pretty picture.

U.S. Intelligence In Iraq Comes Under Fire From Army, Marines

By Greg Jaffe and Christopher Cooper, Staff Reporters Of The Wall Street Journal, December 8 2003

"The division found the enemy by running into them, much as forces have done since the beginning of time," the Marine Corps report says. OUCH! So much for perfect situational awareness.

- Reports by the Army and Marine Corps offering harsh assessments of the military's intelligence capabilities during the war with Iraq are driving demand inside the military to add more intelligence specialists and more unmanned surveillance planes to the force.

- A report by the Army's Third Infantry Division said there was a "mistaken perception" that Iraqi regular Army divisions would surrender en masse to U.S. forces. "A catch phrase was even coined, which reflected this optimistic view: 'movement to parade,' " the report states. Instead, some Iraqis stood and fought, while the vast majority of them melted away into the population and are believed in some cases to be feeding the guerrilla insurgency.

- A report by the First Marine Division complained that human intelligence was thin and overstretched and that unmanned aerial surveillance planes, which could have helped locate the enemy, were in too-heavy demand.

- "The division found the enemy by running into them, much as forces have done since the beginning of time," the Marine Corps report says.

- The Marine Corps report said a "Byzantine" intelligence-collections process meant that the division had to rely almost completely on its own devices in collecting battlefield intelligence.

- As for reconstruction of Iraq, both the Army and Marine Corps reports said an absence of planning and a lack of civil-affairs troops to assess hospitals, roads and other infrastructure hindered efforts. ❖

Appendix 4: A preventable Bradley death and the first three Stryker deaths.

As this document was being finalized, an RPG killed the driver of a Bradley Infantry Fighting Vehicle. The RPG punched straight through the glacis (sloped front) because the Bradley had not been equipped with the Explosive Reactive Armor – illustrated above – or passive anti-RPG armor that would have defeated this munition. Yet, both types of armor are available and RPG protection has long been a known, essential, requirement.

Why was the Bradley not so equipped?

Because Army funds were diverted to pay for vehicles like the disastrous wheeled Stryker and inadequately considered concepts such as the FCS. The Fighting Army was neglected and paid, and continues to pay, the price.
We opened this report with an example of a preventable death. Sadly, we are closing with others.

Three Stryker deaths and the long known, potentially fatal, issues of instability, excessive vehicle weight, excessive ground pressure, and poor performance on unpaved surfaces – all compounded by the massive increase in weight caused by SLAT armor.

The background. The dangers were predicted.

For some time informed observers have been aware that the Stryker has had a stability problem (although the Army have done their very best to conceal the fact). In much the same way as an innately top heavy SUV is more likely to roll over than a low slung automobile, the top heavy, overweight, wheeled Stryker will roll over *much sooner* than a tracked vehicle of similar weight. Tracks are lower to the ground and – most important – can spreads their weight.

The Stryker's center of gravity was arguably fine when it was an armored car weighing 28,000lbs driving on good surfaces.

Ceramic armor was then added which brought the weight up to 38,000lbs. SLAT armor added a further 5,200lbs to the top making 43,200 lbs. Add fuel, water, ammunition, weapons, food, personnel possessions and personnel and you are probably up to around 47,000lbs. And most of this weight is in the upper half of the vehicle.

This makes the center of gravity problem vastly worse.

You are then faced with the fact that your tire pressure has to be increased to handle all that extra weight. Extra tire pressure means less tire surface area in contact with the ground so more weight concentrated on a single spot.

Poor surfaces, even if paved, give way, and the overweight vehicle sinks, normally unevenly, into the ground.

The Stryker is now out of balance, especially if going at speed and wobbling and is all too likely to roll over.

A report from just one – out of many - concerned correspondents on the Stryker's (much scripted) performance at the Joint Readiness Training Center in mid 2003.

Remember reports from scouts in Fort Polk training reporting that when they parked the vehicle on shoulders of the road, and came back from scouting, they found *the vehicle sunk up to its axles* or deep enough that the onboard winch could not recover the vehicle. This was an early warning of what happened in Iraq.

There were also numerous rollovers at the National Training Center in the Mojave – and all of this was before the SLAT armor was added.

The Stryker as it looks now – in its even more top heavy form – in Iraq.

If this Stryker looks crude and top heavy, it is even though the average cost is now in excess of $3 million – and climbing. Realize also that is now TWELVE FEET wide and, overall, albeit much wider, about the size of a school bus. And this is a vehicle meant to be optimized for the narrow lanes of urban combat. Imagine speed and darkness and wheels digging unevenly into soft ground and the rest is, sadly all too predictable.
Note also that the weapon cannot be depressed to deal with close in attackers

How three Stryker soldiers died.
Note. The precise reasons in this case, of course, are as yet unknown but we cannot but continue to be concerned about the survivability of the vehicle.

News Tribune by Mike Gilbert

NEAR DULUIYAH, Iraq
- Three Stryker brigade soldiers from Fort Lewis were killed Monday evening when two Stryker vehicles plunged from a collapsed embankment and landed upside down in an irrigation canal northeast of the Iraqi town of Duluiyah. The accident occurred about 5:30 p.m. (6:30 a.m. Monday PST) as infantrymen were beginning nighttime patrols in the area. A fourth soldier was revived after he was pulled from one of the vehicles.

End of yet another Stryker to enemy action.

Apart from the stability issue and the many other weaknesses which we have emphasized, we have long been concerned about the Stryker's ability to withstand mines and Improvised Explosive Devices. In particular, we believe that the armor under the vehicle is not adequate.

Although great progress has been made in producing mine resistant vehicles, it seemed to us that little of this technology had been incorporated in the Stryker despite its average cost (close to that of a much more heavily armed and armored tank) of in excess of $3 million per vehicle.

We were particularly concerned about the tendency of the tires to burn, a well known weakness of such vehicles which is disastrous under enemy fire because you are left with a choice of being, in effect, cooked, the ammunition contained within the vehicle being ignited, or exiting into the guns of an expectant hostile force.

Unlike the M1A1/2 Abrams tank, which has proved the value of this life saving feature in combat, the Stryker does not have an ammunition store which vents outwards and away from the crew. Why not? We come back to the point that, regardless of the hype, this is not a sophisticated vehicle.

On December 13 2003, the following story appeared. This is an extract. Unfortunately, it supports our concerns.

Stryker Vehicle Destroyed
komo news | 13 December 2003 | KOMO Staff

TIKRIT, IRAQ - A roadside bomb destroyed a Stryker vehicle with the Fort Lewis Stryker Brigade.

A scout platoon on a reconnaissance mission south of Tikrit ran over what the military calls an improvised explosive device.

The soldiers inside got out safely but the 19 ton vehicle caught fire and burned out of control. The vehicle burned for several hours as the soldiers set up a perimeter to ward off any further attacks. There were none.

"There was a small explosion, and the engine caught fire. The soldiers inside got out and tried to put the fire out but it got out of control and started setting off the ammunition," said ABC news producer in Iraq, Mike Gudgell.

One soldier in the vehicle was slightly injured, he suffered a small hairline fracture in his leg.

This Stryker, being a scout vehicle, had a crew of only 4. The consequences, if it had been a conventional infantry carrier with a crew of 11 could have been a great deal more serious.

Precisely how one scouts – and survives - in a vehicle the size of a school bus is a good question.

We are not giving survivability the attention it deserves. ❖ **End.**