

LAND WARRIOR: DOMINATING DISMOUNTED OPERATIONS

LIEUTENANT COLONEL W. W. PRIOR

One of the U.S. Army's mission essential tasks is to dominate land operations. Through its combat forces, it is ultimately the Army's ability to close with and destroy the enemy that allows it to dominate in decisive full spectrum operations. Such dominance springs from formations that are well trained, well equipped, well led and superbly fit. While most would agree that American combat Soldiers and units are the best we have ever fielded and the best in the world, the qualities mentioned above are necessary but not sufficient to dictate the terms and outcome of the close fight. The final requirement is information superiority.

The U.S. Army has long sought and normally achieved information superiority with the aide of technologically advanced command and control and intelligence, surveillance, and reconnaissance systems. However, these advanced systems and the advantages they offer have always been

confined to command posts and, more recently, mounted platforms with the advent of Force XXI Battle Command Brigade and Below (FBCB2). The immediate benefits of these systems ended when leaders inevitably left their headquarters or dismounted their vehicles to be forward with their Soldiers at the decisive point on the battlefield. Army leaders have never possessed a distinct advantage in information that would help them to dominate the close, dismounted fight — until now.

Land Warrior is an integrated, Soldier-worn fighting system designed to improve mobility, survivability, and lethality.

Most importantly, it provides the user with critical combat information in dismounted combat. The infantry battalion that I command has used Land Warrior fighting in Iraq for the last 10 months in every mission, every time that we go outside the wire. The accurate, timely information that we receive from Land Warrior enables my leaders and I to make better battlefield decisions and act faster than our adversaries — the essence of information superiority. Land Warrior helps us to dominate the dismounted fight in ways that we have never been able to do before.

The 4th Battalion, 9th Infantry Regiment is a Stryker infantry battalion subordinate to the 4th Brigade, 2nd Infantry Division

(SBCT) from Fort Lewis, Washington. In May of 2006, the Manchu battalion was the first unit in the Army to field Land Warrior in a configuration known as Land Warrior – Stryker Interoperable (more on that subtle distinction later). For nearly a year, team leaders and above trained with the system including execution of assessments and a limited user test along with all the individual and collective training that U.S. infantry battalions conduct to prepare for combat. In October of 2006, I decided that we would take Land Warrior to war because I believed that it would increase the combat capabilities of my formation. In April 2007 we deployed to Iraq and have been employing Land Warrior with great effect in combat every day since.

In this article, I will explain what Land Warrior is and what it does. Along the way, I will present examples showing how the Manchu battalion uses the system to establish information superiority and dominate the dismounted fight in Iraq. Finally, I will propose a way ahead for Land Warrior as a component of the future dismounted force's kit.

SSG Daniel Garza of HHC, 4-9 Infantry and a member of his squad secure the site of a recent IED find.

SSG Russell Bassett

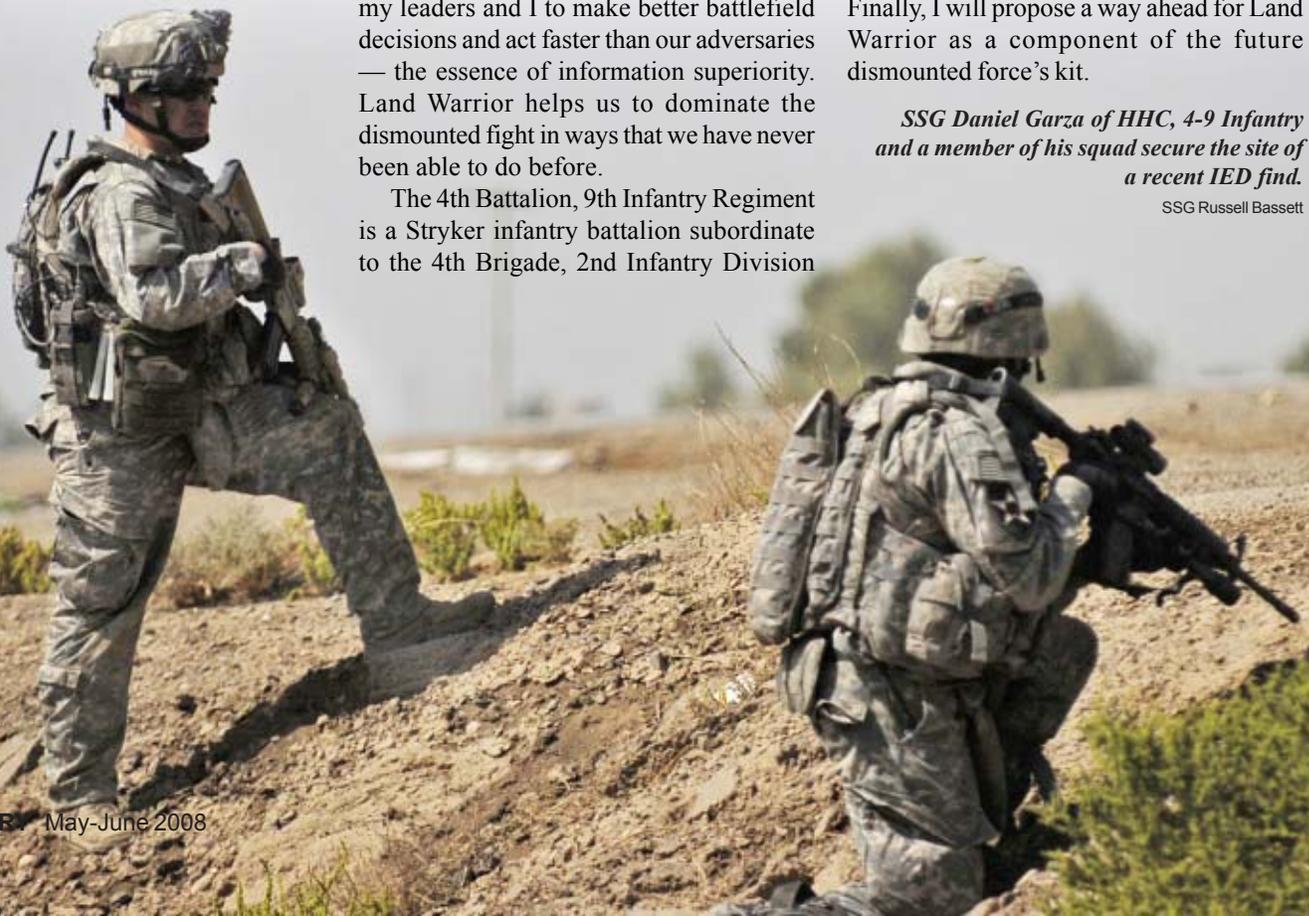




Figure 1 — Land Warrior - Stryker Interoperable

Land Warrior is, to use a favorite Army term, a system of systems. Each part of Land Warrior is designed to improve the Soldier's performance in dismounted combat while remaining an integrated component of the overall system. In other words, there are no "stand alone" parts of Land Warrior. The main components are a computer, navigation module, radio, helmet module with a display and headset and weapon module (see Figure 1). All components are connected by cables woven through the Soldier's body armor and powered by rechargeable batteries. Our version of Land Warrior is known as Stryker Interoperable because it is complementary to our vehicles. In specific, our Strykers have a kit with battery charge and storage capability and a radio gateway that permits exchange of the common operating picture and messaging between our mounted FBCB2 and the dismounted Land Warrior as well as voice communications between the respective radios.

As with most military equipment, what it does is much more important than what it is. Land Warrior provides the Manchu battalion with four distinct advantages in combat that we would not otherwise have. These advantages include dismounted situational awareness through the shared common operating picture, readily available and configurable maps and imagery, overlaid graphics with the capability to update on the move, and configurable voice and text communications.

Global Positioning System navigation tools and shared situational awareness are invaluable in the dismounted fight. Land Warrior-equipped Soldiers know where they are and where their teammates are in the dark the first time that they set foot on the terrain. No longer is there confusion on whether we are in front of building 43 or 47 or if the support-by-fire position is set. Manchu leaders look in their helmet-mounted display and see themselves and their men relative to the terrain and graphics without radio

chatter and without hesitation. When posted by any user, Land Warrior leaders see enemy and environmental icons such as obstacles, suspected enemy positions, or IEDs. Furthermore, that information is automatically shared between the Land Warriors and the Strykers so that each knows where the other is and what the other knows. Land Warrior is a leap ahead in solving the age-old problem of "touch" between men and small units in the close fight. (This problem was discussed in the article "Infantry and National Priorities" by MG (Retired) Robert H. Scales in the December 2007 *Armed Forces Journal*.) With Land Warrior, Soldiers are not alone even if they do not have voice or visual contact with other Land Warriors.

Complementary to the shared situational awareness is our capability to configure and Land Warrior's capacity to carry large geo-referenced maps and imagery files. We are able to tailor those files to suit our needs. In the approach march, we may only need a 1:25 map, but the area within five kilometers of the target village may require five meter imagery. In the vicinity of the objective, we want one meter

imagery for maximum clarity and detail. Since the Land Warrior view is infinitely scalable, the Land Warrior leader can zoom out to see where the adjacent platoon is then zoom in when on the target to easily distinguish first and second squad's positions in the cordon while third squad takes down the target house and weapons squad covers routes to the flank. The possibilities are limitless and this scenario is not from some future capabilities document — it is what we do today with Land Warrior.

Graphics are one of the commander's most powerful command and control tools. With Land Warrior, the commander draws his graphics on the digital map and distributes them electronically to his subordinates. There is no manual copying with accompanying errors. And, since the graphics are geo-referenced, they scale perfectly when the Soldier zooms in to imagery. A platoon leader no longer needs to tell the company commander that he has crossed a phase line. The commander can watch him do it even though he is with another platoon.

Most useful is the ability to update and change those graphics on the move. Not surprisingly, execution often differs from plan and leaders must issue fragmentary orders now as they have always done. The ability to instantly and painlessly send simple graphics with those orders over the digital network makes the unit much more flexible and adaptable in contact when the situation changes. We most often do so by posting generic colored symbols to the Land Warrior map that we affectionately call "digital chemlights." If the target house changes during infiltration, a red chemlight on the new house indicates its position to all. If the helicopter landing zone for extraction changes while on the objective, the platoon leader can place a blue chemlight on the new location and drop five or six yellow chemlights on the map to designate the route. His squad leaders see for themselves where they are going and how

the platoon leader plans to get there. Our Soldiers are limited only by their own imagination in the use of this superb tool. For instance, our SOP to mark a cleared building is a green chemlight (the physical variety) at the entry point. Manchus quickly realized that a green digital chemlight could mean exactly the same thing. Now leaders post a digital green chemlight when they clear a building and, with Land Warrior, not only can others watch them move from building to building, but all know with certainty which have been cleared and which have not.

Finally, Land Warrior provides Manchu leaders with voice communications and tactical text messaging (e-mail) over the network. Each Land Warrior system has two voice nets with which leaders can choose to talk to peers, superiors, subordinates, or Strykers. These voice transmissions are very limited in range as compared to our normal suite of FM radios, so they do not replace but augment them. Land Warrior radios do, however, provide a functional, redundant means of communications on the battlefield. Text messaging is another useful feature, although we employ it sparingly. The virtual keyboard is slow and awkward, but there have been a few occasions where dismounted Manchu leaders could see each other's icons but communicate in no other way and used text messaging to establish or reestablish contact.

The combination of situational awareness, imagery, dynamic graphics and communications at our fingertips is an incredible advantage to Manchu leaders on the streets and in the palm groves of Iraq. Land Warrior gives us the tools to make better, faster, more informed decisions and communicate those decisions to subordinates — it helps us achieve information superiority. Furthermore, since subordinate leaders have access to the same information as commanders, they are better able to exercise disciplined initiative to seize or create an opportunity. These advantages allow us to establish a tempo during dismounted operations that the enemy cannot hope to match. Land Warrior makes 4-9 Infantry a more capable and lethal organization.

In the present era of persistent, asymmetric conflict, the importance of U.S. dismounted military capability — the infantry function — has reached the point of dominance. Land Warrior is one tool that

can and does change the terms of dismounted combat giving U.S. infantry a decided edge. Naturally, then, I propose that the U.S. Army and Marine Corps continue to field Land Warrior and that we continue to seek improvements to the system.

Like any other piece of Soldier gear, Land Warrior can get better. Any addition to the infantry Soldier's load comes at a price, and the price for Land Warrior is steep. At about 12 pounds in its current configuration, the first and foremost improvement to Land Warrior must be to decrease its weight. Infantrymen in Iraq carry all of the things that infantrymen have carried for many years including ammunition, water, helmets, etc... Relatively new to U.S. forces, modern body armor has dramatically increased Soldier load and Land Warrior ups the ante further. As a personal example, I weigh about 185 pounds in my shorts but tip the scales at about 265 pounds in full kit. And, as a battalion commander, I never carry a sledge hammer, a shotgun, or an FM radio. I have no doubt that some of my Soldiers carry fighting loads close to 100 pounds at times. Like body armor, Land Warrior provides such an advantage that it is worth it. Also like body armor, we must find ways to decrease its weight so that Soldiers are physically able to exploit the advantage that it provides during sustained combat operations.

The next upgrade should be in battery size and life. Full-sized Land Warrior batteries are heavy and bulky — about the size and weight of two full 30-round magazines of 5.56 mm ammunition. Soldiers must carry at least one and often carry a spare on them. The batteries normally last about six to eight hours during continuous operations. I will not revisit weight issues addressed above, but the requirement to change batteries can also become problematic during long duration dismounted operations. As a Stryker force, recharge and storage capability on our vehicles mitigates this problem. But we need smaller, longer lasting power supplies (batteries or otherwise), and this need will become more acute if units without ready access to chargers intend to use Land Warrior regularly.

Although most combat Soldiers probably cringe a bit at the thought, each Land Warrior is really a node in a wireless network. As such, the Land Warrior network is only as strong as the wireless carrier. The limited range and performance of Land Warrior data

radios sometimes causes this network to fracture into cells, decreasing situational awareness, limiting shared information and otherwise degrading the most advantageous aspects of the system. In addition, due to its short voice range, Soldiers cannot take maximum advantage of the Land Warrior radio that they are already carrying and hence must also carry FM radios. Longer range, more reliable radios will improve the performance of Land Warrior and could decrease Soldier load by making dismounted FM radios unnecessary.

Finally, the individual weapon components of Land Warrior show promise, but must improve to make the cost of carrying them worth the benefit. The daylight video sight (DVS — think gun camera) provides full motion video with zoom capability to the helmet-mounted display. The DVS has adjustable digital reticles and can be zeroed to the Soldier's M4 or M16. This allows Soldiers to accurately shoot off-hand or "around corners." But the DVS suffers from poor resolution and low light capability. If it had better resolution and a night sight, most Soldiers would want to use it. If we could send still or video images from the camera over the wireless network, I would probably require all Manchus to use it. While the weapon components are clearly not the most important features of Land Warrior, they have inherent value that could be realized with a few modifications.

The Manchu battalion, 4-9 Infantry, has dominated the enemy in dismounted operations in Iraq with the help of Land Warrior. The combat information available to leaders through the system helps us to decide and act faster than the insurgents can match. Land Warrior could, with some improvements, provide the same advantages to the entire U.S. infantry force. Our national priorities should demand no less and our national treasure — our Soldiers — deserve no less.

LTC (P) W. W. Prior commands the 4th Battalion, 9th Infantry Regiment in Iraq. He was commissioned in the U.S. Army from U.S. Military Academy at West Point in 1987 and holds a master's degree in Applied Physics from Stanford University.

The author wishes to thank MG (R) Robert H. Scales for inspiration and impetus to write this article. He also thanks all Manchu Soldiers for their dedication to duty and work with Land Warrior and to the TRADOC and PM Soldiers and civilians for their support to the battalion.
