Soldier 2040

Mr. Gary E. Phillips ended his active Army career as the Commander of the National Ground Intelligence Center in Charlottesville, VA. Mr. Phillips currently serves as the Senior Intelligence Advisor and Assistant TRADOC G2. He holds a Master's degree in business and a Master of Military Arts and Sciences.

Cyber Specialists & Future Force Structure

Bob looked up from his handheld when his neural interface silently chimed that the squad leader was about to issue orders. "Guess I will check on the wife later," he thought as he shut down the app that would generate a virtual home visit for him on demand. His eyes widened as the squad leader sent graphics and orders for the next mission. As a member of a Lancer squad, Bob trained in several military specialties with neural uploads during the Mission Rehearsal Exercise. For this mission, he performed as a fires specialist and combat engineer.

The squad would rely on Bob to focus direct and indirect fires while managing the application of the robotic engineer systems to breach obstacles and clear explosives. This combination of activities would allow the unit to put down suppressive fire while the artificial intelligence modules in the robotic engineer systems interpreted Bob's intent on priority of effort. Mission Command for robot swarms – who would have thought that possible way back in 2020 when robots were just an idea?

Lancer soldiers trained in multiple specialties to increase capabilities of small units without increasing manpower. The low birth rates in most of the industrialized world collapsed the 18- to 24-year-old demographic. The atrophy of physical abilities continued in a youth population that spent much of their time in virtual reality. Each soldier become far too important to have only one or two skills.

While not members of the US Advanced Special Forces (ASF), formed in 2025, Lancers had many of the same capabilities. Soldiers selected for Lancer units underwent rigorous mental testing and received not only neural implants, but also chemical and physical enhancement to increase endurance and mental acuity.

The National Defense Act (NDAA) of 2022 and accompanying legislation legalized mental and physical enhancement and augmentation of soldiers with the proviso that each modification remained potentially reversible upon the soldier's request or release from active duty. Most soldiers were not interested in the reversal, which spawned a range of social issues as soldiers returned to a population that did not have the same advantages. Enhanced former soldiers took advantage of increased physical and mental abilities for profit or prestige. The International Football League (IFL) scandal of 2027 centered around a small group of former soldiers that gained notoriety on and off the field, changing the game forever. The NDAA of 2032 had language requiring reversal of all physical and mental modifications before release from active duty. This number of former soldiers already released from active duty complete with enhancements made the legislation a hollow victory.

By 2040, the US Army called for 35% of the total force to be Lancer units. The plan called for 50% by 2050 and a 100% transition by 2070. Although this was the plan, the details of recruiting, promotions, and career paths for

The Army Press created the Future Warfare Writing Program to generate ideas about possible complexities of future warfare, as presented in the Army Operating Concept. The views expressed belong to their authors, and do not necessarily represent the official view of The Army Press or any other government institutions or agencies.

these Lancers were not developed. Most successful recruiting was a result of an expansive social media campaign using embedded "games" as tools to discriminate those prospects worth a second look. The Army sponsored weekend events featuring physical and mental challenges hinged around ad hoc teams working through complex problems. The geographically dispersed, combined physical and virtual "leadership reaction course" (LRC) featured augmented reality with 2,000 simultaneous participants tracked by embedded biometrics and enhanced 3D video recording. Old soldiers remembered the LRC as the place where tender body parts were exposed to injury by unyielding obstacles and teammate mistakes. Now, the Army could review the "play" in slow motion while tracking your mental activity.

As the download of plans and orders finished, Bob glanced up and saw the other members of his squad digesting the information with looks ranging from satisfaction to confusion. Neural implants worked reasonably well but some people's brains just had trouble assimilating knowledge delivered that quickly. Bob began his pre-combat check of equipment with his "living" uniform. While not technically living, the uniform had "pockets" of nano-bots that would perform a variety of functions should he be injured, from repairing small injuries on the fly to stabilizing and sedating him for injuries requiring a med-bot to treat. The nanos worked well most of the time, but there was barracks talk about "the time the nanos went crazy and ate a soldier's liver." Bob discounted that kind of rumor; nanos saved his arm when he was wounded on the Senakaku islands. Now that was a strange fight; the politically motivated, incredibly restrictive, rules of engagement hampered both sides. It was like watching boxers wearing pillows for gloves dancing around the ring trying to scare each other.

Bob's injury resulted from a "hurry up" convoy of US Army hovercraft with a fan blade circle X'd. When the hovercraft fan failed, the resulting collision with the unyielding ground broke his arm. The nanos surged into action and stabilized Bob's arm in seconds. The Army denied the recommendation for a Purple Heart; injuries from maintenance failures were not considered a result of enemy action.

As Bob's squad mounted the multi-wheeled squad combat transport vehicle (SCTV: pronounced Skit-V), he accessed the latest maintenance check via his neural implant and was happy to see no issues with the Skit-V. The hovercraft-mode fans were brand new and just balanced. The two engines, biomass fed and electrical, checked out perfectly. There were often problems with the biomass engine if the bio material fed in did not have a high enough calorie quotient to both drive the vehicle and recharge the batteries that provided both standby and motive power for the electrical engine. The most sought after bio-mass came from the unit dining facility after any deep fried meal. Nothing like grease to produce energy!

As the Skit-V moved out, the illuminated displays brightened. Several displays showed multi-discipline intelligence feeds from high-level unmanned aerial vehicles as well as the fleet of smaller, ground and air robots that established a protective perimeter around the Skit-V. Tethered to the Skit-V by an electronic leash were 3 unmanned engineer support vehicles, and 2 unmanned ground fire support systems –32 short range rockets on wheels that could controlled by Bob and the squad leader as needed. Should both of them be put out of action, a priority queue alerted other members of the squad to assume control. The Skit-V carried a directed energy weapon for defense against aerial attack and an array of self-protection systems. For this mission, the squad leader opted to leave behind the belt-fed rail gun and the adjustable caliber mortar (40-120mm).

During transit to the objective, all members of the squad accessed various information sources with both neural implants and the old fashioned way, looking at a display and sharing it, with comment, to other squad member via the wireless connection to the receiver in their body. While much slower than the direct interface through neural implants, it was more reliable and avoided some of the downside of neural implant data interpretations. Some people's minds are just a mess.

The movement to the objective passed through some of the worst slums of Megalopolis – the latest in a never-ending crises that revolved around increasingly crowded cities acting in some respects like separate countries. The less well-off in these slums clustered in make-shift housing cobbled together with scraps from the more upscale neighborhoods and the business district. Many looked relatively livable with sheets of mechano-plastic bent and laser welded to form multi-room and multi-story "houses." Every one of these houses had antennas

embedded in the mechano-plastic, visible as dark shadows in bright sunlight. Those antennas indicated that this area was connected to Worldwide Universal Access Information Portal Network. That meant everything Bob and his squad did became public knowledge, and the enemy scanned all of the onboard computer systems and neural interfaces for vulnerabilities to exploit. Bob was glad he left his personal assistant in the garrison. On the last mission, the Cybrids cracked his assistant and it took Bob months to repair damage and recapture all of the personal information. His wife still bristles at the mention of the defaced family photos that were posted and the threats that came over the digital entertainment system at home.

Bob carefully looked over the objective, a suspected Nuclear Weapons storage facility, as seen through the eyes of literally a hundred or more sensors. The small dragonfly UAVs landed on windows and Bob looked in and saw only a few people were left on the small fortified site. The gate looked easily breachable, but Bob detected two carefully hidden automatic weapons robots parked to look like they were destroyed covering the gate. Although the camouflage was very good, the fusion power pack emitted a detectable level of energy. Bob thought, "Nice try, but everyone knows that when a robot is non-functional the fusion pack 'scrams'[1] to keep from becoming a radiation problem." The amended Geneva-Hague convention of 2032 was very specific about safety features on robots constructed for combat operations. Everyone remembered the problem with landmine proliferation and civilian casualties in the late 1990s and 2000s.

As the Skit-V reached 10 kilometers from the objective, the squad leader checked once more for friendly units in the area. With a green board, he squinted and forcefully sent the mental command to the squad and equipment to execute the operation. Within seconds, the fire support vehicles slammed to a halt and began extending legs to stabilize the launch platform. Bob received a constant stream of status reports on the readiness of the vehicles to deliver fires. Targets from the UAVs and unmanned engineer vehicles closing on the site streamed through Bob's mind – all he had to do was 'think' about engagement and the effects he wanted and the weapons systems would chose the delivery system and warhead and fusing combination appropriate for the effect. As Bob began to prioritize the engagements, the squad Cyber "Black Knight" hit the bright red kill switch that disconnected power to one of the trailing fire support vehicles.

He told Bob, "Those guys are good, as you were setting up the fire missions, I noted that one of the fire support vehicles was demonstrating too much latency. When I dug in to the problem I found a cyber-attack that had changed arming permissions and was going to have you sending duds downrange." The Black Knight worked to remove the problem software, restore the system, and add some additional protection. While Bob still had plenty of firepower available, the intrusion troubled him – it was like seeing someone messing with your kids! Bob asked for a time to regain control.

"About 3 minutes," said the Black Knight. "Bad code cleaned out, good code uploaded, adding additional firewalls and new permissions matrix. Also adding a little gift to the guys on the other side; they come after us again they will get a load of code they will wish they had never seen."

While Bob and the "Digital Dude" in soldier slang, had been working through the problem the other members of the squad had finished preparations of their exo-skeletons and supporting assault robots. Normally assault robots did all the dangerous work, but in a nuclear storage site, you needed soldiers to make sure things went according to plan. The M27 Exo-skeleton provided the utmost in personal protection and precision fire power for the 2040 soldier. Although not used very often the weekly day-long exo-skeleton "games" played by the platoon keep everyone in fighting form as well as exhausted by the end of the day.

Bob checked and all systems were back on line. He mentally scrolled through the target list and commands for the fire support vehicles – armed robots – DESTROY, Front Gate –BREACH, All doors – BREACH, South Side Barracks – SUPPRESS, and so on down the list until 90 seconds later the fire plan was complete. Bob transmitted it to the other Squad members and went to work with the unmanned engineer vehicles, giving them the fire plan and additional instructions on clearing any mines or IEDs. With those set and a final check with his squad, Bob mentally flipped the switch in his mind from standby to execute!

The 2040 soldier will still be required to use the tools of fire and maneuver to bend adversaries to their will. This is a constant of combat from the first fight of Neanderthal tribes to the 2040 battle at the squad level. What is likely to change the most is the same dynamic we have seen change over the years from World War I to World War II to the 1973 Israeli War to Desert Storm. That dynamic is the speed of destruction and the magnitude destruction that ever smaller numbers of soldiers and combat systems produce. The year 2040 will not change that dynamic. In fact the speed and scale of destruction produced by a squad may well rival that of battalions and brigades.

Perhaps even more unfortunate is that speed and scale of destruction will not be limited to nation-state armed forces. As technology becomes more pervasive neural implants and other interfaces developed for "immersive gaming experiences" may provide the ability for non-state actors to master capabilities that rival nation-state armed forces. Not addressed in this paper are ethical and moral issues with biological enhancements or other manipulations of the human body to enhance performance. Where we draw the line in the US may be well behind where others decide to go. Inevitably, we will be faced with the issue of keeping up or standing by our ethics while friends and enemies develop capabilities we cannot counter. The world of 2040 will still be a dangerous place. How will we handle it?