

ATTACK OF THE

KILLER ROBOTS

The Pentagon's dream of a techno army is doomed to fail

BY ERIC STONER

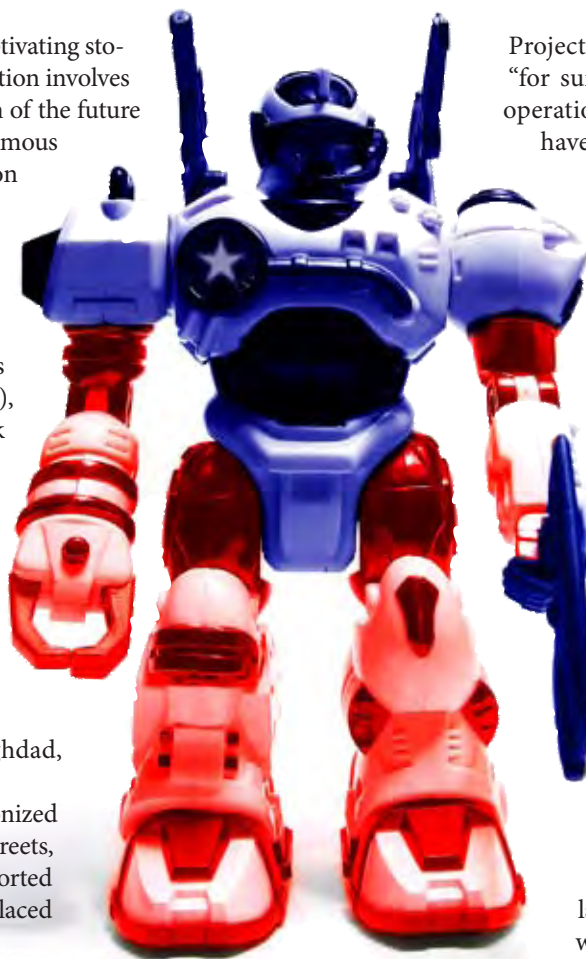
ONE OF THE MOST captivating storylines in science fiction involves a nightmarish vision of the future in which autonomous killer robots turn on their creators and threaten the extinction of the human race. Hollywood blockbusters such as *Terminator* and *The Matrix* are versions of this cautionary tale, as was *R.U.R. (Rossum's Universal Robots)*, the 1920 Czech play by Karel Capek that marked the first use of the word "robot."

In May 2007, the U.S. military reached an ominous milestone in the history of warfare—one that took an eerie step toward making this fiction a reality. After more than three years of development, the U.S. Army's 3rd Infantry Division based south of Baghdad, deployed armed ground robots.

Although only three of these weaponized "unmanned systems" have hit Iraq's streets, to date, *National Defense* magazine reported in September 2007 that the Army has placed an order for another 80.

A month after the robots arrived in Iraq, they received "urgent material release approval" to allow their use by soldiers in the field. The military, however, appears to be proceeding with caution.

According to a statement by Duane Gotvald, deputy project manager of the Defense Department's Robotic Systems Joint



Project Office, soldiers are using the robots "for surveillance and peacekeeping/guard operations" in Iraq. By all accounts, robots have not fired their weapons in combat since their deployment more than a year and a half ago.

But it is only a matter of time before that line is crossed.

Future fighting force?

For many in the military-industrial complex, this technological revolution could not come soon enough.

Robots' strategic impact on the battlefield, however—along with the moral and ethical implications of their use in war—have yet to be debated.

Designed by Massachusetts-based defense contractor Foster-Miller, the Special Weapons Observation Remote Direct-Action System, or SWORDS, stands three feet tall and rolls on two tank treads.

It is similar to the company's popular TALON bomb disposal robot—which the U.S. military has used on more than 20,000 missions since 2000—except, unlike TALON, SWORDS

has a weapons platform fixed to its chassis.

Currently fitted with an M249 machine gun that fires 750 rounds per minute, the robot can accommodate other powerful weapons, including a 40 mm grenade launcher or an M202

rocket launcher.

Five cameras enable an operator to control SWORDS from up to 800 meters away with a modified laptop and two joysticks. The control unit also has a special “kill button” that turns the robot off should it malfunction. (During testing, it had the nasty habit of spinning out of control.)

Developed on a shoestring budget of about \$4.5 million, SWORDS is a primitive robot that gives us but a glimpse of things to come. Future models—including several prototypes being tested by the military—promise to be more sophisticated.

Congress has been a steady backer of this budding industry, which has a long-term vision for technological transformation of the armed forces.

In 2001, the Defense Authorization Act directed the Pentagon to “aggressively develop and field” robotic systems in an effort to reach the ambitious goal of having one-third of the deep strike aircraft unmanned within 10 years, and one-third of the ground combat vehicles unmanned within 15 years.

To make this a reality, federal funding for military robotics has skyrocketed. From fiscal year 2006 through 2012, the government will spend an estimated \$1.7 billion on research for ground-based robots, according to the congressionally funded National Center for Defense Robotics. This triples what was allocated annually for such projects as recently as 2004.

The centerpiece of this roboticized fighting force of the future will be the 14 networked, manned and unmanned systems that will make up the Army’s Future Combat System—should it ever get off the ground. The creation of the weapons systems is also one of the most controversial and expensive the Pentagon has ever undertaken.

In July 2006, the Defense Department’s Cost Analysis Improvement Group estimated that its price tag had risen to more than \$300 billion—an increase of 225 percent over the Army’s original \$92 billion estimate in 2003, and nearly half of President Obama’s proposed stimulus package.

‘War in a can’

Despite the defense world’s excitement and the dramatic affect robots have on how war is fought, U.S. mainstream media coverage of SWORDS has been virtually nonexistent.

Worse, the scant attention these robots have received has often been little more than free publicity. *Time* magazine, for example, named SWORDS one of the “coolest inventions” of 2004. “Insurgents,

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be afraid,” is how its brief puff piece began. And while most articles are not that one-sided, any skepticism is usually mentioned as a side note.

On the other hand, prior to the deployment of SWORDS, numerous arguments in their defense could regularly be found in the press. According to their proponents—generally the robot’s designers or defense officials—robots will not have any of the pesky weaknesses of flesh-and-blood soldiers.

“They don’t get hungry,” Gordon Johnson, who headed a program on unmanned systems at the Joint Forces Command at the Pentagon told the *New York Times* in 2005. “They’re not afraid. They don’t forget their orders. They don’t care if the guy next to them has just been shot. Will they do a better job than humans? Yes.”

Ronald Arkin, a leading roboticist at Georgia Tech, whose research the Defense Department funds, argues without a sense of irony that autonomous robots will be more humane than humans. Atrocities like the massacre by U.S. troops in Haditha, Iraq, would be less likely with robots, he told *The Atlanta* in November 2007, because they won’t have emotions that “cloud their judgment and cause them to get angry.”

Robots are also promoted as being cost-effective. On top of the annual sal-

ary and extra pay for combat duty, the government invests a great deal in recruiting, training, housing and feeding each soldier. Not to mention the costs of healthcare and death benefits, should a soldier be injured or killed.

By comparison, the current \$245,000 price tag on SWORDS—which could drop to \$115,000 per unit if they are mass-produced—is a steal.

After attending a conference on mili-

tary robotics in Baltimore, journalist Steve Featherstone summed up their function in *Harper’s* in February 2007: “Robots are, quite literally, an off-the-shelf war-fighting capability—war in a can.”

And the most popular talking point in favor of armed robots is that they will save U.S. soldiers’ lives. To drive the point home, proponents pose this rhetorical question: Would you rather have a machine get blown up in Iraq, or your son or daughter?

Remove from reality

At first glance, these benefits of military robots sound sensible. But they fall apart upon examination.

Armed robots will be far from cost effective. Until these machines are given greater autonomy—which is currently a distant goal—the human soldier will not be taken out of the loop. And because each operator can now handle only one robot, the number of soldiers on the Pentagon’s payroll will not be slashed anytime soon. More realistically, SWORDS should best be viewed as an additional, expensive remote-controlled weapons system at the military’s disposal.

A different perspective is gained when the price of the robot is compared with the low-tech, low-cost weaponry that U.S. forces face on a daily basis in Iraq.

“You don’t want your defenses to be so expensive that they’ll bankrupt you,” says Sharon Weinberger, a reporter for *Wired’s* Danger Room blog. “If it costs us \$100,000 to defeat a \$500 roadside bomb, that doesn’t sound like such a good strategy—as pretty as it may look on YouTube and in press releases.”

The claim that robots would be more ethical than humans similarly runs contrary to both evidence and basic common sense.

Lt. Col. Dave Grossman writes in his 1996 book *On Killing* that despite the

portrayal in our popular culture of violence being easy, “There is within most men an intense resistance to killing their fellow man. A resistance so strong that, in many circumstances, soldiers on the battlefield will die before they can overcome it.”

One of the most effective solutions to this quandary, the military has discovered, is to introduce distance into the equation. Studies show that the farther the would-be killer is from the victim, the easier it is to pull the trigger. Death and suffering become more sanitized—

the humanity of the enemy can be more easily denied. By giving the Army and Marines the capability to kill from greater distances, armed robots will make it easier for soldiers to take life without troubling their consciences.

The Rev. G. Simon Harak, an ethicist and the director of the Marquette University Center for Peacemaking, says, “Effectively, what these remote control robots are doing is removing people farther and farther from the consequences of their actions.”

Moreover, the similarity that the robots have to the life-like video games that young people grow up playing will blur reality further.

“If guys in the field already have difficulties distinguishing between civilians and combatants,” Harak asks, “what about when they are looking through a video screen?”

Rather than being a cause for concern, however, Maj. Michael Pottratz at the Army’s Armament Research, Development and Engineering Center in Picatinny Arsenal, N.J., says in an e-mail that developers are in the process of making the control unit for the SWORDS more like a “Game Boy type controller.”

It is not only possible but likely that a surge of armed robots would lead to an increase in the number of civilian casualties, not a decrease.

The supposed conversation-ender that armed robots will save U.S. lives isn’t nearly as clear as it is often presented, either. “If you take a narrow view, fewer soldiers would die,” Harak says, “but that would be only on the battlefield.”

As happens in every war, however, those facing new technology will adapt to them.

“If those people being attacked feel helpless to strike at the robots themselves, they will try to strike at their command centers,” Harak says, “which might well be back in the United States or among civilian centers. That would then displace the battlefield to manufacturing plants and research facilities at universities where such things are being invented or assembled... The whole notion that we can be invulnerable is just a delusion.”



Top: A robot manned by a U.S. soldier from the 4th Battalion, 64th Armor Regiment, patrols to check a suspected road side bomb in a street of Baghdad on Jan. 8, 2008. Bottom: A remotely-operated TALON robot prepares to defuse a roadside bomb during an IED-clearing mission by U.S. soldiers from Fox company, 4th squadron, 2nd Stryker Cavalry Regiment in western Baquba, northeast of Baghdad.

ALI YUSSEF, JEWEL SAMAD/AFP/GETTY IMAGES

The new mercenaries

Even if gun-totting robots could reduce U.S. casualties, other dangerous consequences of their use are overlooked.

Frida Berrigan, a senior program associate at the New America Foundation's Arms and Security Initiative and *In These Times* contributing editor, argues that similar to the tens of thousands of unaccountable private security contractors in Iraq, robots will help those in power "get around having a draft, higher casualty figures and a real political debate about how we want to be using our military force."

In effect, by reducing the political capital at stake, robots will make it far easier for governments to start wars in the first place.

Since the rising U.S. death toll appears to be the primary factor that has turned Americans against the war—rather than its devastating economic costs or the far greater suffering of the Iraqi people—armed robots could also slow the speed with which future wars are brought to an end.

When Sen. John McCain (R-Ariz.) infamously remarked that he would be fine with staying in Iraq for 100 years, few noted that he qualified that statement by saying, "as long as Americans are not being injured or harmed or wounded or killed."

Robot soldiers will be similar to mercenaries in at least one more respect. They both serve to further erode the state's longstanding monopoly on the use of force.

"If war no longer requires people, and robots are able to conduct war or acts of war on a large scale, then governments will no longer be needed to conduct war," Col. Thomas Cowan Jr. wrote in a March 2007 paper for the U.S. Army War College. "Non-state actors with plenty of money, access to the technology and a few controllers will be able to take on an entire nation, particularly one which is not as technologically advanced."

This may not be farfetched.

In December 2007, *Fortune* magazine told the story of Adam Gettings, "a 25-year-old self-taught engineer," who started a company in Silicon Valley called Robotex. Within six months, the company built an armed robot similar to the SWORDS—

except that it costs a mere \$30,000 to \$50,000. And these costs will drop.

As this happens, and as the lethal technology involved becomes more accessible, Noel Sharkey, a professor of Artificial Intelligence and Robotics at the University of Sheffield in the United Kingdom, warns that it will be only a matter of time before extremist groups or terrorists develop and use robots.

PUT YOURSELF IN THE SHOES OF AN IRAQI. HOW COULD SEEING A ROBOT WITH A MACHINE GUN RUMBLE DOWN YOUR STREET OR POINT ITS WEAPON AT YOUR CHILD ILLICIT ANY REACTION OTHER THAN ONE OF TERROR OR ANGER?

Evidence now suggests that using armed robots to combat insurgencies would be counterproductive from a military perspective.

One study, published in the journal *International Organization* in June 2008, by Jason Lyall, an associate professor of international relations at Princeton, and Lt. Col. Isaiah Wilson III, who was the chief war planner for the 101st Airborne Division in Iraq and who currently teaches at West Point, looks at 285 insurgencies dating back to 1800.

After analyzing the cases, Lyall and Wilson conclude that the more mechanized a military is, the lower its probability of success.

"All counterinsurgent forces must solve a basic problem: How do you identify the insurgents hiding among noncombatant populations and deal with them in a selective, discriminate fashion?" Lyall writes in an e-mail.

To gain such knowledge, troops must cultivate relationships with the local population. This requires cultural awareness, language skills and, importantly, a willingness to share at least some of the same risks as the local population.

The *Counterinsurgency Field Manual*, which was released in December 2006 and co-authored by Gen. David Petraeus, would seem to agree.

"Ultimate success in COIN [counterinsurgency] is gained by protect-

ing the populace, not the COIN force," the manual states. "If military forces remain in their compounds, they lose touch with the people, appear to be running scared, and cede the initiative to the insurgents."

Mechanized militaries, however, put greater emphasis on protecting their own soldiers. Consequently, Lyall and Wilson argue in their study that such

forces lack the information necessary to use force discriminately, and therefore, "often inadvertently fuel, rather than suppress, insurgencies."

Given such findings, deploying armed robots in greater numbers in Iraq or Afghanistan would likely only enflame resistance to the occupation, and, in turn, lead to greater carnage.

To understand this point, put yourself in the shoes of an Iraqi or Afghani. How could seeing a robot with a machine gun rumble down your street or point its weapon at your child illicit any reaction other than one of terror or extreme anger? What would you do under such circumstances? Who would not resist? And how would you know that someone is controlling the robot?

For all the Iraqis know, SWORDS is the autonomous killer of science fiction—American-made, of course.

The hope that killer robots will lower U.S. casualties may excite military officials and a war-weary public, but the grave moral and ethical implications—not to mention the dubious strategic impact—associated with their use should give pause to those in search of a quick technological fix to our woes.

By distancing soldiers from the horrors of war and making it easier for politicians to resort to military force, armed robots will likely give birth to a far more dangerous world. ■