

## Robot armies - another military revolution?

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Theme: [Militarization and WMD](#)

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MOSCOW. (RIA Novosti military commentator Ilya Kramnik) - The political and human impact of the wars in Iraq and Afghanistan has been widely reported and much discussed.

But of even greater historical significance, is the revolution in military practice and technology that today's conflicts are coming to signify.

The previous revolution, which affected all aspects of war without exception took place during and after World War II. This revolution produced new military hardware - nuclear weapons, guided weapons, ballistic and cruise missiles, radars, jet fighters and bombers, helicopters, pilotless aircraft and unmanned ground vehicles. It also changed the art of military operations and tactics. Air-defense operations, large-scale strategic troop deployments, carrier-based units, and combined combat units of ground forces, which combined the flexibility of motorized infantry with the mobility of tanks and the firepower of self-propelled artillery all appeared. All of these achievements and many others were made in the late 1930s and early 1940s.

The human race is still using the fruits of this revolution, and is moving forward. But gradually the price of war is becoming prohibitive - production of modern military equipment, its upkeep, and qualified soldiers are becoming more and more expensive. Combined with the development of electronics and robots, this has created the prerequisites for a revolution in robotics.

The first remotely controlled military vehicles appeared in the 1930s, and were broadly used during the war. It is enough to recall American and German experiments with unmanned flying bombs, or Goliaths, the Nazi remote controlled demolition vehicles. The quantity of remote controlled equipment was growing until quantity changed into quality at the turn of the past century - now ground, air, and sea-based robots of all kinds are playing an increasing role in warfare.

Pilotless aircraft are used for reconnaissance, targeting, and missile guidance. Some of them can even destroy targets. Ground-based robots are used for mine clearing, and breaching barriers. Many of them are armed and can be used in warfare in high-risk urban environments.

Robots have started to be employed in logistics support. The Oshkosh Truck company is developing unmanned trucks; while Boston Dynamics has produced a porter-robot called Big Dog since it is reminiscent of a big dog. It can carry loads up to 75 kg.

The potential of robotics is rapidly growing but it will take robots a long time to match soldiers and human-controlled technology. The main barrier is optics - no electronic optical

system can compare with how the human brain and eye work together. One more restriction is the absence of a high-level artificial intellect, which would be capable of promptly reacting to ever changing situations. This is why remote controlled rather than fully autonomous robots are used.

However, there will be a time when robots will become the best value for the money. When this happens, a couple of battalions will be able to destroy an enemy tank division. Each battalion will consist of a control company and four companies with 15 to 20 vehicles carrying from 10 to 15 robots each. Each robot will be armed with two guided missiles and a machine gun. Equipped with a total of 1,200-2,400 robots controlled by 200 to 300 operators from a distance of several kilometers, these two battalions will be able to inflict heavy losses on enemy divisions, and destroy most of their tanks and infantry combat vehicles.

There is no doubt that a tank battle against these machines will be similar to the feats of Zinovy Kolobanov or Otto Karius (Soviet and German tank aces of World War II). Heavy armored vehicles with powerful artillery, equipped with active protection and interference systems will destroy robots practically without armor and protection systems (produced for less money) as in the testing grounds. But...

Even if one combat vehicle costs these future battalions 20 robots, a total of 1,200-2,400 robots will be exchanged for 60-120 tanks and infantry combat vehicles, with hundreds of killed and wounded crewmembers. Human losses of robotized battalions will be minimal unless an artillery regiment of the tank division destroys the control company. But it is likely to lose the artillery duel to the artillery division of the robotized enemy, which will be actively using pilotless aircraft to adjust its fire.

As a result, to cover the losses one side will have to call up several people and spend considerable resources on the production of more robots, while the other side will have to replace several hundred servicemen and spend a somewhat smaller sum on new combat vehicles. The latter will be very well protected, heavily equipped with arms and mobile but nonetheless vulnerable - with the inevitable loss of human lives.

The situation in the air may be similar. Enemy aircraft will be destroyed not by fighters, but by pilotless flying vehicles controlled from flying command posts. Each fighter can destroy five or six such vehicles, but at some point there will be no missiles left and it will be downed by the seventh, or by another fighter, which will be able to approach it unnoticed under the cover of pilotless flying vehicles.

The situation under water is likely to be identical. Nuclear-powered submarines with a price tag of a billion dollars or more will encounter the massive use of relatively compact underwater robots capable of carrying torpedoes. The latter will have inferior sonar systems, but they will come in large numbers. As a result, warfare will become a race of life against hardware. Its outcome is obvious - it is much easier to mourn robots than people. Will our army start updating its equipment in time? A delay may be more dangerous than it was in 1941.

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