

Eye in the sky

Huma Siddiqui

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For intelligence communities around the world, outer space is fast becoming a high-ground, hide-and-seek arena. Spy satellites are the new tools to keep a watchful eye on any sort of subversive activities that threaten to disrupt peace in their respective territories. With the recent successful launch of radar satellite called Risat-2, India has joined the growing list of nations seeking round-the-clock surveillance through spy satellites.

The Indian security forces had been seeking such capability for a long time and the need to procure one quickly was precipitated after the Mumbai attacks. Risat-2 will also provide India the capability to track incoming hostile ballistic missiles. The satellite is capable of taking high-resolution photographs through clouds, in darkness and via camouflage, enhancing real-time intelligence-gathering capabilities. The key to the new technology is high processing speed. The new satellite's systems can process data at speeds that are 1,000 times faster than a personal computer. Access to the high-tech surveillance tools would, for the first time, allow security and law-enforcement agencies to see high-resolution images and data, which would allow them, for example, to identify terror staging areas, a gang safehouse, or possibly even a building being used by would-be terrorists. Unlike electronic eavesdropping, which is subject to legislative and some judicial control, the use of spy satellites is largely uncharted territory.

Space analysts inform that for more than 40 years, spy satellites have hovered miles above the Earth, and have become increasingly powerful. When they were first launched in the early 1960s, spy satellites were the pride and joy of the US and Soviet militaries. In fact, analysts credit satellite photos—and their accurate information about air force bombers, missiles and navies—for calming tensions during the Cold War.

Be it satellites from the US, Russia, China, Israel or Germany, these pass over every spot on the face of the Earth twice a day, grabbing digital snapshots of places that the intelligence agencies and the military establishments want to see. While the areas of interests could be diverse—mass graves in Bosnia, missile fields in China or Russia, or the environmental disasters in the form of tsunamis or tornadoes—the spy satellites have managed to provide a steady stream of black-and-white images.

Take for instance the 'visible light' satellites, the most recent of which resemble the Hubble Space Telescope and were built at the Lockheed Martin facility in the US. They are known as 'keyhole-class' satellites. They have a resolution of 5 to 6 inches, which means that they can distinguish an object that small on the ground.

Until a few years ago, satellite imagery, even though the downlink was digital, had to be converted to film—because physically, the intelligence community didn't have the bandwidth to move it. So much so that during the US military operation Desert Storm in the Middle East, an airplane had to fly the pictures to Saudi Arabia. Thanks to rapid technology advances, digital data has permitted US intelligence and military agencies to combine visible light imagery with other imagery to make a two-dimensional image multi-dimensional. More importantly, it is now possible to transmit digital imagery to users around the world.

Such 3-D capabilities can even help intelligence agencies determine what a terrorist or drug lord's intentions might be. For example, if intelligence agencies know that a suspected terrorist has rented an eighth-floor apartment in a particular building, they can order a 3-D recreation of that neighbourhood. This is possible by simply flying a reconnaissance satellite 80 feet above the ground. And by freezing the view in front of the suspect's apartment, intelligence agencies can keep a close watch on the suspect's activities.

Buoyed by the prospects, the Obama administration has recently approved the purchase of new spy satellites. It has also decided to buy more commercial imagery from the private sector to plug immediate gaps in satellite coverage. Interestingly, the US has developed a spy satellite with the capability to move around in space in order to inspect satellites that have malfunctioned and possibly spy on other countries' spy satellites as well.

Earlier this year, the US department of defence disclosed it has developed two covert inspection satellites that have the ability to assess damage to a failed geostationary satellite. These satellites also have the ability to attack satellites made by other countries. No wonder, the Chinese government is concerned about such developments. It sees the development as a new US intelligence tool that could theoretically also enable a sneak anti-satellite attack in geosynchronous orbit.

The Germans too are basking in the success of their new reconnaissance satellite-based system, which is capable of carrying out independent military operations. The SAR-Lupe system is based on a special radar technology called synthetic aperture radar (SAR) that provides high-definition images under any weather or light conditions. The system, which achieved full operational capability at the end of 2008, has catapulted the German armed forces into a leading position in radar-based reconnaissance. This new reconnaissance capacity has drastically reduced Germany's dependence on other countries in the field of security policy. The spy satellites will provide images that can be

retrieved by radar day or night and under any weather conditions. Germany has become the third country in the world after the US and Russia to deploy its own spatial radar reconnaissance.

In the long run, there might be no place on Earth where we will be able to avoid surveillance.

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