

From Venus to Mars

The European Union's steps towards
the militarisation of space

Frank Slijper

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A TNI briefing paper in cooperation with Campagne tegen Wapenhandel [the Dutch Campaign against Arms Trade].

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Preface

For decades defence policy issues played an insignificant role within the European Union, the focus being almost completely on economic cooperation. But that has changed over the past decade, as political cooperation became increasingly important, including the development of the Union's so-called second pillar of Common Foreign and Security Policy (CFSP), including a Common Security and Defence Policy (CSDP).¹

Since the start of the new century we have witnessed Javier Solana's – the EU High Representative for CFSP – “A Secure Europe in a Better World”, the blueprint for Europe's security strategy, which is currently being updated.² At the same time the CSDP became an important part of the texts of the original Constitutional Treaty, which was then replaced by the very similar Lisbon Treaty. Though both treaties were rejected in referenda held in France and the Netherlands in 2005, and in Ireland in 2008, the political importance within the EU context of an integrated external and internal security policy continues to grow, though probably not as fast as would otherwise have been the case.³

This security and defence profile has evolved from a focus on mostly ‘soft’ tasks- policing and peace keeping - towards the creation of Battle Groups for more robust military interventions. It is characteristic of the changing security agenda in Europe, where a stronger military role is entering the European domain step by step under the veil of ‘security’, rather than using the still controversial ‘military’ label. The EU aims, by 2018, to be able to deploy 60,000 troops with air and naval support within 60 days, who could remain operational for a year, although officials admit the bar may have been set too high.⁴ Also the European Defence Agency (EDA) was established in 2004, though its real influence remains limited so far.

As we've seen in the previous two TNI papers on EU security and militarisation⁵, a warm relationship exists between industry and European Commission. The behind-closed-doors, business-dominated policy making processes only confirm what many people in Europe think about the expanding EU. Despite widespread discontent with the way Brussels operates, Eurocrats and industry take a ‘business as usual’ approach. Worse, these crucial developments go unnoticed for most people.

¹ Starting with the Amsterdam Treaty (signed 2 October 1997, in force 1 May 1999), which made substantial changes to the Treaty on European Union, which had been signed at Maastricht in 1992

² “European Union to update strategy guidelines”, AP, 5 September 2008

³ According to former EDA chief Nick Whitney “The Irish ‘no’ damaged the defense identity, specifically”. (Pierre Tran, “EU Ministers Pledge Capabilities”, *Defense News* online, 2 October 2008)

⁴ “France Satisfied With EU Military Progress”, *Agence France-Presse*, 2 October 2008

⁵ Ben Hayes, “Arming Big Brother”, TNI/Statewatch, 2006; Frank Slijper, “The emerging EU Military-Industrial Complex”, TNI/Campagne tegen Wapenhandel, 2005

The same is true for military-related developments in the area of the new European space policy that have so far received hardly any public attention, while developments over the past decade have been considerable. Again, mostly under the veil of 'security' and intelligence sharing, the emergence of a military role for the formerly purely civilian European Space Agency (ESA) follows a path towards military use, similar to what we've seen with the development of repressive policy tools. While still in its infancy, EU financed communication and spy satellites are slowly becoming reality, and in the long term the inclusion of space-based missile defence and other more offensive uses of space are real options for an increasing ambitious EU military space policy.

French president Sarkozy has called the space agenda one of the top priorities during the EU presidency over the second half of 2008, as part of a broader aim to progressively frame common EU defence policy. "I very much hope that the French presidency of the European Union (...) will be the first step in a veritable relaunch of European defence for the coming years", Sarkozy said just before taking over the presidency.⁶

In November 2008 government ministers are scheduled to meet in the Netherlands to set multi-year programme objectives and budgets for the European Space Agency, which fulfils a key role in slowly incorporating space into Europe's rising military ambitions.

This paper analyses the state of affairs in military space developments from a critical European perspective. Like the previous publications in this series, it aims to increase awareness of the creeping militarisation of the EU, and raise discussion among European citizens on its undesirability.

⁶ Honor Mahony, "European defence remains a French priority, says Sarkozy", *EUobserver.com*, 17 June 2008

Arms race in space

Hotly debated during the 1970s and 1980s, discussions on the military use of space largely disappeared after the fall of the Berlin Wall. In recent years, the issue has attracted new interest with the rapidly growing use of space for civilian purposes: GPS navigation in transport, satellite TV, satellite-based communications, etc.

The increasing use of and dependency on, space-based assets has direct implications for security on earth. Not only could any satellite disruption have very serious economic consequences, growing military use has also set off a new competition that may well lead to an arms race in space.

Modern warfare, be it in Iraq and Afghanistan, or in future conflicts, has become strongly dependent on the use of space, with all its (geopolitical) implications.

The Space Security 2008 report summarises the current situation:

Fueled by the technological revolution in military affairs, **the military doctrine of a growing number of actors** (led by China, Russia, the US, and key European states) **increasingly emphasizes the use of space systems to support national security**. Dependence on these systems has led several states to view space assets as critical national security infrastructure. US military space doctrine has focused on the need to ensure US freedom of action in space through the use, when necessary, of ‘counterspace operations’ that prevent adversaries from accessing space to threaten US interests.⁷

The Union of Concerned Scientists, an American organisation, warns that “some in the United States see space as a critical enabler for bringing decisive military force to bear anywhere on Earth with little or no warning. (...) Protecting and enhancing U.S. military capability in space is emerging as an important focus of military planning. Recent documents have proposed, for example, various anti-satellite and space-based weapons to protect and augment U.S. capabilities in space”⁸

Though what used to be highly classified ‘spy satellite’ imagery has now largely become available through commercial satellite pictures, and while GPS has lost a lot of its military exclusivity, defence applications and interests have also moved forward apace. The relatively recent use of GPS-guided missiles and artillery grenades has added a new dimension to ‘precision warfare’, actually lowering the threshold to opening fire. At a recent conference US Air Force Maj. Thomas, said: **“NATO is now fighting its first space war”**, referring to combat operations in Afghanistan supported by satellite communications, GPS-guided weaponry, and command and control.⁹ The simmering conflict between Russia and the US regarding the latter’s missile defence ambitions

⁷ Executive Summary, “Space Security 2008”, <http://spacesecurity.org/SSI2008ExecutiveSummary.pdf>

⁸ David Wright, Laura Grego, and Lisbeth Gronlund, “The Physics of Space Security”, American Academy of Arts & Sciences, Cambridge (MA), May 2005, p. xi

⁹ Douglas Barrie, “Empty Space”, *Aviation Week & Space Technology*, 22 September 2008

also has crucial space elements. The recent satellite shoot-downs by China and the US have made it clear that the military use of space and a potential arms race around it have crucial implications for international security for the decades to come.

During the Cold War the United States and the Soviet Union dominated space. The situation today is more fluid, with many more players. **The increased availability of space technology** and the growing economic power of –especially- India and China **have added new dimensions to what the US considers as a threat to its overwhelming military space dominance.** Moreover, space programmes in Brazil, South Korea, Taiwan, Israel and Japan have grown rapidly in recent years.¹⁰ With over 400 active satellites in space, the US has more than all other nations combined,¹¹ but it is slowly losing its preponderance. While this paper mainly focuses on European developments, it is useful to look at the wider picture in which these developments take place.

Recent developments in the militarisation of space

To see current European developments in military space policy in perspective this box summarizes a few of the main international issues in the field of international space warfare over the past decade or so.

August 1996:

General Joseph W. Ashy, then Commander-in-Chief of US Space Command (CINC-SPACE): “We’re going to fight a war in space. We’re going to fight from space and we’re going to fight into space...”¹²

February 1997:

US Space Command produces “Vision for 2020”, laying out an expansive plan to achieve “full spectrum dominance of the battlespace”: dominating earth through the control of space. “Space superiority is emerging as an essential element of battlefield success and future warfare”.¹³

November 2000:

ESA and EU Councils adopt resolutions endorsing European Strategy for Space

¹⁰ Marc Kaufman, “U.S. Finds It’s Getting Crowded Out There”, *Washington Post*, 9 July 2008

¹¹ According to May 2006 calculations by the Union of Concerned Scientists, there were just over 800 worldwide, of which just over 400 American, 89 Russian and 35 Chinese satellites (http://www.ucsusa.org/nuclear_weapons_and_global_security/space_weapons/technical_issues/satellites-types-orbits.html). See also: Katherine Shrader, “U.S. Satellites Outnumber Rest of World”, Associated Press, 7 December 2005

¹² Quoted in William B. Scott, “USSC Prepares for Future Combat Missions in Space”, *Aviation Week & Space Technology*, 5 August 1996

¹³ US Space Command, “Vision for 2020”, February 1997

January 2001:

Space Commission (aka Rumsfeld Commission) warns of a 'Space Pearl Harbour'. "The US is more dependent on space than any other nation. Yet the threat to the US and its allies in and from space does not command the attention it merits". The commission appreciated "the sensitivity that surrounds the notion of weapons in space for offensive or defensive purposes," but believed the US president should "have an option to deploy weapons in space to deter threats to and, if necessary, defend against attacks on US interests."¹⁴

January 2003:

Green Paper on European Space Policy

November 2003:

- "U.S. Air Force Transformation Flight Plan" document maintains space dominance as leading concept. On the ambitious weapons wish list are e.g. the "rods from God", or "hypervelocity rod bundles"¹⁵

- White Paper on European Space Policy

May 2004

ESA/European Commission Framework Agreement enters into force

January 2005:

Israel's top defence lawmaker urges development and deployment of space-based weapons to deliver victory in future conventional wars.¹⁶

April 2006:

While lagging 15 years behind the US and Russia, China could catch up within 10 years with enough government funding, according to an assessment by a Chinese space leader.¹⁷

July 2006:

US dismisses proposal by China and Russia at UN to ban all space-based weapons.¹⁸

¹⁴ Jean-Michel Stoullig, "Rumsfeld Commission Warns Against "Space Pearl Harbor""; AFP, 11 January 2001

¹⁵ See http://www.af.mil/library/posture/AF_TRANS_FLIGHT_PLAN-2003.pdf and CDI's Theresa Hitchens' "USAF Transformation Flight Plan Highlights Space Weapons", 19 February 2004

¹⁶ Barbara Opall-Rome, "Israeli Official Urges Space-Based Weapons", *Defense News*, 10 January 2005

¹⁷ Frank Moring (ed.), "Space Race", *Aviation Week & Space Technology*, 10 April 2006

¹⁸ Caitlin Harrington, "US stays firm on right to defend space assets", *Jane's Defence Weekly*, 12 July 2006

August 2006:

- China's People's Daily publishes analysis from researchers at the National Defence University who state that "Our military should not only protect China's national sovereignty and territorial integrity, but should also protect the oceans and transport routes and other economic interests as well as ... the security of space".¹⁹

- US National Space Policy states that the US will deny, if necessary, adversaries the use of space capabilities hostile to US national interests and that it will "oppose the development of new legal regimes or other restrictions that seek to prohibit or limit US access to or use of space.... Freedom of action in space is as important to the United States as air power and sea power".²⁰

January 2007:

In a surprise move, China shoots down outmoded weather satellite Feng Yun 1C

May 2007:

Launch of European Space Policy

June 2007:

- Israel embarks on a major expansion of its space capabilities²¹

- US boosts space spending, pushes NATO members to help develop and build new generation satellites and rockets²²

- South Korea's ambitious space programme shows progress in developing indigenous space technology; the building of a Space Centre nears completion²³

January 2008

- Israel launches its first synthetic aperture radar (SAR) reconnaissance satellite launched from an Indian space centre, "a dramatic improvement in Israel's intelligence-gathering capabilities".²⁴

February 2008:

- Russia and China present draft Treaty on the Prevention of the Placement of Weapons in Outer Space, the Threat or Use of Force against Outer Space Objects (PPWT) to the Conference on Disarmament.

¹⁹ "China's Military Looks to Outer Space", Agence France-Presse, 2 August 2006

²⁰ "US National Space Policy", 31 August 2006 (released 6 October 2006), see: http://www.globalsecurity.org/space/library/policy/national/us-space-policy_060831.pdf. Also see: Duncan Lennox, "In war and peace", *Jane's Defence Weekly*, 4 April 2007; Gopal Ratnam, "U.S. STRATCOM Launches Space Control Plan", *Defense News*, 16 October 2006

²¹ Barbara Opall-Rome, "Israel To Greatly Expand Space Capabilities", *Defense News*, 11 June 2007.

²² William Matthews, "China Sat Test Spurs U.S. To Boost Space Spending" and John T. Bennett, "Will U.S. 'Responsive Space' Concept Go Global?", both in *Defense News*, 11 June 2007.

²³ Jung Sung-Ki, "South Korean Center To Boost Space Ambitions", *Defense News*, 18 June 2007.

²⁴ Alon Ben-David, "Satellite launch raises Israeli imagery cover", *Jane's Defence Weekly*, 30 January 2008

- Cruiser USS *Lake Erie* shoots down defunct experimental National Reconnaissance Office (NRO) spy satellite US-193 with a Standard Missile 3 (SM-3) - originally developed by Raytheon for missile defence operations.²⁵

Space dominance

Though the 1967 Outer Space Treaty²⁶ aims for the peaceful use of space, for more than two decades the United States has pursued an aggressive space policy, largely out of public view, that has alarmed China, Russia and other countries, according to professor John Steinbruner and Dr. Nancy Gallagher of the Center for International and Security Studies at Maryland University.²⁷ The US not only uses spy, navigation and communications satellites, but has also considered anti-satellite weapons, space-based missile defence and space-based global strike weapons. Their recent report states that:

The United States was the principal sponsor of the original rules [of the Outer Space Treaty] but has become the principal obstacle to their legal elaboration. In order to protect efforts to develop ballistic missile defense, the United States has refused since the 1980s to consider explicit rules prohibiting deliberate attack on space objects and the deployment of weapons in space. It has assertively blocked formal attempts to organize negotiations on those topics and has stood virtually alone against the rest of the world in doing so. **The 2006 U.S. National Space Policy and supporting documents formulate the intention to dominate space for national military advantage and to control access by all other countries.** The United States is spending tens of billions of dollars each year—far more than all other countries combined—to acquire advanced military space capabilities.²⁸

In an address on Capitol Hill, Gallagher said **US policy has been to “use space the way we want and to stop others from using it in ways we don’t like”**.²⁹ As Peter Brookes of the conservative Heritage Foundation think tank writes: “No nation relies more on space than the US. Space is the ultimate military high ground and critical to maintaining the ability of US armed forces to meet its security commitments to friends and allies around the globe”.³⁰

²⁵ Amy Butler, David A. Fulghum and Craig Covault, “Missile Fallout”, *Aviation Week & Space Technology*, 3

March 2008; Gayle S. Putrich, “U.S. ASAT Test Roils Industry”, *Defense News*, 25 February 2008

²⁶ See: <http://www.unoosa.org/oosa/SpaceLaw/outerspt.html>

²⁷ William Matthews, “Analysts: Protect Sats With Treaties”, *Defense News* online, 10 June 2008

²⁸ John Steinbruner and Nancy Gallagher “Reconsidering the Rules for Space Security”, American Academy of Arts and Sciences, Cambridge, MA, 2008, p. v (foreword)

²⁹ William Matthews, “Analysts: Protect Sats With Treaties”, *Defense News* online, 10 June 2008

³⁰ Peter Brookes, “Marking the boundaries of weapon use in space”, Opinion, *Jane’s Defence Weekly*, 30 July 2008

However, Steven Kosiak of the Center for Strategic and Budgetary Assessments policy research group thinks that the introduction of space-based weapons lacks a compelling reason, as terrestrial-based weapons with the same capabilities are less costly, technologically less complicated and more difficult to defeat.³¹ In the words of USAF Lieutenant General William L. Shelton: **“I don’t necessarily have to take the fight to space. It sounds mundane, but [bombing a ground site] is just as effective.”**³²

Shooting down satellites

China’s secret test launch in January 2007 of an anti-satellite (ASAT) weapon, successfully destroying an outdated Chinese weather satellite, took the military space community by surprise and sparked broad condemnation, especially from the US. The US Air Force chief Michael Moseley at the time called the test a “strategically dislocating” event as significant as the Russian launch of Sputnik in 1957.³³ “The test puts at risk the assets of all-space faring nations”, according to a Pentagon report that also said that China’s anti-satellite programme aims “to deny others access to outer space”. But however badly timed and flawed in design the test may have been,³⁴ others such as Theresa Hitchens from the Washington DC-based Center for Defense Information (CDI) point out that the ASAT launch is “actually a signal of failed US policy”, as “the Chinese probably felt driven by their frustration at the lack of US willingness to take their concerns about US space weaponisation into account”.³⁵ According to another report the Chinese ASAT programme probably started in response to a similar US programme.³⁶

At the same time the Chinese test has been seized upon to stress the need to speed up more advanced research and development programmes in the field of space warfare.³⁷

³¹ Peter Buxbaum, “Arms race in space”, *Defense Technology International*, January/February 2008

³² William B. Scott, “Space Control Redux”, *Aviation Week and Space Technology*, 6 November 2006

³³ Nathan Hodge, “Shootdown of US satellite raises ASAT concerns”, *Jane’s Defence Weekly*, 27 February 2008; Caitlin Harrington, “Chinese ASAT test prompts US strategic rethink”, *Jane’s Defence Weekly*, 2 May 2007

³⁴ It is said that the test resulted in a huge, ten percent increase (8-900 pieces larger than ten centimetres and another two million smaller than one centimetre) in space debris, potentially harmful to any satellite orbiting the earth. See Frank Morring Jr. and Amy Butler, “Second Thoughts”, *Aviation Week and Space Technology*, 12 May 2008; David Isenberg, “The Newest Anti-Satellite Contender: China’s ASAT Test”, British American Security Information Council, BASIC Notes, 16 March 2007; Frank Morring, “Worst Ever”, *Aviation Week and Space Technology*, 12 February 2007

³⁵ Caitlin Harrington (additional reporting by Bill Sweetman and Stephen Trimble), “Chinese ASAT test rekindles weapons debate”, *Jane’s Defence Weekly*, 24 January 2007

³⁶ Frank Morring Jr. and Amy Butler, “Second Thoughts”, *Aviation Week and Space Technology*, 12 May 2008

³⁷ John T. Bennett, “Gaps’ in the Defense”, *Defense News*, 12 November 2007; William Matthews, “China Sat Test Spurs U.S. To Boost Space Spending”, *Defense News*, 11 June 2007.

One of these recent initiatives is the USAF SASSA (Self-Aware Space Situational Awareness) programme that seeks threat detecting sensors for its satellites (see e.g. William Matthews, “USAF Seeks Threat Detectors for Satellites”, *Defense News*, 9 June 2008 and Amy Butler, “Secret Steps”, *Aviation*

In a February 2007 report, the CDI counted US budget requests for fiscal year 2008 totalling over \$1 billion for programmes that could provide anti-satellite and space-based weapons capabilities.³⁸

Despite its criticism of the Chinese test, over a year later, on 20 February 2008, the US shot down a defunct American spy satellite from the cruiser USS *Lake Erie*, prompting Chinese and Russian condemnation.³⁹ Publicly the US government denied it was part of any military space programme, but claimed that the shoot-down had only been done for safety reasons, as the hydrazine rocket fuel in the satellite could have endangered populated areas if it had not been destroyed while re-entering the atmosphere.⁴⁰ “It certainly would seem that protecting people against a hazardous fuel was not what this was really about,” said a scientist from the Massachusetts Institute of Technology.⁴¹ His colleague Theodore Postol – a former scientific adviser to the US chief on naval operations – added: **“I do not understand what the purpose of the shootdown is except to indicate to the rest of the world that the US has a widely dispersed anti-satellite capability”**.⁴² Moreover the strike with a modified SM-3 missile, originally developed as a missile defence interceptor, showed how “offensive space weaponry and defensive missile shields can be two faces of the same technology”.⁴³ As pointed out by Laura Grego, an astrophysicist with the Union of Concerned Scientists: **“If the Pentagon demonstrates that its missile defence systems can destroy satellites, it will be very difficult to convince other countries that they should not develop a similar anti-satellite capability”**.⁴⁴

The US has conducted anti-satellite tests and deployed ASAT systems since 1959. It developed the ASM-135 air-launched ASAT from 1970, which was tested from a F-15 fighter jet in 1985, destroying a research satellite at an altitude of 525 km – the last such test before the Chinese in 2007.⁴⁵

Week and Space Technology, 15 October 2007). Another is the Rapid Attack Identification Detection Reporting System RAIDRS (see: Amy Butler, “Anti-Asat”, *Aviation Week and Space Technology*, 17 March 2008).

³⁸ Theresa Hitchens, Victoria Samson and Sam Black, “Space Weapons Spending in the FY 2008 Defense Budget”, CDI, 21 February 2007

³⁹ Amy Butler, Michael Bruno, David A. Fulghum and John M. Doyle, “Ambiguous Intercept”, *Aviation Week and Space Technology*, 25 February 2008

⁴⁰ Reader Walter Holemans (“Hydrazine case not so hot”, Correspondence, *Aviation Week & Space Technology*, 28 April 2008) calls this argument a lie as the hydrazine tank in all likelihood would have been destroyed by the heat while re-entering the atmosphere at Mach 25.

⁴¹ Mark Kaufman and Josh White, “Spy Satellite’s Downing Shows a New U.S. Weapon Capability”, *Washington Post*, 22 February 2008

⁴² Nathan Hodge, “Shootdown of US satellite raises ASAT concerns”, *Jane’s Defence Weekly*, 27 February 2008

⁴³ Charles J. Hanley, “Space treaty efforts hurt by satellite strike”, Associated Press, 24 February 2008

⁴⁴ Nathan Hodge, “Shootdown of US satellite raises ASAT concerns”, *Jane’s Defence Weekly*, 27 February 2008

⁴⁵ Gayle S. Putrich, “U.S.: Shooting Down Satellite Will Reduce Risk”, *Defense News*, 18 February 2008; Duncan Lennox, “Launching out”, *Jane’s Defence Weekly*, 28 March 2007

Just eight days before the American shoot-down, China and Russia had proposed a treaty on “the prevention of the placement of weapons in outer space” and on the “threat or use of force against space objects”, but President Bush promptly rejected it.⁴⁶ That opposition to new rules on weapons in space may demonstrate the US feeling it can do whatever it wants to, but ultimately “offence is much easier than defence” in space, according to Steinbruner, as it is much cheaper to attack a satellite than to protect one. As “you can’t prevent an attack on a satellite (...) you must legitimise it”.⁴⁷

The United Nations and the Space Race⁴⁸

The UN General Assembly has held three special UN space conferences: in 1968, 1982 and 1999. The UN Committee on the peaceful Uses of Outer Space has a full-time secretariat, the UN Office for Outer Space Affairs (UNOOSA).

The most recent resolutions on space were 54/68 in 1999, 59/2 in 2004 60/99 in 2005 and 61/111 in January 2007. The latter summarises the present political priorities for the peaceful use of outer space, including the prevention of an arms race in space, defining outer space, a review of the use of nuclear power systems in space, the development of space law and improved international cooperation.

There is one UN treaty, plus four conventions and agreements concerning the uses of outer space: the 1967 Outer Space Treaty; the Rescue of Astronauts and Return of Objects Launched into Outer Space Agreement; the Convention on International Liability for Damage Caused by Space Objects; the Convention on Registration of Objects Launched into Outer Space; and the Agreement Governing the Activities of States on the Moon and Other Celestial Bodies.

Peaceful use of space

The Chinese and American tests illustrate the need to revitalise the longstanding Prevention of an Arms Race in Outer Space (PAROS) negotiations in the United Nations’ Conference on Disarmament (CD). But any new initiative to develop an international framework to prevent an arms race in space has been blocked by the US, which argues “that an arms race in outer space does not yet exist, and it is therefore unnecessary to take action on the issue”. On the other hand, “the rest of the international community agrees that, because there is not yet an arms race, now is the time to prevent weaponisation of space”, according to Reaching Critical Will, a project by the Women’s

⁴⁶ William Matthews, “Analysts: Protect Sats With Treaties”, *Defense News* online, 10 June 2008

⁴⁷ William Matthews, “Analysts: Protect Sats With Treaties”, *Defense News* online, 10 June 2008

⁴⁸ “UN moves to control the space race”, *Jane’s Defence Weekly*, 4 April 2007

International League for Peace and Freedom.⁴⁹

As the Outer Space Treaty never really defined “peaceful” use of space, over the past decades it has mostly been explained by military planners – realising the huge potential of space – not as a ban on military use of space, but rather as the “non-aggressive” use of space. “Therefore, **most states accept that “peaceful purposes” include military uses, even those which are not at all peaceful - such as using satellites to direct bombing raids or to orchestrate a “prompt global strike” capability.**”⁵⁰

For decades critics have warned that introducing weapons into space would launch a new arms race that, paradoxically, would leave the US as the most vulnerable victim to any attack, given their predominant position, with far more space assets than any other country in the world.

Nevertheless, the US sticks to the motto “*si vis pacem para bellum*” (if you want peace, prepare for war). This is well illustrated by the ongoing US ballistic missile defence (BMD) plans that crucially affect current military space policy debates. In 2001 US President George W. Bush announced the US withdrawal from the Anti-Ballistic Missile (ABM) Treaty between the US and the (former) Soviet Union. The ABM Treaty not only limited ABM systems on both sides, it also prohibited the deployment of space-based ABM systems, such as a Space Based Laser.⁵¹

However slowly US BMD plans may evolve - due to both problematic technical developments as well as major diplomatic challenges - there is no sign that Washington intends to leave its unilateral path, which is likely to spur arms races in multi-billion dollar missile and counter-missile programmes and potentially escalate into violent conflicts.

Similarly, growing military use of space and the inherent will not only to protect space assets, but also –in the case of the US - to maintain dominance in space, will lead to immensely costly space and counter-space projects worldwide.⁵² With no chance of effectively securing highly vulnerable space assets, outer space may become the potential battlefield people have long feared.

⁴⁹ <http://www.reachingcriticalwill.org/legal/paros/parosindex.html#uses>

⁵⁰ <http://www.reachingcriticalwill.org/legal/paros/parosindex.html#uses>

⁵¹ While that programme was officially terminated in 2003, reports suggest that it may be continued through the US ‘black budget’. See e.g. <http://www.armscontrolwonk.com/161/space-based-laser-in-the-black-budget>

⁵² Giuseppe Anzera, “The Pentagon’s bid to militarise space”, *Power and Interest News Report (PINR)*, 17 August 2005

Emergence of a European military space policy

The ambiguity of many western states towards the militarisation of space is clearly reflected within the European Union. While its members support UN initiatives to prevent an arms race in space, they have at the same time become increasingly dependent on satellite services for their military, leading to EU initiatives to develop common space assets and a drive towards a common European space policy.

In December 2001, on the 40th anniversary of France's National Centre for Space Studies then-president Jacques Chirac warned his audience: **“The United States spends six times more public money on the space sector than Europe. Failure to react would inevitably lead to our countries becoming first scientific and technological vassals, then industrial and economic vassals”**.⁵³

In recent years the EU's interest in space policy has grown significantly. According to Brussels a driving force has been the enlargement of the Union, as well as the fact that the space sector would be a “strategic industrial sector for growth and employment”. The Enterprise directorate that is responsible for Space Policy boasts furthermore of “space-based science and applications [that] play an important role in strengthening the competitiveness of the knowledge-based society in Europe”.⁵⁴

Increasingly, this interest widens from purely civilian applications towards space projects with both civilian and military purposes. Contrary to the US, where most space initiatives have a clear military label, within the EU the issue is still caught up in much secretiveness. Though EU military space policies have overcome some of their controversy, much of their acceptance is rooted in the emphasis that is put on human security or non-military aspects.

Lifting the veil

Still a sensitive political topic within the EU, the military use of space has overcome at least part of the taboo in recent years. A series of documents released by Brussels have shaped some common ground in Europe on the use of space for defence purposes. The current European Space Policy document that was released in May 2007 is the product of earlier discussion following up mainly from the European Commission's (EC) ‘Green’ and ‘White’ papers on space (January and November 2003⁵⁵); the ‘ESDP and Space’ document (2004); and the “Generic Space System Needs for Military Operations” (endorsed by the EU Military Committee in February 2006).⁵⁶

⁵³ Daniel Dombey, “Chirac calls for space funding to avert vassal status for EU”, *Financial Times*, 19 December 2001

⁵⁴ http://ec.europa.eu/enterprise/space/themes/intro_space_en.html

⁵⁵ “Space: a new European frontier for an expanding Union. An action plan for implementing the European Space policy”, European Commission, November 2003 (COM 2003/673)

⁵⁶ See “Let us make more space for our defence – Strategic guidelines for a space defence policy in

A 2003 slide show used by the EC to explain its white paper, referred to the “emergence of new competitors in the space field” and the “crisis of the space industry” as major driving forces behind the new space initiatives. **“Standing still is not an option. Lack of action could leave Europe vulnerable to two dangers: decline of space power capabilities [and the] decline of leading space companies”**, the presentation went on to argue. But however much the space policy may have been business-driven, the underlying military aspect has been at least as important, marking a significant departure from the EU path in the area of space.⁵⁷

The white paper describes the rationale behind a common EU space policy as follows:

Europe needs an extended space policy, driven by demand, able to exploit the special benefits space technologies can deliver in support of the Union’s policies and objectives: faster economic growth, job creation and industrial competitiveness, enlargement and cohesion, sustainable development and security and defence.

It further mentions military space programmes as a policy challenge to contribute to a stronger CFSP and ESDP.

To be credible and effective, any CFSP and ESDP must be based on autonomous access to reliable global information so as to foster informed decision-making. Space technologies and infrastructures ensure access to knowledge, information and military capabilities on the ground that can only be available through the capacity to launch, develop and operate satellites providing global communications, positioning and observation systems.⁵⁸

In addition the white paper argues that

Space technology, infrastructure and services are an essential support to one of the most rapidly evolving EU policies – the Common Foreign and Security Policy (CFSP) including European Security and Defence Policy (ESDP). Most space systems are inherently capable of multiple use and the credibility of the above policies will be significantly strengthened by taking better advantage of space applications.⁵⁹

The paper goes on to claim that “the European Space Policy (...) carries the promise of substantial economic, social and environmental benefits for the Union and its citizens.

France and Europe”, French Ministry of Defence, February 2007

⁵⁷ Brooks Tigner, “Germany Hopes To Unveil EU Space Policy”, *Defense News*, 9 April 2007

⁵⁸ White Paper, p.12

⁵⁹ White Paper, p.19

The policy will also bring new qualities to the Union's external actions, especially in defence, security, environment and development.”⁶⁰

These early phrases on European military space policy have laid the foundation for gradually more explicit wording.

Strategic Interest in Space

The following quote from a European Commission document clearly show the ambitions to strongly develop European Space policy, including its military options.

To the Commission space activities are “strategic for their contribution to the construction of Europe. Space is a tool to serve the interests of the Union, its Member States and its citizens: Strategic influence, scientific progress, economic growth in the knowledge economy and security. (...) European security policy is developing rapidly. Space based situation awareness and reaction capability will play a substantial role in this policy. The differentiation between defence infrastructure and internal security infrastructure and systems is becoming blurred and common use needs to be clarified. The Council of the EU has recognised that space assets could contribute both to making the EU more capable in the field of crisis management and to fighting other security threats. It has therefore approved the idea that identified and agreed upon ESDP requirements should be reflected in the global EU space policy and European space programme.

The EU needs guaranteed access to capabilities in the development, launch and operation of space assets, secured through a mix of independent capability, strategic international partnership and reliance on market forces. Europe's investment in space infrastructure and services also benefits and influences neighbouring countries, developing countries and international partners. The international dimension of space policy thus will increase.

Today, European companies are key actors in the world-wide commercial market of satellite manufacturing, launch services and satellite operators; Europe has a sound technology base; and scientific excellence has been established. All this has been achieved with public expenditure in space representing six times less than that of the US. The European space sector needs to maintain excellence at an affordable cost.”⁶¹

⁶⁰ White Paper, p.37

⁶¹ Communication from the commission to the council and the European parliament: European Space Policy - Preliminary Elements”, Commission Of The European Communities, Brussels, 23.05.2005, COM(2005) 208 final, p.4

The pushers

There has been a growing chorus of industry and government representatives urging the framing of a European 'space defence policy'. One of the more vocal representatives over recent years has been Michèle Alliot-Marie. As a French defence minister, in October 2003 she initiated a working group to examine the 'Strategic Directions of Space Defence Policies' – also known by its French acronym GOSPS. Led by former ambassador François Bujon de L'Estang, in late 2004 the GOSPS presented a range of proposals aimed at strengthening French military space capabilities. When its report – "Let us make more space for our defence – Strategic guidelines for a space defence policy in France and Europe" – was partly declassified and released in an updated version in February 2007, Alliot-Marie noted that "space assets play a critical role as demonstrated during recent conflicts. **Such assets enable the countries that possess them to assert their strategic influence on the international scene and to significantly enhance their efficiency during military operations. Space control has thus become pivotal to power and sovereignty** and now involves stakes comparable to those of deterrence during the 1960's."⁶² The report claims to demonstrate "the growing significance of space, at both the military and political levels for both France and Europe", and "**the role that space should play, as a catalyst in enhancing the effectiveness of Defence resources and as a unifier in the emergence of a European Defence**". It concludes that "dialogue and strategic analysis between the civilian, military industrial and institutional partners in both France and Europe" should be promoted.

In a 2005 speech - within weeks of the French and Dutch people rejecting the proposed Constitutional Treaty - Alliot-Marie told her audience that "the space sector has to be a priority for Europe. (...) To me it seems fundamental that Europe mustn't fail to grasp the importance of the stakes which others have perfectly understood."⁶³

Another outspoken supporter of that line is leading Christian Democrat MEP Karl von Wogau, a staunch proponent of Europe as a more muscular military power.⁶⁴ For years the conservative Von Wogau has been working relentlessly to make the European Parliament more receptive to a greater (military) role for Europe in space. In a 15 May 2008 speech at the launch of the European Organisation for Security (EOS) – a new Brussels-based industry lobby group which includes all major European arms companies - the long-time chairman of the EP's subcommittee on security and defence, urged the incoming French presidency to make sure that the next genera-

⁶² "Let us make more space for our defence – Strategic guidelines for a space defence policy in France and Europe", French Ministry of Defence, February 2007

⁶³ Speech by Defence minister Michèle Alliot-Marie at the international conference of the economic defence council, Paris, 8 June 2005

⁶⁴ "See also Frank Slijper, "The emerging EU Military-Industrial Complex", TNI/Campagne tegen Wapenhandel, 2005, p.30

tion of space technologies should be common European facilities.⁶⁵

Von Wogau receives support for his idea from former EDA (European Defence Agency) chief Nick Witney, who is currently senior policy fellow at the influential European Council on Foreign Relations. A similar message was conveyed in 2006, when Von Wogau proposed that “the next generation of satellites intelligence-gathering systems be integrated into a European system whose output would be available for military, police and disaster-management purposes using the EU satellite centre in Torrejón”.

In June 2008 Von Wogau received strong backing from the European Parliament’s Foreign Affairs Committee for his “Report on space and security”.⁶⁶ While acknowledging the “concern over the prospects [of] possible weaponisation of space”, this should not stop Europe from embarking on an ambitious military space programme. According to the MEP, “the EU needs for the efficiency of its ESDP a full range of space-based systems which would enable it to watch, listen, communicate and navigate accurately”.⁶⁷ For the necessary protection of Europe’s satellites against “a hostile state or non-state actors” the construction of a space surveillance system is also recommended – a position strongly supported by both the European Space Agency (ESA) and the French government.

European civil society clearly has been less vocal so far on this issue. Rebecca Johnson of the Acronym Institute for Disarmament Diplomacy in London, has been one of the few monitoring the process in Europe and is author of the report “Europe’s Space Policies and their relevance to ESDP”, commissioned by the European Parliament in 2006. In the report she warns that **“there is a danger that in the rush to ensure that Europe’s space assets are better geared to serve ESDP goals, not enough consideration is being given to the countervailing implications of an overly narrow and militarised concept both of ESDP and of space potential and uses”**.⁶⁸

European Space Policy

In May 2007 then, the new European Space Policy was released, unifying the approach of ESA with those of the individual European Union member states. Jointly drafted by the European Commission and ESA, the European Space Policy sets out a basic vision and strategy for the space sector - including in the area of security and defence – that

⁶⁵ See www.eos-eu.com and Julian Hale, “MEP Calls for French to Push for Joint EU Space Facilities”, *Defense News*, 19 May 2008

⁶⁶ ‘Report on Space and Security’, European Parliament Committee on Foreign Affairs (rapporteur Karl von Wogau), 10 June 2008

⁶⁷ Brooks Tigner, “EU urged to push defence focused space projects”, *Jane’s Defence Weekly*, 11 June 2008; Von Wogau press release, “European Parliament: EU space projects should be financed from the EU budget“, http://www.wogau.de/07/action=speeches/2_speeches_101_EN.htm

⁶⁸ Rebecca Johnson, “Europe’s Space Policies and their relevance to ESDP”, European Parliament, Directorate-General For External Policies Of The Union, 19 June 2006, p.7

will “bring a new dimension to the EU’s international relations”⁶⁹ With this document, the EU, ESA and its Member States all commit to increasing coordination of their activities and programmes and to organising their respective roles relating to space. It is considered to be the formal break with the past, when the EU and ESA (formally) always carefully avoided any clear involvement in the military dimensions of space.⁷⁰

On “security and defence” the policy document states:

The EU Security Strategy highlighted that Europe faces constantly evolving threats which are more diverse, less visible and less predictable. The Commission has identified security of EU citizens as one of the three main objectives in its work programme. To tackle these constantly evolving threats requires a mixture of civilian and military solutions. Space assets provide a significant contribution to this. The EU approach to crisis management emphasises the synergy between civilian and military actors. Space system needs for planning and conducting civilian and military Crisis Management Operations overlap. Many civilian programmes have a multiple use capacity and planned systems such as Galileo and GMES may have military users. **The Member States in the Council have identified Europe’s generic space system needs for military operations and stressed the necessary interoperability between civilian and military users.** Military capability will continue within the remit of Member States. This should not prevent them from achieving the best level of capability, within limits acceptable to their national sovereignty and essential security interests. Sharing and pooling the resources of European civilian and military space programmes, drawing on multiple-use technology and common standards, would allow more cost-effective solutions. The economy and security of Europe and its citizens are increasingly dependent on space-based capabilities which must be protected against disruption. Within the framework of existing EU principles and institutional competencies, Europe will substantially improve coordination between its defence and civil space programmes, while retaining primary end-user responsibility for funding.

At a hearing by the European Parliament a few days prior to the release of the policy document, Paul Weissenberg, the head of the aerospace, security, defence and equipment policy office at the EC’s Directorate-General for Enterprise and Industry had said: “We all agree that there is no security [in Europe] without space. If we want to be independent, Europe must use space as an asset and it must offer a mixture of civil and military applications”.⁷¹ Weissenberg’s office had been largely responsible for steering the new European Space Policy to completion.

⁶⁹ See “New European Dimension”: http://www.esa.int/SPECIALS/About_ESA/SEMFPYV1SD_0.html

⁷⁰ Henk H.F. Smid, “Europese Militaire Ruimtevaart – Het taboe doorbroken?,” [Dutch space magazine] *Ruimtevaart*, 3/2007; Brooks Tigner, “Space Policy Rises on EU Radar”, *Defense News*, 7 May 2007

⁷¹ Brooks Tigner, “Space Policy Rises on EU Radar”, *Defense News*, 7 May 2008

Newspeak: militarising in a dual-use way

All this follows the familiar pattern that we have seen previously in the area of security research, where **projects initially are very much presented as civil security initiatives, sometimes as dual or multiple purpose, whereas a closer look in many cases reveals a strong military component.**⁷² As one industry expert some years ago baldly explained, the sensitive word ‘military’ was carefully replaced by ‘security’ to smoothen acceptance of their research agenda.⁷³ As we shall see here, much the same mechanism is being used in the nascent European space policy.

The dual-use terminology moreover allows for the incorporation of military projects under the banner of and financed by (civil) security projects. This silent inclusion of military aspects in dual-use programmes is a favoured route for the military at a time when – at least in Europe – it has to cope with decreasing budgets.⁷⁴ As three Italians related to the *Scienziati/i Responsabili* (Responsible Scientists) association write in the journal *Space Policy*:

Furthermore, it allows private and public funding of industrial space activity without a sharp separation of military and civilian use, now considered as a *démodé* cultural heritage out of step with economic (industrial) needs for a complete commercial and public synergy of investments. It remains less evident, however, how such industry characteristics might assure European ‘sustainable growth’ and ‘quality of life’.⁷⁵

They further contend that a space arms race remains the main risk of dual-use developments, as they go against the promotion of confidence-building measures to prevent such an arms race. From the perspective that Europe is a peacemaker that should be trusted, this may sound paranoid. However, this argument is well illustrated in the western (military) press, which often criticises or at least mistrusts Chinese dual-use space developments as being a cover for (offensive) military intentions in space.⁷⁶ The concerned Italians warn that **“a European ‘dual-use race’ may be a complete loss of civilian scientific leadership in space research activities** – with dual-use industries

⁷² See “Ben Hayes, “Arming Big Brother”, TNI/Statewatch, 2006; Frank Slijper, “The emerging EU Military-Industrial Complex”, TNI/Campagne tegen Wapenhandel, 2005.

⁷³ Frank Slijper, “The emerging EU Military-Industrial Complex”, TNI/Campagne tegen Wapenhandel, 2005, p.17

⁷⁴ F. Brown, “Space and ESDP – a growing partnership?”, *Space Policy* 18 (2002) in: M. Cervino, S. Corradini and S. Davolio, “Is the ‘peaceful use’ of outer space being ruled out?”, *Space Policy* 19 (2003), p.233-4

⁷⁵ M. Cervino, S. Corradini and S. Davolio, “Is the ‘peaceful use’ of outer space being ruled out?”, *Space Policy* 19 (2003), p.233

⁷⁶ See e.g. Christopher Griffin and Joseph E. Lin, “China’s Space Ambitions”, *Armed Forces Journal*, April 2008

gaining increasing power as they link up with military institutions”⁷⁷ Also, they show that while dual-use suggests some kind of balance, in the case of the Italian Cosmo-SkyMed space programme – which started as a fully civilian mission - the military has access to all civilian data, while “data specifically produced by military missions may eventually be passed to civil users only after being degraded”⁷⁸

A good example of how this stronger military emphasis is pushed comes from a document that was released through the European Parliament in July 2007, written by - pro-‘milspace’ - French and Italian researchers. The authors note that “any space-based system architecture will have to be developed according to operational needs and will have to recognize the specificities of the military user communities before addressing broader security needs. This implies that such an architecture will have to address: security and confidentiality issues; the robustness of its components in strenuous military contexts; [and] the guarantee of high levels of performances (above that available on the market).”⁷⁹

But however much some want space to be strongly embedded in Europe’s military agenda, there are still enough conflicting interests that slow many processes (as we will show later, most clearly in the case of Galileo): behind-the-scenes bureaucratic in-fighting, including friction between the European Commission and ESA; a stake for the European Defence Agency; diverging national interests and priorities, including support for national space industries.⁸⁰ As Colonel Yves Blin, head of the space office within the French general staff and another chief proponent of a strong European ‘mil-space’ programme, put it: “If Europe can’t work together on a relatively low-sensitivity programme like Galileo, how can it operate on milspace?”⁸¹

Lisbon Treaty

Building upon earlier documents, the area of space policy became part of the treaty texts on the European Constitution and the subsequent Lisbon Treaty. One important gain was its inclusion in the articles on research and technological development. A new article added:

⁷⁷ M. Cervino, S. Corradini and S. Davolio, “Is the ‘peaceful use’ of outer space being ruled out?”, *Space Policy* 19 (2003), p.234

⁷⁸ M. Cervino, S. Corradini and S. Davolio, “Is the ‘peaceful use’ of outer space being ruled out?”, *Space Policy* 19 (2003), p.235

⁷⁹ Giovanni Gasparini, Jean-Pierre Darnis and Xavier Pasco (Fondation Pour la Recherche Stratégique, Paris and Istituto Affari Internazionali, Rome), “The cost of non Europe in the field of satellite based systems”, manuscript completed 19 July 2007 and released by the European Parliament in December 2007 (study requested by the European Parliament’s Subcommittee on Security and Defence)

⁸⁰ Renata Goldirova, “EU expected to unveil space policy before summer”, *EUobserver.com*, 10 April 2007; Brooks Tigner, “Germany Hopes To Unveil EU Space Policy”, *Defense News*, 9 April 2007

⁸¹ Robert Wall and Michael Taverna, “Brothers in arms”, *Aviation Week and Space Technology*, 24 September 2007

To promote scientific and technical progress, industrial competitiveness and the implementation of its policies, the Union shall draw up a European space policy. To this end, it may promote joint initiatives, support research and technological development and coordinate the efforts needed for the exploration and exploitation of space.⁸²

On the question of competencies, the Lisbon Treaty text states that: “In the areas of research, technological development and space, the Union shall have competence to carry out activities, in particular to define and implement programmes; however, the exercise of that competence shall not result in Member States being prevented from exercising theirs.” The new treaty would further cement ties between the EC and ESA, making the latter the official agency for all EU space activities, including military ones.⁸³

Further, according to the Lisbon Treaty text, “the European Parliament and the Council, acting in accordance with the ordinary legislative procedure, shall establish the necessary measures, which may take the form of a European space programme, excluding any harmonisation of the laws and regulations of the Member States.”

“The Lisbon Treaty would have established a legal basis for the European Space Policy (ESP) as well as the possibilities of permanent structured cooperation on security and defence matters”, states MEP Von Wogau in his earlier mentioned report.⁸⁴

Though it is unclear yet which direction new treaty talks will go, any new or amended treaty proposal might include similar wording to enable Brussels to pursue a more European course, including in the area of military space. If the dreams of some French officials become true, this might happen much sooner than most people would believe.

French presidency

Traditionally, France has been Europe’s front-running space country. France has made space policy a top priority for its EU presidency in the second half of 2008: “The year 2008 will be a turning point in the European space program”, according to President Nicolas Sarkozy.⁸⁵ A major objective would be to persuade countries other than France, Italy the UK and Germany – which already account for most of Europe’s spending - to raise their space spending budgets substantially. To stress the importance that the French attach to space, their new defence plan, launched in June 2008 and in-

⁸² Treaty of Lisbon amending the Treaty on European Union and the Treaty establishing the European Community, 3 December 2007

⁸³ Michael Taverna and Frank Moring, Jr., “Pilot in the Loop”, *Aviation Week and Space Technology*, 21 January 2008

⁸⁴ ‘Report on Space and Security’, European Parliament Committee on Foreign Affairs (rapporteur Karl von Wogau), 10 June 2008

⁸⁵ Michael A. Taverna and Robert Wall, “EU Space Strategy Eyed”, *Aviation Week and Space Technology*, 18 February 2008

troducing heavy cuts elsewhere in the defence organisation, announced the doubling of the military space budget over the next 15 years, including a programme to create a space-based early warning system against missile attacks.⁸⁶ France is Europe's largest spender, accounting for almost half of Europe's €1 billion annual military space budget.⁸⁷ Another French offer has been to make the Kourou launch centre in French Guiana – owned and operated by France on behalf of ESA - available to the European Union.

France is also backing a proposal to place independent ground-based space surveillance systems throughout Europe in a network, and expand it to give Europe a space-monitoring capability, like the US and Russia already have. The ESA is expected to propose in November 2008 that its 17 members spend €100 million over the next three years to field a rudimentary space-surveillance network for both civilian and military users.⁸⁸ Sarkozy has suggested that situational awareness systems should not only track space debris, but also objects that could threaten the peaceful use of space. **“Space should not become a new Wild West”**, he said.⁸⁹ According to an official of the French ministry of Foreign Affairs, Rosine Couchoud, with the introduction of a Code of Conduct for space-faring nations Europe would try and find a middle ground between Russian and Chinese proposals to make space an arms-free zone and the US position that no new treaty is needed.⁹⁰ She went on to say that the proposal gives “due consideration to defence interests”, and seeks to establish confidence-building measures that reinforce each nation's right to use space without the fear that its satellites will be damaged.

With a dual-track approach Paris pushes joint projects with ‘coalitions of the willing’⁹¹, while at the same time trying to get space higher on the agenda in Brussels (see also the ESA section below). Obviously, this would not only serve political goals, but also mean more affordable space plans for France.

Disappointing for the French then, was the Irish rejection of the Lisbon Treaty in their

⁸⁶ Michael Taverna, “Big Boost”, *Aviation Week and Space Technology*, 23 June 2008; Steven Erlanger and Katrin Bennhold, “In Defense Policy, France Turns to U.S. and Europe”, *The New York Times*, 17 June 2008

⁸⁷ Michael Taverna, “Ambitions Aligning”, *Aviation Week and Space Technology*, 4 February 2008 and Michael Taverna, “Mutual Fund”, *Aviation Week and Space Technology*, 19/26 March 2007

⁸⁸ Peter B. De Selding, “France To Keep Pushing for New EU Space Policy”, *Defense News*, 14 July 2008

⁸⁹ Michael Taverna and Robert Wall, “EU Space Strategy Eyed”, *Aviation Week and Space Technology*, 18 February 2008

⁹⁰ Peter B. De Selding, “France To Keep Pushing for New EU Space Policy”, *Defense News*, 14 July 2008

⁹¹ Like e.g. collaboration on a ground-based military space surveillance system that could include signal intelligence and data relay networks; see: Michael Taverna, “Accent Graves”, *Aviation Week and Space Technology*, 18 June 2007. Also see: Michael Taverna, “Mutual Fund”, *Aviation Week and Space Technology*, 19/26 March 2007

referendum in June 2008. According to some industry officials, its biggest impact is likely to be felt in space. **While space plans can still proceed without the new treaty, it could slow the introduction of reforms aimed at greater responsibility on space initiatives within the European Commission and a greater leading role for the EP.**⁹² Still, lobbyists consider the French presidency as “the last (...) in a long time that will be in a position to make a decisive push for space”, according to Kevin Madders of the Systemics Network International consultancy in Brussels.⁹³

To highlight its intentions, within weeks of France assuming the EU presidency in July 2008, a French Air Force plane – serving champagne and *foie gras* on board - flew European ministers and top officials to Kourou. Invited by French research minister Valérie Pécresse the group was taken around ‘Europe’s space port’ for two days while debating directions for Europe’s space policy. “Space is a strategic interest”, according to Pécresse, which needs greater “political guidance (...) keeping in mind what is at stake – Europeans’ way of life, sovereignty, budgetary choices and international relations”.⁹⁴

Also in Kourou was Brussels’ industry commissioner Günther Verheugen, who reinforced these views, stating that “space is politically important; its strategic importance is growing. Space has a [robust] unification capability” and is therefore “good for the identity of Europe”.⁹⁵ Ministers at the meeting agreed that the strategic importance of space warranted that it be integrated into the EU’s high-level policymaking structure.⁹⁶ Others have doubts: “Space for the benefit of mankind? Those motives are too soft. I want hard results”, German delegation leader Hertmut Schauerte, the German delegation leader told a Dutch journalist covering the trip.⁹⁷

Brussels’ space budget

While it is very difficult to get a complete picture of all space programme spending using European Union money, according to MEP Von Wogau there is a total €5.25 billion – €750 million per year - programme to support common European ‘space and

⁹² Peter B. De Selding, “France To Keep Pushing for New EU Space Policy”, *Defense News*, 14 July 2008; Michael Taverna, “Last-Chance Saloon”, *Aviation Week and Space Technology*, 14 July 2008; Michael Taverna, “Irish Stew”, *Aviation Week and Space Technology*, 23 June 2008

⁹³ Michael Taverna, “Last-Chance Saloon”, *Aviation Week and Space Technology*, 14 July 2008

⁹⁴ Pierre Sparaco, “Space Uncertainties”, *Aviation Week & Space Technology*, 18/25 August 2008; Michael Persson, “Met de Franse slag de ruimte in”, [Dutch daily] *De Volkskrant*, 26 July 2008; “Outcome of the meeting of ministers for space affairs, Kourou (French Guiana)”, press release, 22 July 2008 (http://www.ue2008.fr/PFUE/lang/en/accueil/PFUE-07_2008/PFUE-22.07.2008/resultats_de_la_reunion_des_ministres_en_charge_de_l'espace_a_kourou_guyane)

⁹⁵ Pierre Sparaco, “Space Uncertainties”, *Aviation Week & Space Technology*, 18/25 August 2008; Michael Persson, “Met de Franse slag de ruimte in”, *De Volkskrant*, 26 July 2008

⁹⁶ “Space Heads for High-Level Support”, News Breaks, *Aviation Week and Space Technology*, 11 August 2008

⁹⁷ Michael Persson, “Met de Franse slag de ruimte in”, *De Volkskrant*, 26 July 2008

security' activities.⁹⁸ Not part of that budget is the recently approved EU funding for Galileo, which also has defence uses (see below).

One good indicator for the growing emphasis in Brussels on space is the space research budget that has grown enormously within the 7th Framework Programme (FP7) for 2007-2012. FP7 has allocated €1.4 billion, or €200 million per year for space related research and development.⁹⁹ Of this, 85 percent is devoted to GMES (see below) and the remaining 15 percent will be used for activities in the space foundations field. By comparison, under FP6, space was a new research area with a total of €235 million.

⁹⁸ 'Report on Space and Security', European Parliament Committee on Foreign Affairs (rapporteur Karl von Wogau), 10 June 2008; "European space projects should be financed from EU budget", Karl von Wogau MEP press release, 4 June 2008 (<http://epp-ed.eu/Press/showpr.asp?PRControlDocTypeID=1&PRControlID=7476&PRContentID=13037&PRContentLG=en>)

⁹⁹ http://ec.europa.eu/enterprise/space_research/fp7.htm

The Security Panel of Experts and the business lobby

The space industry has grown rapidly over the past decade. Most recent figures report \$251 billion space-derived revenue for 2007, an 11 percent growth rate from a year earlier.¹⁰⁰ While 69 percent is for commercial products and services, the US government accounts for 25 percent (or \$62.6 billion) of the total market and another six percent (\$14.7 billion) is spent by other governments. However, the European Commission sets global turnover substantially lower, at over €120 billion.¹⁰¹ The European space lobby calculates European space industry turnover in 2007 at €5.4 billion.¹⁰²

Europe's space industry has become concentrated in a few major companies, including the recent creation of Thales-Alenia Space, 67 percent owned by Thales and 33 percent by Finmeccanica.¹⁰³ Another major player is EADS Astrium, which made headlines in 2007, urging Europe to develop a quick-response capability to meet future threats to space assets. A system based on the new French M51 ICBM nuclear missile should be able to shoot a polar-orbiting mini-satellite into space, capable of providing global coverage of the earth within two weeks.¹⁰⁴

But Europe's space industry is worried about the prospects for their business. Ten former space executives recently sent a formal warning to ESA's council about the Ariane 5 launcher missile. If the development of upgraded versions did not start soon, they warned, the industry would face an unavoidable decline.¹⁰⁵

The space industry is part of the ASD (AeroSpace and Defence Industries Association of Europe) lobby umbrella. Previously known as Eurospace, they merged with their partners from the aerospace and defence sector in 2004. Somewhat enviously, ASD notes that "institutional support of space activities grows worldwide, particularly with regard to military support ...except in Europe".¹⁰⁶ In their "Security & Defence Position Paper 2008" ASD-Eurospace contended that despite all the recent paperwork that has been produced, little progress has been made at the operational level, while many threats have emerged. "Recent events have shown the global origins of the threat to our security in Europe. We need to be constantly aware and ready to respond. Our senses must be constantly on alert. Europe's eyes and ears must function anywhere on Earth,

¹⁰⁰ Frank Moring, Jr., "Worldwide Space Economy Passes \$250 billion", *Aviation Week and Space Technology*, 7 April 2008

¹⁰¹ "The value chain", at http://ec.europa.eu/enterprise/space/space_industry/article_6824_en.html

¹⁰² "Eurospace facts and figures", ASD-Eurospace, 21 May 2008

¹⁰³ Thales Alenia Space has 11 industrial sites in 4 European countries (France, Italy, Spain and Belgium) with over 7,200 employees worldwide; see: http://www.finmeccanica.it/Holding/EN/Business/Spazio/Alcatel_Alenia_Space/index.sdo and <http://europa.eu/rapid/pressReleasesAction.do?reference=IP/07/477>

¹⁰⁴ Jean-Michel Guhl and Michael Taverna, "Jack Be Nimble", *Aviation Week and Space Technology*, 11 June 2007

¹⁰⁵ Pierre Sparaco, "Space Uncertainties", *Aviation Week & Space Technology*, 18/25 August 2008

¹⁰⁶ Alain Gaubert [Eurospace Secretary General], "European Industrial Space Policy", PPT presentation, 13 June 2006

both day and night and in all conditions”, the paper notes a bit hyperbolically.¹⁰⁷ Thus “we have to work together (...) on the new requirements for which very little national investment has so far been made”.

Back in 2004-5, the industry had a key role in the report of the Space and Security Panel of Experts, a so-called expert group of 150 people that was set up in June 2004 by the European Commission to advise them on the ‘security’ dimension of space policy.¹⁰⁸ Their work was a direct consequence of the consultation process that followed the space policy’s Green and White papers. While, contrary to other defence-related expert groups,¹⁰⁹ the report did not identify individual companies participating, they worked alongside all relevant European government officials in the area of space, security and defence who were also involved in the report’s compilation.¹¹⁰

While stressing obvious civil security benefits of space surveillance (“Space assets have for example played an important role in Darfur by providing detailed maps to the NGO’s working in that region”¹¹¹), Günther Verheugen - the EC vice-president and Enterprise & Industry Commissioner – revealed the deeper rationale behind the report’s findings. “It is time for the EU to play a much greater role in international security. Space is a unique tool to help achieve this strategic goal”.¹¹² The obvious input from defence institutions, such as the EDA and OCCAR (Organisation for Joint Armament Cooperation), in the report’s final conclusions again clearly shows the strong lobby to militarise EU’s role in space.

Another way for the space industry to emphasise its interests is, of course, the lobby area in Brussels. Sponsored by arms industry money, the Security and Defence Agenda (SDA) ‘think-tank’ regularly hosts roundtables and other meetings for business executives, military leaders, high-ranking government officials and other military-minded interest groups.¹¹³ The SDA Advisory Board is a cross-section of Europe’s most influential military experts, including the ubiquitous ex-EDA chief Nick Witney and MEP Karl von Wogau.¹¹⁴ Its patrons are Jaap de Hoop Scheffer (NATO SG), Javier Solana (EU High Representative for CFSP and SG of the Council of Ministers) and Benita Ferrero-Waldner (EC for External Relations and European Neighbourhood Policy).

¹⁰⁷ “Security & Defence Position Paper 2008”, ASD-Eurospace, 2008

¹⁰⁸ “Report of the panel of experts on space and security”, March 2005

¹⁰⁹ E.g. the European Advisory Group on Aerospace, LeaderSHIP 2015 and the Group of Personalities in the Field of Security Research; see Frank Slijper, “The emerging EU Military-Industrial Complex”, TNI/Campagne tegen Wapenhandel, 2005, p.11-23

¹¹⁰ A very brief Annex on the composition of the group mentions “representatives from Industry”; earlier in the report the presence of Eurospace at the first meeting of the group is reported

¹¹¹ “New report evaluates European security needs in the space sector”, European Commission, 18 March 2005

¹¹² “Space has a security dimension, security has a space dimension”, European Commission press release, 22 March 2005

¹¹³ Formerly the New Defence Agenda; see also Frank Slijper, “The emerging EU Military-Industrial Complex”, TNI/Campagne tegen Wapenhandel, 2005, p.28/9

¹¹⁴ <http://www.securitydefenceagenda.org/AboutSDA/Whoweare/tabid/383/Default.aspx>

At least three times over the past few years, space and security was on the agenda.¹¹⁵ In their October 2006 meeting, **Günther Verheugen** is quoted as saying that “**Europe needs information (...) and the robust means to intervene. That is the link between space and security**”.¹¹⁶

Europe’s space industry

The space business in Europe today is largely concentrated within three major companies:

With 11,000 employees and state-of-the-art facilities in France, Germany, the United Kingdom, Spain and the Netherlands (subsidiary Dutch Space), **EADS’ Astrium** is Europe’s largest space industry with prime contractorship experience across all sectors of the space business.

Thales Alenia Space is a joint venture between Thales (67%) and Finmeccanica (33%) and forms with Telespazio a Space Alliance. It was born after Thales bought the participation of Alcatel in the two joint-ventures between Alcatel and Finmeccanica, Alcatel Alenia Space and Telespazio. Thales Alenia Space is active in telecoms, radar and optical earth observation, defense and security, navigation and science. Thales Alenia Space has 11 industrial sites in 4 European countries (France, Italy, Spain and Belgium) with over 7,200 employees worldwide.

Bremen, Germany based **OHB Technology** has experienced enormous growth over the past decade. Total consolidated revenues came to €223.3 million in 2007, compared to €15 million in 2001. OHB Technology currently has around 1,300 employees.

Other important companies, with space divisions that have less than a thousand employees, include **Dassault** (France), **Oerlikon Space** (Austria), **Saab Space** (Sweden), **Sonaca** (Belgium), **Terma** (Denmark) and **VEGA Aerospace** (UK).

¹¹⁵ Resp. “Is Europe getting serious about space and security?” (16 October 2006; financed by Astrium/EADS Space), “Tracking European Space Policies – Have we got the civil – military balance right?” (18 October 2005, sponsored by VEGA); and “Space and Security in Europe” (6 November 2004)

¹¹⁶ Report of the meeting, p.9

Europe's toolbox: ESA, EUSC, GMES and Galileo

ESA – the militarising gateway to space

Since 1973 the European Space Agency (ESA) has been the embodiment of Europe's common space efforts in order to increase the effectiveness of generally modest national space budgets.¹¹⁷ According to its website, "ESA's job is to draw up the European space programme and carry it through. The Agency's projects are designed to find out more about the Earth, its immediate space environment, the solar system and the Universe, as well as to develop satellite-based technologies and services, and to promote European industries. ESA also works closely with space organisations outside Europe."¹¹⁸ Probably best-known is ESA's involvement in the International Space Station (ISS) and the construction of Ariane rockets, as well as their launching from Kourou in French Guiana.

By coordinating the resources of its members, it undertakes programmes beyond the scope of individual countries. With 18 member states¹¹⁹ and almost 2000 staff, ESA is an independent organisation that maintains close ties with the EU through an ESA/EC Framework Agreement. This 2004 Framework Agreement commits them to work together to avoid duplication of effort; cooperation takes place within the Joint Space Council. One of the main aims of the agreement is to "progressively develop a European space policy to link the demand for services and applications in support of EU policies with the supply, through ESA, of the space systems and infrastructure needed to meet that demand."¹²⁰ As a consequence, the two organisations developed the European space policy launched in May 2007.

ESA is funded by contributions from its member states that totalled almost €3 billion in 2006. National space industries participate in ESA projects in proportion to the money spent by its government. This mechanism, which is also known in the arms industry as '*juste retour*' ('just return'), increases inefficiency and reduces effectiveness as national contributions rather than the best equipped company determine the work shares. Much of the delay in the Galileo project has been due to such, often bitter, arguments (see below).

¹¹⁷ ESA's predecessors, the European Space Research Organisation (ESRO), and the European Launcher Development Organisation (ELDO), were already set up in the early 1960s.

¹¹⁸ http://www.esa.int/esaCP/GGG4SXG3AEC_UnitedKingdom_0.html

¹¹⁹ Austria, Belgium, Czech Republic, Denmark, Finland, France, Germany, Greece, Ireland, Italy, Luxembourg, the Netherlands, Norway, Portugal, Spain, Sweden, Switzerland and the United Kingdom. Though not all EU states are members of ESA yet, virtually all have indicated their wish to become one in the near future. Malta and Cyprus are likely to become the first new members. Note that Norway and Switzerland are non-EU ESA members. See <http://www.esa.int> and Michael Taverna, "Financial Engineering", *Aviation Week and Space Technology*, 21 January 2008

¹²⁰ http://www.esa.int/SPECIALS/About_ESA/SEMEDIUEVL2F_0.html

ESA and the military use of space

The ESA Convention (article II) states that “the purpose of the agency shall be to provide for and to promote, for exclusively peaceful purposes, cooperation among European states in space research and technology and their space applications”,¹²¹ With the adoption of CFSP and ESDP, and especially since 2000, efforts have been made to expand the interpretation of ESA’s statute, to enable the agency to take part in military programmes more directly. Symbolically important in that process was the report by the so-called ‘three wise men’: the Swedish former Prime Minister Carl Bildt, Jean Peyrelevede, then President of Credit Lyonnais, and Lothar Späth, then CEO of Jenoptik AG, a major German arms and space company. They had been asked by ESA to look at the organisation in the light of the changing EU policies. In their report to ESA in late 2000, the men wrote that “without a clear space component, the evolution towards the European Security and Defence Policy will be incomplete”.¹²² Leading military weekly *Defense News* opened its issue with “Panel Urges ESA To Begin Military Space Operations”,¹²³ In Bildt’s vision, “ESA would be responsible for providing the [foreign and security] policy’s supporting instruments. That is logical. It should pose no problem, even if politics sometimes does not follow logic”.¹²⁴ Partly based on their report, the European Parliament in 2002 delivered a resolution concerning Europe and space in which, as a first, the option of military applications was included.¹²⁵

Thus over the past few years, after long having been reluctant to become deeply involved in military matters, **ESA now interprets ‘peaceful’ use as ‘non-aggressive’,¹²⁶ rather than ‘non-military’.**

This is an interpretation that is hard to sustain though, looking at current European developments. How for example would ESA act if any (member) state would use its access to ESA run projects for military operations where information is used to launch attacks on perceived enemies? What if in the near future GMES or Galileo is used for operations such as in Iraq or Afghanistan? Would they know at all when military members use ESA space information for aggressive, rather than non-aggressive purposes? What if for the sake of anti-terrorism operations a country is bombed with

¹²¹ <http://www.esa.int/convention/>

¹²² Carl Bildt, Jean Peyrelevede and Lothar Späth, “Towards a Space Agency for the European Union”, 20 November 2000

¹²³ Peter de Selding, “Panel Urges ESA To Begin Military Space Operations”, *Defense News*, 20 November 2000

¹²⁴ Peter de Selding, “Panel Urges ESA To Begin Military Space Operations”, *Defense News*, 20 November 2000

¹²⁵ European Parliament, resolution P5_TA(2002)0015, 17 January 2002. Also see M. Cervino, S. Corradini and S. Davolio, “Is the ‘peaceful use’ of outer space being ruled out?”, *Space Policy* 19 (2003), p.231-37

¹²⁶ Michel Praet, “The European Union and ESA. Issues linked to Security / Defence”, ESA presentation at NATO Defence College, 31 January 2007

the help of common European space assets? What if a war is termed a humanitarian emergency? And what if space imagery is used to fabricate a case to go to war? Given the military ‘adventures’ of the past ten years these questions need to be addressed. The European Defence Agency (EDA), in its 2006 ‘Long Term Vision’ report, addresses the issue as follows: “the preparation and conduct of future EU led operations will require continued consideration of space related aspects, such as communication, and the detection and identification of potential threats in advance of an appropriate answer”.¹²⁷ Needless to say, an ‘appropriate answer’ could very well be a military intervention that is far from peaceful. The EDA aspires to become a more important player in this field. It is looking for ways to increase cooperation between the different national programmes, for example on military satellite communications.¹²⁸

Nevertheless, ESA has contracted various studies over the past few years “to determine how it might be involved in a European security programme without too obviously slipping the bounds of its charter”, according to a *Defense News* journalist.¹²⁹ It should be noted though that, albeit mostly indirectly, ESA facilitated military work ever since its creation, e.g. while taking military space payloads on board its Ariane rockets, launched from its Kourou space port.¹³⁰

Also, since ESA has said goodbye to its overwhelmingly civilian and scientific orientation, some of its officials have embraced the new course with great enthusiasm, while losing track of reality at the same time. Surprisingly, but symptomatic of how many European officials look at their dream of a strong Europe with a powerful military arm, they seem to think that the militarisation of space is not a controversial issue for the general public.

For example Michael Praet, head of ESA’s Brussels office, in early 2007 quoted Jean-Luc Dehaene as having said “I have never heard any criticism towards the reinforcement of Europe where foreign policy or defence is concerned”, following up that “the EU and ESA have never heard any criticism towards the reinforcement of a European Space policy”, and to concluding that there was “coherence and consensus which allows us to build a European Space Security and Defence Policy in the footsteps of the ESDP”.¹³¹ Clearly both Praet and Dehaene have been deaf to a significant segment of no-voters in France, the Netherlands and Ireland, who specifically objected to Europe becoming a military power.

ESA’s director-general, Jean-Jacques Dordain, says that perhaps the most important element of the European Space Policy’s has been the strong expression of all partners

¹²⁷ “Long Term Vision”, EDA, 3 October 2006

¹²⁸ Robert Wall, “Forming New Links”, *Aviation Week and Space Technology*, 19 February 2007

¹²⁹ Peter de Selding, “ESA Eyes European Space Surveillance Network”, *Defense News*, 8 October 2007

¹³⁰ Also see: Malte Lühmann, “Aus dem All in alle Welt – Weltraumpolitik für die Militärmacht Europa”, *Studien zur Militarisation Europas* 33/2008, Informationsstelle Militarisation, Tübingen (Germany), p.8

¹³¹ Michel Praet, “The European Union and ESA. Issues linked to Security / Defence”, ESA presentation to visiting NATO Defence College, European Space Research Institute, Frascati, 31 January 2007

that space is a strategic asset for Europe.¹³² Whatever that strategic value may embody, the recognition should shore up efforts to generate more funding. Or, with the blunt colonial sentiment of ESA director of science, David Southwood:

Let's be realistic. Europe hasn't gone into space primarily to do science. **The ability to put satellites in orbit is now an essential strategic and economic tool in telecommunications, navigation, security, etc. It's a major issue of independence. A few centuries ago a modern nation had to have a fleet and be able to send its ships from one continent to another. In the same way we have to be able to send our spacecraft wherever we want.**¹³³

Space surveillance has become one of the priorities of ESA lately and France will lend strong support to its plan to develop a space situational awareness (SSA) system. Such a dual-use – military and civilian – system, would be built around France's Graves ground radar, already in operation, and other existing units in the UK, Germany, Italy and ESA itself.¹³⁴ Built into an expanded network it would give Europe a space-monitoring capability alongside that of the United States and Russia.¹³⁵ A European SSA system is expected to be proposed at the agency's ministerial summit in November 2008. French president Sarkozy has also confirmed that SSA will be one of the top objectives during its 2008 EU presidency.¹³⁶

According to space journalist Amy Butler:

SSA refers to understanding what objects are in space and what capabilities they have. Accurate SSA is required to know for certain if a satellite's operations have been intentionally affected by an adversary. Talk of SSA and space control only began to show up in speeches given by senior political officials and the uppermost echelons of the military brass after China destroyed one of its own aging weather satellites in a dazzling ASAT test on Jan. 11.¹³⁷

There is general agreement that SSA got a big push after China's ASAT test in 2007, both in Europe and the US.¹³⁸ "Thanks to the Chinese," says Maj. Gen. William Shelton, 14th Air Force Commander, **it has become "more palatable" to openly discuss**

¹³² Robert Wall, "Strategy Decisions", *Aviation Week and Space Technology*, 5 March 2007

¹³³ "The revolutions of offshore science", RTD Info, Special Issue, February 2007

¹³⁴ Tony Skinner, "Europe pursues space network", *Jane's Defence Weekly*, 24 September 2008

¹³⁵ Peter B. De Selding, "France To Keep Pushing for New EU Space Policy", *Defense News*, 14 July 2008

¹³⁶ Peter B. De Selding, "France To Keep Pushing for New EU Space Policy", *Defense News*, 14 July 2008; Michael A. Taverna, "France Eyes Milspace Push", *Aerospace Daily & Defense Report*, 24 June 2008; Peter de Selding, "ESA Eyes European Space Surveillance Network", *Defense News*, 8 October 2007

¹³⁷ Amy Butler, "Bush Memo Orders Space Situational Awareness", *Aerospace Daily & Defense Report*, 12 October 2007

¹³⁸ Robert Wall and Michael Taverna, "Brothers in arms", *Aviation Week and Space Technology*, 24 September 2007

the issues of space situational awareness and the more politically sensitive areas of offensive and defensive space operations.¹³⁹ That sounds like the ideal excuse for the western military space community to put forward plans that would have been simply unrealistic before.

Torrejón and Kopernikus: towards a comprehensive spy satellite capability

Over the past decade European states have started introducing their own military observation satellites, like the French Hélios-2 satellite and the German Sar-Lupe programmes. Since 2005, Musis (Multinational Space-based Imaging System) - for surveillance, reconnaissance and observation - has brought together Italian-, French- and German-led development programmes under one umbrella, in partnership with for example, Austria, Belgium, Greece, Spain and Sweden; the system is scheduled for completion by 2014.¹⁴⁰ European geospatial intelligence is slowly taking shape.

The first common European project in this field has been the **European Union Satellite Centre (EUSC)**, based in Torrejón, near Madrid, which opened in 2002. The agency is “charged with exploiting and producing information obtained from the analysis of satellite pictures”.¹⁴¹ In particular, it aims to support EU decision-making in the field of the Common Foreign and Security Policy (CFSP) and the European Security and Defence Policy (ESDP). The EUSC is financed by contributions by member states and payments for services rendered, which are available for both individual (European and other) countries, as well as the EC, UN, OSCE and NATO. EUSC information could contribute to humanitarian and military operations; controls on proliferation of weapons of mass destruction; as well as certain judicial inquiries.

Another major project in this field is the **Global Monitoring for Environment and Security (GMES)** initiative that dates back to the Gothenburg Summit in June 2001, when the European Council decided on “establishing by 2008 a European capacity for global monitoring of environment and security”. GMES was set up in 2005 by the European Commission and the ESA. GMES was renamed **Kopernikus** recently, and is now in its implementation phase, though full operability is not expected before 2014. The initiative federates a wide range of observational networks and data providers, exploiting the most recent observation techniques and technologies, for developing cutting-edge information products to end-users. In principle, the Kopernikus observational infrastructure is comprised of two main components, space infrastructure and *in-situ* infrastructure. Kopernikus is based on observation data received from Earth

¹³⁹ Amy Butler, “Bush Memo Orders Space Situational Awareness”, *Aerospace Daily & Defense Report*, 12 October 2007

¹⁴⁰ “Military surveillance”, research*eu (‘the magazine of the european research area’), *Satellite Special*, September 2007

¹⁴¹ “Military surveillance”, research*eu (‘the magazine of the european research area’), *Satellite Special*, September 2007

Observation satellites and ground based information. These data will be coordinated, analysed and prepared for end-users, including from the 'security' community.¹⁴²

In March 2008 the EC approved a €625 million funding package for the construction and launch of three spacecraft - in 2011-12 - and related ground equipment.¹⁴³ Earlier, ESA had already approved another €758 million, and will seek approval for a further €600-800 million at the agency's ministerial meeting in November 2008.

Originally, its main purpose was in the area of disaster prevention and protection of the environment. While there seems little reason to object to that, GMES has increasingly become a typical dual-use project with growing military dimensions.

The 2003 EC White Paper on Space still noted on GMES that "its potential value in relation to the requirements of the common European Security and Defence Policy is currently being assessed."¹⁴⁴ Since then it has become clear that while "many GMES information services have the nature of a European public good and must be made available according to a full and open access principle", it will be "subject to some constraints such as security".¹⁴⁵ That is to say: while it may be a predominantly civilian controlled system, the military and security community will have a strong hand whenever deemed necessary.

While it is still not clear what future military use will be made of GMES, its importance is expected to grow in the coming years. In a January 2007 presentation to NATO Defence College officials on the security aspects of GMES, ESA's Stephen Briggs, stated that while its proposed scope includes "combating all threats that might affect our population, institutions, environment, economic infrastructure, socio-economic interests and strategic interests", a "narrower coverage [is now] assumed by ESA: delivery of products to military and paramilitary users [and] information to support Common Foreign & Security Policy and European Security & Defence Policy".¹⁴⁶

According to Briggs, **the relevance of GMES is based upon "increased use of military assets for complex situation responses"** and an "increased global role of Europe and strong public support for CFSP".¹⁴⁷ It is also expected to become part of an integrated European approach in which the deployment of military resources is an impor-

¹⁴² www.gmes.info

¹⁴³ "GMES monitoring network funding OK'd", *Aviation Week and Space Technology*, 10 March 2008

¹⁴⁴ "Space: a new European frontier for an expanding Union. An action plan for implementing the European Space policy", European Commission, November 2003 (COM 2003/673), p.15

¹⁴⁵ "Council Resolution - Taking forward the European Space Policy", 2891st Competitiveness (Internal Market, Industry And Research) Council meeting, Brussels, 26 September 2008

¹⁴⁶ Stephen Briggs, "GMES Security Aspects", ESA presentation to visiting NATO Defence College, Frascati, 31 January 2007

¹⁴⁷ The same presentation mentions 68 percent public support in 2005 for a European rapid military reaction force

tant element.¹⁴⁸ Also new is the alliance of NATO with GMES; “enhanced cooperation with [the] US Defense Intelligence Agency” was on the agenda for 2007.¹⁴⁹

Although it was hoped by some that expanded defence prerogatives under the Lisbon Treaty would open possibilities for an increased number of satellites,¹⁵⁰ it is unclear whether this can happen without the treaty’s ratification. What is clear though is that **GMES slowly transforms into an important military asset to support future warfare by European and NATO partners.**

Satellite navigation – car and missile guidance

While the American GPS (or NAVSTAR) global positioning system has evolved into a system with predominantly civilian use – in aviation, through car navigation kits – it was designed originally as a military system when launched between 1978 and 1985.¹⁵¹ Only in 1983, when the Korean Airline (Flight 007) airplane was shot down after straying into Soviet airspace, was it decided to allow for restricted civilian use of GPS. From 2013 or 2014 the US plans to launch its GPS III satellites, replacing its 32 ageing satellites as well as ground stations.¹⁵²

Together with the hugely increased demand for civilian use, its military purposes have also grown over the past decade with the introduction of GPS guided air-launched missiles such as JDAM, JSOW and Paveway, some of them first introduced during the 1999 Kosovo war.¹⁵³ More recently artillery shells and multiple launch rocket systems (GMLRS) have been put to use in battle. Its independence of weather conditions or laser target designators makes GPS guided bombs popular with the military. According to Jack Cronin, president of arms manufacturer ATK Mission Systems, GPS-guided artillery “has been described as the biggest revolution since the invention of the cannon”.¹⁵⁴ ATK produces Precision Guidance Kits converting dumb 155 mm artillery rounds into GPS guided weapons. In 2007, rival company Raytheon’s Excalibur – at a cost of over \$30,000 apiece - was the first GPS guided artillery round ever used in combat, in Iraq.¹⁵⁵ Similarly, GMLRS strikes were first introduced during the Afghanistan

¹⁴⁸ Stephen Briggs, “GMES Security Aspects”, ESA presentation to visiting NATO Defence College, Frascati, 31 January 2007

¹⁴⁹ Stephen Briggs, “GMES Security Aspects”, ESA presentation to visiting NATO Defence College, Frascati, 31 January 2007

¹⁵⁰ See Michael Taverna, “Ambitions Aligning”, *Aviation Week and Space Technology*, 4 February 2008

¹⁵¹ History of NAVSTAR GPS, <http://www.kowoma.de/en/gps/history.htm>

¹⁵² Caitlin Harrington, “Lockheed Martin and Boeing submit GPS III proposals”, *Jane’s Defence Weekly*, 5 September 2007

¹⁵³ Noah Shachtman, “Wes Clark’s Military”, Tech Central Station, 19 September 2003

¹⁵⁴ Kris Osborn, “Demand Soars for Precision Artillery”, *Defense News*, 13 August 2007

¹⁵⁵ The Excalibur is actually a co-development by the United States and Sweden’s BAE Systems Bofors company. Gerard O’Dwyer, “Sweden, U.S. Find Success With Excalibur”, *Defense News*, 15 September 2008; David Hughes, “Army accelerating Excalibur production after Iraq debut”, *Aerospace Daily &*

and Iraq wars. Lockheed Martin's GMLRS has been dubbed the "70-kilometer sniper weapon".¹⁵⁶

With the success of GPS, other nations have to set their sights on their own satellite navigation systems, not least to be independent of American control over the use of its GPS. Together with the Russian GLONASS and the Chinese Compass systems, Europe embarked on their Galileo programme. While advocated as a mainly civilian system, military use of Galileo will be more dominant than is widely perceived.

Galileo: the European copy of GPS

Galileo is a typical case where public propaganda is focussed on stressing the huge benefits for the general public, whereas a closer look at the project reveals little-mentioned but crucial military components that affect, and actually contradict, the proclaimed advantage (*vis-à-vis* GPS) of full civilian control. While certainly not unimportant, most focus has so far been on political power struggles and related funding problems that have much delayed Galileo, with total costs now estimated to be €3.4 billion, all publicly funded.¹⁵⁷ With only two of its thirty planned satellites now in orbit, the full system is expected to be operational by 2013.¹⁵⁸ Galileo's programme management is controlled by the EC and ESA.¹⁵⁹

The delays have caused Galileo to lose much of its precision advantage *vis-à-vis* the current GPS, the upgraded version of which may now coincide with Galileo's introduction. Nevertheless, to many Europeans Galileo is considered to be an essential element of an independent European space policy, despite being a costly duplication of similar systems in the US, Russia and China that are already available or will soon become so. The desire for European military autonomy is at least part of the reason why the EU has proceeded with Galileo.

Contrary to general public understanding, **from the beginning Galileo has been connected to military use.**¹⁶⁰ Already back in 2001, when Galileo was still in its infancy,

Defense Report, 1 October 2007; Kris Osborn, "Demand Soars for Precision Artillery", *Defense News*, 13 August 2007, Kris Osborn, "New Weapons, Defenses Debut at AUSA Show", *Defense News*, 12 March 2007

¹⁵⁶ David Hughes, "Army accelerating Excalibur production after Iraq debut", *Aerospace Daily & Defense Report*, 1 October 2007

¹⁵⁷ Peter de Selding, "Second Satellite in Galileo Constellation Reaches Orbit", *Defense News*, 19 May 2008; Ekrem Krasniqi, "EU: Green light for Galileo", *ISN Security Watch*, 9 May 2008

¹⁵⁸ Peter de Selding, "Second Satellite in Galileo Constellation Reaches Orbit", *Defense News*, 19 May 2008

¹⁵⁹ Simonetta Cheli, "Galileo & Security", ESA PPT presentation, 31 January 2007

¹⁶⁰ Alan Kendal, Alexis Vidal, François Boulette, Pascal Campagne and Bernard Panefieu, "Say 'Hello' to Galileo's PRS", [bi-monthly] *Inside GNSS*, Fall 2007; Simonetta Cheli, "Galileo & Security", ESA PPT presentation, 31 January 2007; Massimi Annati, "GALILEO vs. GPS – Battle over Navigation Warfare?", *Military Technology*, December 2003; Marc Peeperkorn, "EU onderzoekt militair gebruik navigatiesysteem", [former Dutch daily] *Haagse Courant*, 29 maart 2000

the so-called Public Restricted Service (PRS), encrypted signals to be used by military and security users, more than worried the US. PRS is one of five different services that Galileo will offer.¹⁶¹ It is expected that half of all users of the encrypted signal will be military customers, with the other half made up of law-enforcement agencies and emergency-response services, according to a recent survey by the European Commission.¹⁶²

Then deputy defence secretary Paul Wolfowitz wrote a letter to Brussels “to convey my concerns about security ramifications for future NATO operations if the European Union proceeds with Galileo satellite navigation services that would overlay spectrum of the Global Positioning System (GPS) military M-code signals”. Word had come to him that Galileo’s PRS signal was planned in the same spectrum as the GPS M-code. “Additionally I am concerned that it is intended that the Galileo PRS will have the features of the military signals of GPS. If the future PRS is actually intended to serve such a purpose, I do not believe the current civil forum being used by the EC provides the proper venue to fully address the security implications”. Wolfowitz wrote.¹⁶³ The issue was finally resolved in June 2004, when it was agreed to allow both EU and US forces to block each other’s signals in the battlefield, without disabling the entire system. The European Union also agreed to address the “mutual concerns related to the protection of allied and U.S. national security capabilities”.¹⁶⁴

The military use of Galileo has also long caused friction between especially the French and British governments. Where the French had been clear from the start that they would use the signal for their armed forces, the British are said to have long resisted such use.¹⁶⁵ In 2001 then -president Chirac said the benefits of an independent European satellite positioning and navigation system would be not only industrial and commercial but also strategic for the embryonic EU defence force.¹⁶⁶ Also, as he made clear, Galileo would mean that the EU “would not have to accept Europe’s subjugation in space matters” to the US.¹⁶⁷ Especially after the Kosovo war, where the US had again

¹⁶¹ http://ec.europa.eu/dgs/energy_transport/galileo/programme/needs_en.htm Also see Malte Lühmann, “Aus dem All in alle Welt – Weltraumpolitik für die Militärmacht Europa”, Studien zur Militarisation EUropas 33/2008, Informationsstelle Militarisation, Tübingen (Germany), p.17-18

¹⁶² Peter de Selding, “Half of Galileo Users Expected To Be Military”, *Defense News*, 14 July 2008

¹⁶³ A copy of the letter is at <http://www.zdnet.fr/actualites/internet/0,39020774,2106129,00.htm> Also see: Peter de Selding, “European Navigation System Faces Cloudy Future”, *Defense News*, 10-16 December 2001

¹⁶⁴ Robert Wall and Michael Taverna, “Navigating Hurdles”, *Aviation Week & Space Technology*, 28 June 2004; “U.S., EU to Sign Landmark GPS-Galileo Agreement” (<http://useu.usmission.gov/Article.asp?ID=E671D95A-FC0B-4AC5-BDCD-7F89291D2670>);

Peter de Selding, “U.S., Europe Ready “To Settle on Galileo”, *Defense News*, 23 February 2004; Michael Sirak, “Europe, US gear up for latest GPS-Galileo talks”, *Jane’s Defence Weekly*, 28 January 2004 and <http://pnt.gov/public/docs/2004-US-EC-agreement.pdf>

¹⁶⁵ Peter de Selding, “Britain, France At Odds Over Military Use of Galileo Service”, *Space News*, 19 June 2006 (http://www.space.com/spacenews/archive06/Military_061906.html)

¹⁶⁶ Daniel Dombey, “Chirac calls for space funding to avert vassal status for EU”, *Financial Times*, 19 December 2001

¹⁶⁷ Daniel Dombey, “UK set to back EU funding for Galileo satellite”, *Financial Times*, 19 March 2002

limited public use of its GPS signal, some Europeans felt an urgency for their own system stronger than ever before.

Against this picture of Galileo's future military use, **the ongoing public denial of these important capabilities shows how much Brussels and many European capitals are afraid to tell the general public that Galileo is to become an extremely important tool in future warfare by European military forces.** In October 2006 European Commissioner Verheugen said "it was a national decision as to whether Galileo could be used for military purposes. This could not be made mandatory and there was no strategy within the Commission to have European military forces use such technology".¹⁶⁸ Nevertheless, according to an EC spokesperson "surveys conducted among the EU member-states suggest (...) that some military authorities have an interest in the use of Galileo".¹⁶⁹

But in June 2008, the EP widely supported a report by MEP Von Wogau that "underlines the necessity of Galileo for autonomous ESDP operations, for the Common Foreign and Security Policy (CFSP) and for Europe's own security."¹⁷⁰ While many potential military and security applications have not yet been agreed, it has become clear that Galileo could be "subject to shutdown for military purposes in extreme circumstances".¹⁷¹ To deal with these and other situations, the EU Council created the Galileo Security Board in 2002.¹⁷²

With major political hurdles now having been taken Europe's own satellite navigation system is clearly set to become a crucial asset in any future military intervention that involves EU nations. **It will therefore be a matter of when, not if, Galileo also is to be used to guide bombs and missiles to 'terrorists' and other perceived enemies probably far outside Europe.**

¹⁶⁸ "Is Europe serious about space and security?," SDA Roundtable report, 16 October 2006, p.11

¹⁶⁹ Ekrem Krasniqi, "EU: Green light for Galileo", *ISN Security Watch*, 9 May 2008

¹⁷⁰ "European space projects should be financed from EU budget", Karl von Wogau MEP, 4 June 2008 (<http://epp-ed.eu/Press/showpr.asp?PRControlDocTypeID=1&PRControlID=7476&PRContentID=13037&PRContentLG=en>)

¹⁷¹ Ekrem Krasniqi, "EU: Green light for Galileo", *ISN Security Watch*, 9 May 2008

¹⁷² Simonetta Cheli, "Galileo & Security", ESA PPT presentation, 31 January 2007

Conclusions

The past decade has seen a new space race that risks becoming highly politicised and could even lead to a military confrontation. Recent Chinese and American tests with anti-satellite weapons have made it clear that the peaceful use of space is under severe threat. Even though there are no actual weapons in space yet, the distinction between militarisation and weaponisation is in many ways a matter of semantics. Navigation and observation satellites today play an active and crucial role in many different aspects of warfare, from intelligence gathering and communications, to missile and munitions guidance.

The emergence of European initiatives to make common use of military roles of space assets is part of a broader drive to make EU a military powerhouse. Though three national referenda (in France, the Netherlands and Ireland) may have impeded this drive, the creeping militarisation of European space policies is likely to continue. While Europe still takes a backseat in the growing international rivalry in space, it should use its position to enhance and push negotiations, especially within the United Nations, to consolidate and reinforce the Outer Space Treaty and to prevent any arms race in space from further escalation.

As space assets are increasingly being used for both purposes, it gets harder to distinguish between civilian and military use of space. Worse, in Europe the still dominant civilian – commercial or scientific - use is becoming overshadowed by recent initiatives to involve the military in Europe's space policies and activities, as is the case with for example the European Space Agency and the GMES project. This involvement often means taking crucial control. Thus Europe is now pushing for military prominence in space, and therefore part of the growing risk of an arms race in space.

Similarly, Galileo risks becoming the navigation system for European intervention wars – apart from imagery and information relay also including potential missile/artillery guidance. Again while Galileo is generally presented as a genuinely civilian programme, it now appears to be highly militarised.

Both business and the military are major driving forces behind these developments. The danger is real that military and industrial push factors take the lead over more genuine undisputed needs to develop (shared) civilian satellite capabilities.

Therefore the EU should come clean on its military intentions and stop using the smokescreen of 'security' labelling of projects that have clearly identified military interests and goals. As is symptomatic in the area of defence issues, many developments take shape in an atmosphere of meetings and discussions with inner-circle stakeholders who have a direct interest in these developments taking place: Eurocrats, industry representatives and military leaders. However there is very little concern on the in-

volvement of the wider general public, or critical informed civil society. This tendency erodes general public support for military affairs, and undermines the credibility of the EU itself.

Transnational Institute

Founded in 1974, TNI is an international network of activist scholars committed to critical analyses of the global problems of today and tomorrow. In the spirit of public scholarship and aligned to no political party, TNI seeks to create and promote international cooperation in analysing and formulating possible solutions to such global problems as corporate driven globalisation, militarism and conflict, poverty and marginalisation, social injustice and environmental degradation.

It aims to provide intellectual support to those movements concerned to steer the world in a democratic, equitable and environmentally sustainable direction.

Campagne tegen Wapenhandel

The Dutch Campaign Against Arms Trade (Campagne tegen Wapenhandel) is a politically independent organisation that investigates the arms trade policies and realities, publishes books, reports and articles, organises protest and informs politicians and the media on current developments.

It stresses the need for a much stricter application of the present European Union Code of Conduct on arms exports, that should prevent arms exports to conflict regions and human rights abusing regimes. Working in close cooperation with international partner organisations, the campaign seeks to promote the concept of human security rather than military security.

The Campaign Against Arms Trade is part of the European Network Against Arms Trade (www.enaat.org).

Militarism and Globalisation Project

The TNI Militarism and Globalisation Project aims to highlight the links between rising militarisation and the process of globalisation. It aims to exemplify the connection between globalisation and war; between the carving out of new markets by means of trade and by means of violence; between the economics of neoliberalism and the politics of empire. Its current focus includes work on defence industrial reorganisation, EU security, the arms trade and the accountability of foreign military bases.

TNI briefings are available free for download at www.tni.org. Please contact andrea@tni.org for hard copies.

Recent and related publications from the TNI Militarism and Globalisation Project include:

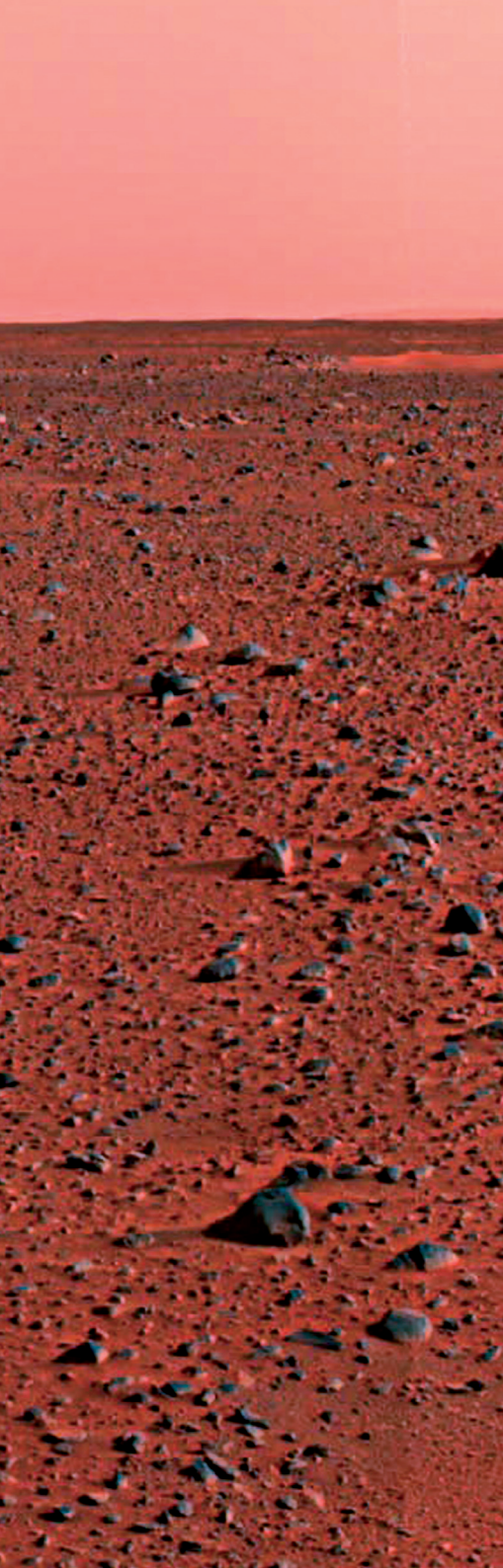
Frank Slijper, *Project Butter Factory: Henk Slebos and the A.Q. Khan nuclear network*

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From Venus to Mars?

This paper examines the emergence of a European military space policy in the context of an international contest to dominate the 'high ground' of space. Raising concerns about the potential for an arms race, the paper looks at the creeping militarisation of space, and the increasing overlap between civilian and military space applications.

The paper examines the activities of the European Space Agency in the implementation of EU space policy, looking at key projects such as the EU Satellite Centre, Galileo and Kopernikus. It points to the ESAs growing interest and involvement in the use of space-based technologies in "EU security".

In situating European space policy in the broader EU defence policy debate, the paper raises questions about how policy is formulated, and the role of business lobbies, EU officials and ordinary citizens. It notes the enhanced prominence of space policy in the Lisbon Treaty, and the efforts to galvanise the space sector during the French presidency of the EU. The paper also argues that the formulation of space policy in Europe could contribute to reinforcing and extending the Outer Space Treaty under UN auspices.

While highlighting the role played so far by business lobbies, the paper points to the need for a wider-ranging and more critical debate on space policy as a part of the broader EU security and defence policy.