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### UNCERTAIN FUTURE OF MANNED SPACE-FLIGHTS?: THE ETHICALLY CHALLENGED U.S. ASTRO POLICY AND THE “NEW SPACE RACE”

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*Abstract:* The paper analyses how quality of ethical decision-making in government space-flight organisations affects the effectiveness of a national astro policy in terms of the “New Space Race”. The Post-Cold War global arena becomes a battlefield crowded with the aspiring space nations — such as Russia, China, India, Iran, Canada, Japan and EU — who are making progress toward equalizing the United States’ supremacy in exploring and controlling outer space. While technological, financial and security challenges are largely discussed, the paper brings attention to vital importance of sound managing and decision-making for an effective space policy. Space flights are among the most demanding endeavours of mankind, with multi-sectoral networking of actors and highly complex work specialisation. The analysis focuses on the case studies of tragic accidents of the space shuttles *Columbia* and *Challenger* to support the thesis that poor ethical reasoning can easily end in the loss of life and enormous waste of resources, which in the long run threat to seriously undermine feasibility of further development of national space programmes. The authors conclude that if the U.S. government is to ultimately win the “New Space Race” it has to transform organisational culture in public spaceflight organisations in a way that recognise moral integrity as a fundamental prerequisite for the successful implementation of manned space-flight programmes.

*Key words:* “New Space Race”, space policy implementation, space flights, public administration ethics, organisational culture, NASA.

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## INTRODUCTION

The fall of the Berlin Wall and surprisingly fast disintegration of the USSR marked the end of the Cold War. The new Russian Federation emerged from the ashes of the Soviet Union, but as a weak state reduced to barely striking regional player and marginalised in the global arena. The United States became the only remaining world superpower and determined to tailor the New World Order to fit their own interests. The U.S. controlled much of the world economy, as well as the land, the sea, the air, and the astro space (Earth's orbital space) in a way that makes it seem impossible to destabilise its global position.

The space supremacy of the U.S. was unquestionable, and until recently one could hardly imagine that some other state is capable to challenge its indisputable position in the “fourth dimension”. Developments in the last two decades on the world scene were to some extent induced by American strive for hegemony and geopolitical, macroeconomic and other processes, which have undermined the omnipotence of the “world's number one” in the astro-space. In recent debates, the thesis that the American space supremacy may come to an end has become increasingly popular. Those who argue that the U.S. is slowly losing pace in the “space race” refer to the unsuccessful past space missions with human casualties, the space technology budget cut due to global economic crisis, over-reliance on “unreliable” partners, the suspension of the funding for NASA *Constellation* project, uncertainty of alternative technical solutions, as well as the achievements of some Asian nations in developing space programmes and higher competitiveness of common European space programme grounded on the rise of the European Space Agency (ESA). Yet, the new members in the “space nations club” suggest that the space race is speeding up and new challenges are ahead for the United States.

### NEW PLAYERS IN “NEW SPACE RACE” AND THE U.S. POSITION

Newspapers, commercial and science magazines are flooded with articles glorifying high-tech achievements of countries succeeded in becoming members in prestigious “space nations club”. Besides the well known players — EU, Russia, and Japan — a lot is said about incredible success of China and India, and those who plan to follow their footsteps. Chinese space programme development has been in full swing for some time.<sup>3</sup> The most convincing evidence is the success of

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<sup>3</sup> Chinese rocket programme started in 1950. The first satellite *Dongfanghong-1* (eng. East is red) was launched in orbit in 1970, which made China the fifth nation with the satellite in the space, while preparations for a manned flight began in 1992 (*Chinese space program*, 2011). Just in period 2006–2011, China had 67 successful launches and placed 79 spacecraft into orbit, including satellites for the Earth observation, the communication, the navigation and the scientific testing (Gerbis, undated (a)).

*Shenzhou* programme. Spacecraft *Shenzhou 5* was launched on 15 October 2003 carrying Yang Liwei as the first Chinese *taikonaut*, making China the third nation in the world that sends a man in the space on its own.<sup>4</sup> New successes followed. *Shenzhou 6* was the mission which was accomplished on 12 October 2005 with two Chinese astronauts (Fei Junlong and Nei Haisheng), while *Shenzhou 7* as the third manned flight was carried out on 25 September 2008, in which taikonauts made their first “space walk” (Chinese space program, 2011). After successful flights with men crew, Chinese ambitions were not halted. On the contrary, encouraged by the successes, China began building its own space station. Due to the sanctions imposed after the Tiananmen Square incident and other reasons, it was practically excluded from international space cooperation with the U.S., Russia, EU, Japan and Canada (Konjikovac 2012, p. 34). *Tiangong 1* (eng. Sky Palace 1) is the Chinese version of the International Space Station (ISS) and, as some experts emphasize, “When ISS becomes outdated (until 2020 or 2024 at the latest), *Tiangong* will be practically the only operational station which will orbit around the Earth” (Gerbis, undated (b)).

China is strongly determined to complete this project with 2020 (2022 at the latest) as the deadline set for completion of *Tiangong*, when it is expected to be fully operational. *Shenzhou 8*, *Shenzhou 9*<sup>5</sup> and *Shenzhou 10* already visited *Tiangong*, while the Chinese establishment stated that the next step is the conquest of the Moon (Barbosa, 2013). In that respect, the Chinese have performed several successful missions of mapping the Moon, with its convincing achievements *Chang’e* (who got the name of the ancient Chinese goddess of the Moon). Last Chinese probe, called “Jade Rabbit” successfully landed on the surface of the Moon, while its return is expected in 2017. China estimates that the collected data will lay the foundation for sending the first manned mission to the Moon around 2027. Besides, construction of new cosmodromes has already been announced, as well as improvement of the existing and development of a new rocket system.<sup>6</sup>

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<sup>4</sup> Word *Taikong* is Chinese term for *space*, while greek suffix - *naut* means *sailor* (Gerbis, undated (b)).

<sup>5</sup> As a test for *Shenzhou 9*, served unmanned mission *Shenzhou 8* during which they tested docking to the space station (31 October 2011). *Shenzhou 9* was the first Chinese mission with a manned crew which successfully docked with *Tiangong* (18 June 2012) and brought the first Chinese women into the space (Amos, 2012).

<sup>6</sup> Chinese establishment mostly relays on the program *Long march* (LM), which includes development of the heavy space rockets (*LM 5*, *LM 6*, and *LM 7*), which are suited to transport the crew, the payload and the food needed for unobstructed performing of the future missions. Current phase of this programme, which began in 2012, will continue until 2017. Besides that Chinese announce building a new cosmodrome in Hainan, after improving three existing launch facility (the Jiuquan Satellite Launch Centre, part of the Dongfeng Aerospace City located in the Gobi desert; the Xichang Satellite Launch Centre in the Sichuan Province; and the Taiyuan Satellite Launch Centre in the Shanxi Province), recently been improved (Gerbis, undated (a)).

As Konjikovac noted (2012, p. 34), “even China is behind the USA and Russia in some achievements, China is quickly closing the gap, mainly thanks to well elaborated strategy and its powerful scientific, financial and development potential”. It seems like the tested Chinese “slow and steady” approach is already yielding results.

India also wants to establish its “space nation” reputation. The most prominent example of fruitful Indian space effort is the success of *Mangalyaan* project, which is reflected in several aspects. Firstly, being aimed to exploration of “Red planet”, the project puts India among “Martian nations”, including construction of the first Indian interplanetary spacecraft. Secondly, the project is unique because *Mangalyaan* is the first spacecraft that successfully got into Martian orbit on the first attempt. Thirdly, the most interesting thing about that space apparatus is the fact that production cost only around USD 74 million, which makes it the cheapest apparatus which reached Mars orbit.<sup>7</sup> Indians are also proud of producing a middle-range payload rocket, with successful flight made on 18 December 2014.<sup>8</sup> Jalees Andrabi and Dean Nelson (2014) consider this flight as important stage in development of the Indian space programme, and “huge step towards realization of the first Indian manned space mission”.

Those programmes suggest that India, like China, continues marching towards the stars. Their determination may be the most strikingly reflected by the words of Koppillil Radhakrishnan, director of Indian Organisation for space exploration. When asked to comment on the latest Indian space achievement, he replied: “We are doing that for ourselves. We have our national priorities in space and their implementation. We are capable of building satellites with our own resources, launching spacecrafts, and applying science which is important for our country” (*India wins outer space*, 2013). It seems there is no doubt about Indian determination. However, India still needs to confirm the status of a nation which successfully and independently perform manned space flights, and that will need more time.

Assessing the rise of aspiring space powers from the U.S. supremacy perspective, there is a cause for concern, particularly with a view to the fact that Russian rockets taxi American cosmonauts to the ISS, and that Kremlin timely noticed that the space race was intensifying. Russian president Vladimir Putin instructed his administration seven years ago to intensify efforts and financial support for national space programme development. On the Astronauts day 2008 Putin emphasized: “Now we have a real chance to make a breakthrough and to cross to newer, more ambitious space facilities rather than exploit older facilities from Soviet times” (*The new “space race” begins*, 2008). The return of Russia to world map as a geopolitical

<sup>7</sup> In fact, as Ivanovic (2015) pointed, “*Mangalyaan* is much cheaper than many satellites that orbit the Earth”.

<sup>8</sup> It’s *GSLV Mk III* rocket launched from the Indian Space Center Satish Dhawan – the Shriharikota rocket launch site (Trumpic, 2014).

player was enabled from revenues acquired from quality developed energy sector and implementation of strict internal and external policy in the last decade, which led to rebuilding of space programmes, as for security reasons and economic reasons. A well-known fact is that astro space is rich in energetic potential, and that helium 3 drew special attention of the Russian establishment. In that sense, a major part of its potential Russia has focused on the colonisation of the Moon which is rich in helium 3. As pointed out in the news coming from the East, there is a plan to launch three satellites: *Luna-25*, *Luna-26* and *Luna-27*. The main task of the first Russian mission is to restore plausibility of landing on the Moon, while module *Luna-27* will carry the equipment necessary for drilling in search for water ice on the Moon. *Lavochkin Research and Production Association* (or short *Lavochkin Association*) already started developing lunar modules necessary for transporting robotized equipment for building lunar infrastructure (*Russia begins to colonize the Moon*, 2014). Ivanovic (2015) concludes: “After years of stumbles, falls and big failures, the first successful launch of carrier rocket *Angara-A5* from cosmodrome Pleseck was a huge success for Russian space industry, by which Russia is back on cosmic scene as a key player”.

The U.S. space supremacy is likely to be challenged in near future by enhancing space cooperation between Russia and Iran. A strategic document signed by the representatives of Roscosmos and Iranian Space Agency (Anatoly Shilov and Hamid Fazeli) provides a framework for closer bilateral cooperation, including Iranian access to Russian satellite recordings, the use of Russian carrier rockets to launch Iranian satellites as well as specialist education for Iranian astronauts (Afanasjev, 2014). From the Iranian perspective, Russia–Iran cooperation is primarily motivated by aspirations to get to the Moon (Howell, 2014); yet, the results have been modest to date.<sup>9</sup> However, the media reported in August 2013 that Iran finalised its first spacecraft with the aim to put it in the orbit by 2020 (2022 at the latest). This shows that Iranians are highly motivated to join the “space nations club”.<sup>10</sup>

The analysed dynamics of space programmes development in Russia, China, India and Iran suggests that the U.S. will have to make an extra effort to preserve the domination in astro-space. The “most important space nation” status claimed by the USA seems to start diminishing at a slow pace. This is also indicated by recent concerns of the American astro experts raised after the Kremlin said it consider to cancel “giving rides” to their American colleagues to the ISS if Ukrainian crisis intensifies (*Is the divorce an option?*, 2014). Although it has not happened yet, even

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<sup>9</sup> Recently, Iranians have managed to send safely into the space a mouse, turtle and worms; after several failures they also sent a monkey (Afanasjev, 2014; *Abmadinejad wants to be the first Iranian astronaut*, 2013).

<sup>10</sup> According to the media reports, the space ship can carry three pilots and it was engineered by Hadze Nasir University experts (Afanasjev, 2014).

a hint of calling into question the U.S.–Russia space partnership that would directly undermine the presence of American cosmonauts in space must be taken into account carefully as a likely option. In a worst-case scenario, the U.S. would have a huge problem because at this moment there is no alternative for transportation of the astronauts, while a new solution needs at least several years to be found. So, a burning issue is what can the United States do in the short-run as to safely and independently ferry its cosmonauts back into orbit, and reaffirm its status of “the most powerful space nation”?

### **THE UNCERTAIN FUTURE OF THE U.S. SPACE POLICY: MANNED SPACE FLIGHTS IN PRIVATE AND/OR PUBLIC HANDS?**

What is the future of the U.S. space programme? It is still an open question which answer may depend on set goals, quality of organisation and financial resources. It seems that the Ukrainian crisis, Russia’s and China’s plans to establish the bases on the Moon, and an increasing number of nations interested in the control of astro space, have all led to the reconfiguration of the U.S. space interests.<sup>11</sup> Still, a tendency to keep the ranking as “the most important nation in space” does not seem in question. Former astronaut and current NASA administrator, Charles Borden, shortly before press conference held on 1 July 2011, confirmed that undoubtedly with his words: “I am here to tell you that the American leadership in space will continue for at least half a century, because we laid down the foundations for success, so failure is not an option” (What’s Next For NASA?, 2013). Barack Obama’s decision to cancel the financing of the *Constellation* programme so as to start new projects, and involve the private sector into space exploration, could be interpreted as a strategic move by the Washington administration to reach more efficient and more effective solutions for space flights as soon as it is possible.<sup>12</sup>

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<sup>11</sup> Even though reconquest of the Moon now is not high on the American astro agenda (the most important goal is sending manned mission to the Mars, at the latest until 2030 year), some U.S. experts think that the priorities should be reorganised. The group of scientists from LEAG (Lunar Analytical Group for Research), which helps the NASA in planning exploration of the Moon), deems that sending a man and the equipment to the Moon should be put again on the list of the most important tasks. The group initiated a petition after Chinese successful mission *Chang’e 3* (according to: Scientists pray for a new study of the Moon, 2013).

<sup>12</sup> With cancelation of the government projects road is open for powerful private sector. It is well known that the space tourism is promoted in the USA for while. It is clear that the marketisation, direct competition and economic struggle could lead to major improvement in cutting the costs. Competition encourages innovations much faster, than in the case of competition between various national programmes. Commercialisation of the space-flights can bring the U.S. government an open room to re-allocate the scarce resources to develop the space transport more efficiently (Filijovic, 2011, p. 189).

The unreliability of Russian partner, which is underlined by Ukrainian crisis, can be interpreted as one of the motives. Commenting the potential savings that goes with the use of private companies like *Boeing* or *SpaceX* for sending astronauts into space instead Roscosmos (Russian Federal Space Agency), and American space management determination to have independent space operations, Charles Boden vigorously stated on a press conference at the beginning of 2015: “I don’t want to write another check to Roscosmos ever again”.<sup>13</sup>

However, opinions are mixed whether the government handoff of space programmes to the private sector would solve all the problems. On the one side are those who stand for handover of space flights entirely to the private sector, while others maintain that important strategic sector shouldn’t leave government’s hands (Davenport, 2015).

While debate continues, private entrepreneurs are already working on the possible solutions. *Boeing* and *SpaceX* received USD 2.6 and 4.6 billion respectively from NASA to deliver independent and safe “taxiing” of American cosmonauts to the ISS. *SpaceX* hopes for their project *Dragon 2*, while *Boeing* is relying on *CST-100*, wherein both companies estimate that they could perform flights until 2017 (Wells, 2015). Except for these two companies, others are also interested to join the development of “space taxis” (*Virgin Galactic*, *Orbital ATK* and *Lockheed Martin*) (Davenport, 2015). Those who support the private sector joining the development of space programmes, estimate that tasks could be divided in that way. Some experts claim that in case of a new division of work, the private sector could take over lower orbit and related type of missions, which would make savings in the federal budget. In the meantime NASA could allocate its resources to more complex tasks, such as sending a manned mission to Mars using *Orion* rockets and new *Space Launch System* (so-called SLS program) (Wells, 2015). *SLS* and its version for transporting human crew — *Orion Multi-Purpose Crew Vehicle* is planned to be the biggest manned space craft ever made, which will, as NASA hopes, with the exception of Mars, transport cosmonauts to various asteroids (Noland, 2013). According to some media reports, which refer to data of the U.S. Government Accountability Office (GAO), it seems that funding is missing for the project, and that it is questionable if it will end until planned deadline.

Redefining of the U.S. space interests and finding new ways for their realisation is still in progress. But if these plans are to become reality, NASA will remain a key agency of the space programme, because it will remain responsible for organising and implementing space flights — even more complex and more time-consuming — which draws one more strategically important question. It is the issue of the

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<sup>13</sup> Price that Americans currently are paying to Roscosmos for transporting the cosmonauts is about USD 70 million per cosmonaut. Estimates are that the same service with *Boeing* or *SpaceX* should cost about USD 58 million (Wells, 2015).

safety of space travellers. On one hand, entrepreneurs emphasize that their crafts are developed so that they can provide a safe flight to their destination and back. On the other hand, NASA states the same claims. However, having in mind the inglorious past of some of space flights, one cannot avoid the question of the quality of management and organisation as major prerequisites for good outcome of the national space policy.

Since the practice of extreme ethical standards violation — that may even result in a loss of life — is not an unknown phenomenon in public agencies of the most developed countries, this aspect of space activities should be considered vital for the implementation of space-conquering national strategy. In other words, to be able to rise to the challenge of other countries, the Washington administration should focus most of its attention right on providing high level of safety of those who carry out the national space programmes. The goal of providing the high level of safety is strongly co-related with the quality of public managers and servants' performance, and it requires detailed analysis of the prevailing behaviour patterns in the organisational culture in the public sector.

### **ADMINISTRATIVE FAILURES AND THE LACK OF ETHICAL COMPLIANCE**

Human ability to act morally is grounded on the ability to empathise with others, i.e. ability to identify and understand other peoples' emotions. Recent studies in neuroscience indicate that empathy requires the development of brain functions that enable the growth of human intelligence, while some psychological studies show that empathy is an element of a special type of general intelligence, the so-called social intelligence, which implies that we are "intelligent not just *about* our relationships but also *in* them" (Goleman, 2006, p. 11). Reduced degree of attention that people devote to each other in their mutual communication today additionally undermine the empathy in a society of atomised, self-centred and busy individuals. Martin Buber (1937) holds that human behaviour is determined by two contrasting types of relations: 1) *relation I–You* is established as a two-way relationship between humans as free and equal persons; 2) *I–It* experience rather depicts the attitude of a man as sole self-consciousness subject to things. As Buber says, "(t)hrough the *Thou* a man becomes *P*" (1937, p. 28). Nevertheless, modern social alienation remodels the relation *I–You* into the relation *I–It*, so other humans are now identified as mere objects, things thrown out of the realm of good and evil that can be easily targeted by a wide range of immoral actions — from indifference to manipulation. Treating people as they are mere objects or means to achieve someone else's goals stems from the weak empathic connectedness, thus missing the feeling of involvement innate to genuine sympathy.



An individual with no ability to empathise with others, and who has no feelings of guilt as well, is a huge threat to society. As Korsgaard (1992, p. 84–85) puts it, committing moral transgressions undermines the conceptions of ourselves that are most important to us, because to violate moral obligations is to lose our integrity and so our human identity.

For Korsgaard, to commit an evil action means to lose the ability to reflect upon ourselves under the description under which we find our life worth living and our actions worth undertaking. Besides the feelings of shame and embarrassment, guilt is another emotion directed at the self-regulation of behaviour. For an individual with no internalised prescriptions applied to his/her own action, we cannot claim that he/she has a moral sense. Two sides of the same coin of guilt are emotions and rational evaluative attitudes towards violation of a norm in the form of moral judgment. Moral judgment is essentially not an act that occurs exclusively in the mind of an individual, but it is a continuous communicative process in which the judgement is confirmed through collective bargaining, and thus the motivation for the choice of the course of moral action in a particular case is necessarily associated with the public sphere.

Several studies conducted in the post-industrial polyarchies over the past two decades has found that managers both in the private and public sectors are the main models of ethical behaviour in organisations, and thus bear the most of responsibility for its consistent enforcement (Jurkiewicz, 2005, p. 98). Organisations are often unsuccessful in achieving the objectives not because of the incompetence of employees, but rather due to poor leadership. Managers must possess qualities that requires genuine leadership, and must be able to initiate and harness the creative potential of public servants (Broussine, 2003, p. 175–185; Shafritz et al., 2008, p. 381–402). The study conducted in 2004 on a group of 200 managers of public administration in the USA confirmed the interconnectivity of an effective leadership and ethical motivation in public service (Jurkiewicz, 2005, p. 101–110). Unlike ineffective colleagues, the effective executives are more willing to grapple with ethical dilemmas, taking into account the broader perspective of moral reasoning, which involves stakeholders, principles, justice, human rights, the circumstances and the potential outcomes. Effective leaders do win the respect of subordinates by being courageous in making difficult decisions with due regard to generally accepted moral principles, accepting responsibility for bad outcomes of their decisions, and implementing them with a firm belief that those decisions protect and improve the public interest.

One's ability to comply with public service ethics obviously does not arise automatically from the fact that he/she holds public office; one becomes moral agent by strong and permanent personal commitment to ethical standards. Therefore, in addition to knowledge of moral principles and norms, and deductive capabilities that enable their proper application to particular situations, good moral

reasoning depends greatly on those personal qualities we call character. For a manager, we can say that he has moral virtues needed for public service when the overall quality of the excellence of his character is expressed in long-term effort to act out of habit with care towards achieving someone else's well-being. Only with such defined moral virtue manager acquires credible authority necessary to convince the subordinated civil servants to follow him in a moral performance of professional assignments.

The New Public Management as a model for public service reform in the post-industrial polyarchies during 1980s and 1990s led to the uncritical use of the corporate governance methods in the public sector, based solely on the belief that the best government is one that costs less its citizens. Corporate governance should have increased efficiency in providing public goods and services by more flexible and innovative working of public servants, contracts with private companies, developing entrepreneurial spirit, risk taking, better budget management, and accountability for performance (Bovaird & Löffler, 2003, p. 6). The public service based on the management ideas, methods and practice in a market-driven economy should have provided the increased quantity and quality of public services for the same amount of public money. Despite the strengthened managerial discretion in decision-making and control of employees as well as the emphasis on the evaluation of performance, the New Public Management did not provide expected solution for the chronic administrative deficit in the collapsing welfare states.

Taking over corporate governance methods and the delegation of public functions to private companies and non-profit organisations over the past two decades have shifted the focus of public service managers on improving the efficiency in implementation of departmental policies and programmes. While the quantitative, measurable outcomes of public policy have been a priority, the ethical perspective has considerably been ignored. Top managers have tolerated and justified wrongdoings with the pragmatic idea summarised in motto that the foremost is to achieve a goal, while the way of doing it is unimportant. Such amoral pragmatism in conducting business in the public and private sector is a logical outcome of the dominance of the idea of technical rationality that is embedded in modern organisations, whose activities are emptied of moral content and meaning. The public service is thrown into a moral vacuum with its managers and servants left demoralised (Hoggett, 2005, p. 186).

### **ADMINISTRATIVE FAILURE AT WORK: MISMANAGEMENT IN NASA**

Administrative failures in the public service may occur when professionals in public organisations give biased instead of factual and objective assessments in their policy domain. The bottom-top politicisation is one of the main causes of the unsound public

policy implementation; it depicts the situation where top managers in a public organisation demonstrate loyalty to a departmental policy they are empowered to implement, even if the policy does not reflect the public interest, but only promote particular/private interests of the ruling party (Meer et al., 2007, p. 41–44; Peters & Pierre, 2004, p. 1–11). This is a side-effect of the most extreme type of politicisation of public service — so-called ‘spoils system’ — which in his purest form exists in the politics of the United States. The traditional practice of so-called administrative presidency includes the efforts of the incoming president to gain and maintain exclusive control over the legal, financial and human resources available to him (Rockman & Thiam, 2009, p. 203–204). The President expects subordinated public servants to affirm his decisions, and to clearly and actively support policies of the ruling party — the neutrality and professionalism are less important virtues. Even though it has been criticised for decades, the spoils system in the USA is still legitimised by the belief of the incoming president that the top management of federal administration, that had been appointed during the tenure of his predecessor, will hinder the implementation of new public policy — whether due to the agenda differences or simply to preserve previously established corrupt-clientelistic ties (Peters, 2004, p. 125–136).

From the ethical perspective, the spoils system favours partisan appointees openly and has the corrosive effect on a career- and merit-based system of public service. The U.S. National Commission on Public Service (The Walker Commission) emphasized more than two decades ago that political leaders pose one of the biggest threats to the health of American public administration, and pointed at the demoralising effect of politically-driven appointments on professionalism and the merit system (Verkuil, 2007, p. 165). No matter how it may seem convenient for pursuing the effective policy implementation, the spoils system in the long run creates a climate of distrust between political appointees, who perform public duties only as a career break from their regular jobs in the corporate sector, and the permanent civil servants who dedicate their lifetime to protecting the public interest. The politicisation of any type changes organisational culture in the public sector for worse by establishing various ‘blame games’, that in the long run make a fertile ground for unethical behaviour.

A central idea of organisational sociology is that resistance to hierarchical rules is a universal feature of modern bureaucracy, and that the form of this resistance shapes organisational culture in public service (Jorna & Wagenaar, 2007, p. 190). The resistance may result from the efforts of honest servants to perform daily assignments with due regard to ethical considerations in a situation where politicised top managers spread moral misconduct. The creation of favourable ethical climate can be restricted because of behavioural pattern conceptualised as the model of self-inflicted negative interdependence (Bowman et al, 2004, p. 80-81). According to this model, general manager of department within a ministry strives, as much as it is possible, to ascribe responsibility for poor performance to heads of subordinated units in order to avoid being penalised by the minister, and save his

position. The head of unit replay the ‘blame game’ at his level of the hierarchy, trying to point the finger at his employees. Being captured at the lowest level of the hierarchy in the work environment hostile to open professional debate, public servants start to reinterpret the imposed blame game with the aim to hide problems from the immediate superior.

Stepping into the trap of self-inflicted negative interdependence gradually establishes the practice of unethical leadership that could jeopardise not only policy implementation, but can endanger human security even with tragic loss of life. There are two tragic cases of policy implementation affected by unethical management with the death toll of 13 astronauts and one citizen. In 1986, space shuttle *Challenger* exploded during the launch sending six astronauts and one Teacher in Space participant to their fiery deaths; in 2003, the explosion of the *Columbia* resulted in killing seven more. Report of the Presidential Commission on the Space Shuttle Challenger Accident (the Rogers Commission) and Report of the Columbia Accident Investigation Board revealed that in both cases the main cause was poor management practice in NASA (Report, 1986; Report, 2003, pp. 115–118).

Costly space shuttle development programme, unrealistic annual plan for space flights, and the advertising-driven expectations of the White House not to delay the launching, all together put pressure on NASA leadership to avoid the regular extensive security checks of space shuttle essential structural parts. Contrary to several internal warnings made by engineers and technology experts about slow pace of solving the problem of faulty design of some parts and material built in the space shuttle, NASA managers single-mindedly decided to launch the shuttles in scheduled time for several reasons. For instance, in the case of *Challenger*, NASA managers were anxious to justify before the U.S. Congress the large amount of federal budget that had been invested in the space programme for years. This prompted NASA to schedule a record number of missions in 1986 to make a case for its budget requests as well as to prove cost effectiveness and potential for commercialization of space shuttle. NASA also wanted to launch the *Challenger* without any delays to collect data a few days before the launch of a similar Russian probe, and to successfully beat the competition of the ESA. Moreover, some critics in the media charged that the White House had intervened to insist that the launch occur before the U.S. President give his State of the Union address so that he could refer to the launch.

Seventeen years later, the space shuttle *Columbia* blew apart just 16 minutes before its scheduled landing at the Kennedy Space Centre in Florida, and harshly raised the question of NASA managers’ true ability and will to learn lessons from earlier lethal mistakes (Koestler-Grack, 2004). *Columbia* accident finally brought the problem of the agency’s organisational culture to light (Report, 2003, p. 99–27). Organisational culture can be defined as a set of prevailing beliefs, attitudes, expectations and opinions of the members of an organisation regarding the role they play in it, and that shapes their behaviour — perceiving, thinking, decision making, and taking action (Geuras & Garofalo, 2005, p. 98;

Alvesson, 2002, p. 3–6; Ott & Baksh, 2005, p. 299–301). Organisational culture is a set of common rules that govern the cognitive and affective aspects of membership in an organisation, which means that it also influences how managers choose the course of action from alternatives available in any given situation. This freedom of choice that may lead to good and bad outcomes is what links organisation's culture and public service ethics inextricably. Mason (2004, p. 128–142) argue that the great shift in NASA's organisational culture from safety- to production-oriented one — based on efficiency as the agency's core value — has made ethical considerations redundant in decision making and programmes implementation process. In spite of the wake-up calls of *Challenger* and other mishaps, NASA managers not only maintained new culture of production in the space shuttle programme, but even in the aftermath of the failings of 1986 they fought harder to preserve the efficiency-based value system. The quest for timely production overshadowed ethical concerns in implementation of the programme with a view to human security. The Columbia Accident Investigation Board concluded in its report (Report, 2003, p. 170) that the responsible Space Shuttle Programme managers displayed no interest in engineering concerns about a technical problem that occurred during *Columbia's* flight and its potential danger for safety of the crew. The high-level officials blocked effective communication of technical problems, overlooked signals, silenced people and dissenting views on technical issues.

Political considerations combined with organisational culture shaped by self-interested NASA top managers prevailed over compliance with professional standards, and protection of the public interest. Pressures in NASA developed at the expenses of engineering considerations because of a requirement to launch a certain number of flights per year and to launch them on time. NASA was subjected to strong external pressure to accept very ambitious goals, which was undoubtedly felt by managers and employees. As NASA attempted to meet the increasing flight schedule of the space shuttle, the agency encountered a number of constraints and operating problems that made it increasingly difficult for NASA to reach its goals by providing the high level of safety. NASA attempted to resolve these strains by resorting to means that were less safe, rather than by changing its goals and proceeding more cautiously. The immense costs of continuous disregard for ethical standards in decision-making are the unacceptable loss of 14 lives, and the discredit upon a long-term science project of global importance and a symbol of American pride.

### **IS THERE AN EFFECTIVE SPACE POLICY WITHOUT ETHICAL BEHAVIOUR?**

The USA global supremacy in the control of outer space and other great powers' efforts to reduce that supremacy or to challenge it, are often naively equated with the mere possession of high tech and significant financial power. Yet, the quality of political decision making and proper human resources organisation in the public sector

are still an inevitable part of creating and implementing every public sector politics, and thus national policy of astro space. The analysed practice deviation from professional, and ethical standards with tragic consequences for human life, makes it clear that the administration in Washington must seriously consider improving the organisational culture in public agencies entrusted for performing space flights, if it really intends to preserve the status of superpower in astro space. Great moral failures stem from moral insensitivity, i.e. one's incapability to understand how her/his behaviour affects others, and to choose the course of action determined on basis of its potential consequences. We showed that NASA managers saw no problem with leaving basic professional standards and sound knowledge of technical expertise aside, only to follow the politically-driven schedule at the expense of human lives.

The enormous pressure put on national governments by the accelerating “New Space Race” must not be the factor that worsens decision-making due to lack of sound ethical reasoning. Despite tougher recent competition in taking control of astro space, the U.S. administration in its endeavour to maintain position of the superpower has to respond effectively to that challenge. The tragic past of some of the American space travels remind us and warn that mismanagement and bad administration can have a profound impact on the outcome of the national astro agenda. The unfortunate failures of *Columbia* and *Challenger* urge that the establishing of an ethically sensitive organisational culture in public space-flight agencies should come to the fore in making and implementation of the U.S. space policy. A space agenda ought to consider the human security component, primarily to protect those who implement national space programmes. The safety and unobstructed work of all professionals and experts are the key factor in achieving success in the “New Space Race”. Some challenges are already known, new are arising, and only time will tell which way the U.S. administration will choose and how responsible it will be.

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### **„TRKA ZA RESURSIMA” U ASTRO-PROSTORU: ŠTA NAM DONOSI BUDUĆNOST?**

*Apstrakt.* Rad analizira kako brz tehničko-tehnološki napredak može da olakša pronalazjenje i iskorišćavanje alternativnih izvora energije u svemirskom prostoru i u isto vreme podstakne postojeće i otvori nove dugoročne sukobe oko prevlasti u komercijalizaciji kosmičkih resursa. Autor posebnu pažnju posvećuje razmatranju održivosti aktuelnih i planiranih projekata najvažnijih zemalja članica prestižnog kluba „svemirskih nacija” – SAD, Japana, Rusije i Evropske unije. Rast potražnje za budućim sigurnim snabdevanjem energentima je podstakao tehnološki napredne države da intenzivnije istraže mogućnosti lociranja alternativnih izvora energije u astro-prostoru, jer je utvrđeno da on obiluje energetske potencijalima i da bi se, uz odgovarajuće unapređenje svemirske tehnologije, u doglednoj budućnosti astroresursi mogli iskoristiti kao alternativa ili bar dopuna postojećoj resursnoj bazi. Autor ukazuje da sve veće i vidljivije ambicije Kine, Indije i donekle Irana u pogledu osvajanja svemirske tehnologije, stvaraju potencijalna čvorišta novih geopolitičkih i geoeekonomskih sukoba u međunarodnim odnosima. Autor zaključuje da će svemir kao značajan alternativni izvor resursa i energetske bezbednosti u narednoj deceniji pre postati novo poprište ostvarivanja strateških interesa najmoćnijih država, nego zajednička baština čovečanstva dostupna svim nacijama.

*Ključne reči:* nova svemirska trka, sprovođenje svemirske politike, svemirski letovi, etika javne uprave, organizaciona kultura, NASA.

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