

# The political desirability, feasibility, and sustainability of planetary defense governance<sup>☆</sup>

Nikola Schmidt

Institute of Political Studies, Faculty of Social Sciences, Charles University, U krize 8, Prague, Czech Republic



## ARTICLE INFO

### Keywords:

International relations  
Planetary defense  
Securitization  
Technological interdependence  
Security cosmopolitanism

## ABSTRACT

Planetary defense is a delicate topic that has inherently sincere intentions – to save the Earth, biosphere or humankind from an asteroid capable of causing an extinction event. However, the call for action in an exceptional situation that uses scientific knowledge to rationalize exceptional political decisions is an obvious target for criticism by critical security studies scholars. The following article offers a policy framework to avoid the inevitable harsh criticism when any planetary defense policy is thoughtfully designed. The aim is to bring knowledge from political science and international relations theory to the planetary defense community to help build the future planetary defense political and technical architecture that will be desirable, feasible and will sustain. The article argues that it must be ethically desirable for involved actors, politically feasible in the current international system and sustainable in the long-term for the sake of humankind survival and prosperity. The theoretical approach reflects realistic dynamics between nation states but also proposes more visionary cosmopolitan future of humankind; it introduces ethical security studies to argue why, when and how planetary defense can be ethical but also derives from neoliberal thought to propose a policy of technological interdependence. The article combines critical reflections of current technical proposals, anticipate the criticism and proposes the least complicated way through the maze of international relations. The planetary defense has potential to unite people around the world in the Ulrich Beck's cosmopolitan vision, but it must take into consideration that rational solutions focused on effectivity enabled by engineered technology do not necessarily bring the desirable future.

## 1. Introduction

This article proposes a policy framework for any further policy<sup>1</sup> proposals on planetary defense governance<sup>2</sup> through the discussion of *desirability, feasibility, and sustainability* of future planetary defense architecture.<sup>3</sup> It aims to discuss specific dynamics in the discipline of

international relations for the development of future policy proposals. The article does not follow a single theoretical perspective but instead selects relevant thoughts from international relations theory to develop a policy framework reflecting the current scientific efforts focused on planetary defense against asteroids (Fig. 1).

The article uses a perspective of critical theory<sup>4</sup> in critical security

<sup>☆</sup> This study was supported by the Charles University Research Programme “Progres” Q18 - Social Sciences: From Multidisciplinarity to Interdisciplinarity.

E-mail address: [nikola.schmidt@fsv.cuni.cz](mailto:nikola.schmidt@fsv.cuni.cz).

<sup>1</sup> The article uses terms *policy* and *policy architecture*. *Policy* is used to express set of actions adopted or proposed by any actor possessing authority to act in planetary defense. *Policy architecture* is used to express broader and more complex set of actions that takes into consideration broader implications of the decision to international relations.

<sup>2</sup> Mark Bevir conceptualizes governance as: “Governance is all of the processes of governing, whether undertaken by a government, market or network, whether over a family, tribe, formal or informal organization or territory and whether through the laws, norms, power or language of an organized society” [54]. Finkelstein conceptualizes global governance in two following dimensions [55]. Global governance as a way how we organize international or transnational relations without a sovereign authority or global governance as a projection of power, intention to control or steer things in a way to influence someone else. Broader perspective on global governance also includes other actors beside states: international organizations, corporations, influential individuals, NGOs etc. because they play a significant role in global affairs. The article follows the first Finkelstein's definition but will at some point discuss how can we influence decision makers by implementing rules and norms in the way planetary defense community wishes in order to save the Earth from asteroids in the current international political system. Discussion about any global decision-making authority – global government – is beyond the scope of this paper.

<sup>3</sup> *Planetary defense architecture* is used to express the combination of the policy and technical proposals to observe and mitigate the asteroid threat. Operation of this architecture can be understood as planetary defense governance.

<sup>4</sup> Robert Cox in 1981 made a very clear distinction between the *problem-solving* disciplines and the *critical theory*; in the political science the former solves problems by e.g. proposing particular policies or form of governance, while the latter is “the sense that stands apart from the prevailing order of the world and asks how that order came about” [16]. Critical thinkers may look provoking because they tend to deconstruct our pillars of certainty holding our worldviews, but they rather open our perceptions, which is – I deem – the biggest challenge when writing complex thoughts to technical communities because there does not need to be one best solution but plenty of possible explanations.

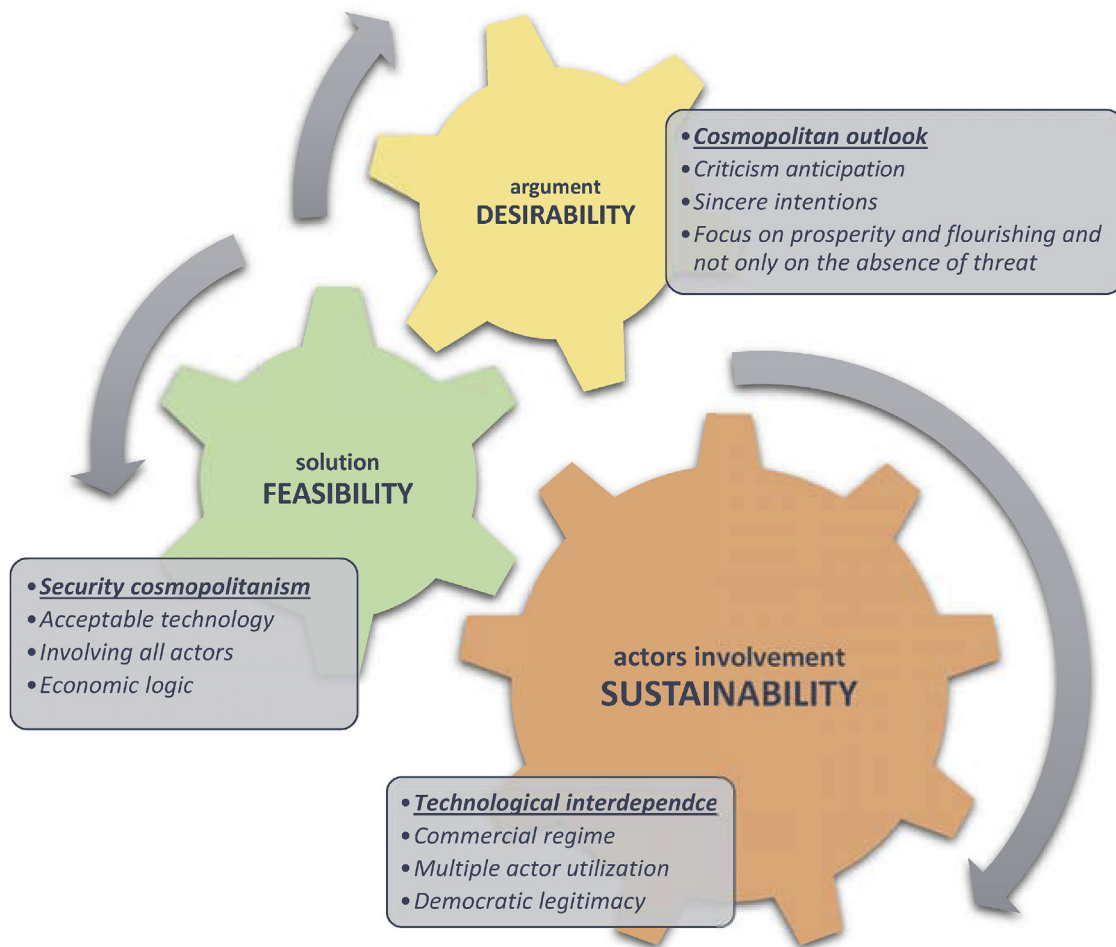


Fig. 1. Policy framework proposing three components in policy making concerning planetary defense.

studies in the political science discipline in general and in the international relations discipline in particular [1]. This approach let us reflect critically scientific proposals with their potential impact on society. Moreover, it enables to critically discuss their likely impact on security dynamics in international relations. Thus, critical security studies allow us to unveil unintended effects caused by adopted planetary defense architecture. These unintended implications of the rational decisions should be taken into consideration if we wish to secure our survival, stimulate prosperity and avoid unnecessary bad implications simultaneously – all three components constitute one desirable future. Most importantly, the deployed technology might have a dedicated purpose but a list of currently unknown utilizations sensitive to national security. Choosing the right and proper technology is not only about its effectiveness in mitigating the asteroid but also about its political subtleness. Feasibility, thus, includes both the effectivity and normative<sup>5</sup> assessment – the desirability. The effective policy should include all potential critical reflections of the potential technology deployment because deploying technology in practice is inherently

political [2].

It is tempting to understand planetary defense efforts uncritically as normatively good because efforts to survive seem to be hard to be questioned; however, the outcomes of these efforts are also about unintended political effects of scientific efforts that are inevitable, always in any discipline and especially when applied in policy implementation. Objectivation of scientific facts in policy proposals – arguing that rational solutions are the only good solutions – risks being caught in its disciplinary orthodoxy [3]. Normative assessments of proposed solutions are necessary to reach ethical outcomes for the society.

One would say that the credible and reliable planetary defense policy should propose a solution to a global threat that is similar to those that evolved in combating pandemics or climate change; however, it has its specifics. The most significant advantage is the fact that planetary defense has an obvious outcome which desirability cannot be questioned – to remove the asteroid from the collision course is the normatively unquestionable outcome. The desirable outcome of any climate change policy leading to the desirable future state of climate will not – in contrast to removing the asteroid – be easy to define, defend and implement. Any solution will have inherently other unintentional effects requiring continuous steering of the adopted policy that keeps the climate in the desirable state. In other words, any policy of climate change cannot be fully normatively good and will forever provoke heated debates given the implicit unintentional implications and inability to define the desirable end-state. The asteroid will miss us or not, the climate is and will remain dynamic after our action to save it. Planetary defense community should exploit this advantage and at the same time reflect potential criticism in advance to avoid it.

<sup>5</sup> The term *normative* has nothing to do with norms as laws but rather norms as morally good behavior. Normative theory in international relations has an objective to make the world a better place; in doing so we should be reflectively aware of the opposite, of implicit assumptions of possible negative implications of our behavior or decisions. Norms are not synonyms to naïve idealism but more a middle-stage building blocks between good ideas and regulatory regimes. Remember president Wilson and his famous 14 points after the WWI that clearly shaped the era between wars and finally successfully the second half of the 20th century; these points were ideas that have transformed into international norms that forms normative international regime – the desirable, appropriate, good behavior of states.

Moreover, successfully working planetary defense architecture has the chance to become a *path-dependent* policy agenda – an agenda worth to be followed – for other global questions influencing our survival and prosperity. Well-considered design can be hardly criticized if it works for its purpose driven by the cosmopolitan<sup>6</sup> ideas reflecting humanity as a whole and when locks nation-states in a cooperative mode. Appropriately formulated normatively good and sincere intentions can be imprinted into the technology after its deployment and, thus, stimulate further cooperation driven by the deepened confidence regardless of the current sensitivity of certain mitigation methods such as nuclear. Thus, the political intentions must come first before the technology selection. Saving humanity is inherently ethical. However, it should be humanity as an actor who will act, even with a nuclear solution.

The article is divided into three sections following the mentioned three components of planetary defense architecture. Each component builds on one theoretical idea. The first component – desirability – means the necessity to establish an argument for planetary defense as a cosmopolitan ethical issue of national security policies. As such, it builds on the Beck's cosmopolitan vision [4] and most recent ethical security studies [5]. The second component – feasibility – means that the desirable idea must have a chance to be achieved. It can be done through the proper selection of technologies, the equal involvement of all in the project and the promising economic logic. It builds mostly on Burke's security cosmopolitanism [6]. The third component – sustainability – locks actors in a cooperative mode resisting possible defections that arise suddenly and more likely through emotions of powerful individuals. It builds on the decades-long neoliberal logic of complex interdependence [7] that was altered with technologies for the article's argument. The proposed approach locks actors in the protective measures that are resistant to political fluctuations; they are a commercial regime, multiple actor utilization, complex technological interdependence, and finally democratic legitimacy.

## 2. Making the desirable argument – constructing the fundamental security threat to humankind as an ethical cause

It may seem to be a matter of fact as we talk about our survival, but the international system of nation-states<sup>7</sup> has some important disadvantages vis-a-vis global security issues. Neorealists<sup>8</sup> argue that we live in an anarchic international system consisting of sovereign nation

states. According to the neorealist thought, the high priority interests of a nation-state usually end at the level and the borders of a nation state. Another argument says that politicians tend to reflect what their electorate wants to keep themselves in power and thus reflect their domestic needs and miseries; then they may have time, capacity and will to discuss possibilities on the international level – the so-called two-level game [8]. However, responsible politicians are ready to lead and explain the electorate why we need to cooperate internationally first, and that the cooperation is in our principal even national interest. Strong arguments that powerful individuals can change the global political environment in a desirable way do exist [9]. However, strong individuals can do precisely the opposite and act irrationally against global efforts if they feel threatened. Desirability is used in this article as a concept reflecting the desire of all involved actors to proceed in the implementation of any planetary defense architecture because as such it constitutes the overall desirability to proceed.

International efforts can be successful if they are appropriately formulated as cosmopolitan efforts that do not impede the interest of nation-states but rather indulge them. This will help the planetary defense agenda to become a broadly desirable one on any national level. The policy should not be based only on scientific evidence and axiomatic logic of our survival to achieve the international planetary defense architecture desirability; it has to be based on the emancipatory power of cosmopolitan thinking that world peace, prosperity, human well-being and further flourishing are the desirable core principles that drive the efforts. The recent debate in critical security studies can help substantially here.

### 2.1. Avoiding the possible harsh criticism

Critical security studies are heavily built on the concept of securitization. In their work, Buzan et al. developed a theory on which critical security studies have laid for the last twenty years [10]. Securitization studies how any issue rises to the fore of a serious political debate about security – how we construct insecurity to argue for a reaction policy. Securitization is an extreme example of politicization. In detail, the *securitization process* is as follows. A securitization actor acts through speech acts to make security statements (about the necessity of planetary defense) to raise awareness of a threat (posed by asteroids) against which we need to protect a referent object (humanity or the biosphere) to the audience (decision makers) in order to make them act. Scientific discovery of an asteroid was securitized and has become a threat to humankind. Critical security studies then do not assess the necessity of the securitization act, or its desirability or effectiveness but study *the processes leading to the outcomes* unveiling the hidden intentions of the securitization actor.

The classic debate of securitization understands the process of securitization as inherently negative and reactionary because it is state-centered [11]; it is understood that it is usually a state that securitizes a threat posed by the other states or currently non-state actors threatening '*our way of life*.' The question of critical security studies scholars would be '*what the hidden intentions are to securitize asteroid threat?*' In this perspective, any securitization is power-laden [12] or being entirely driven by imaginations to support the nation-state agendas strengthening nation-state power in an unoccupied domain [13]. In this manner of argumentation, Weaver posited that good securitization is simply its opposite process – de-securitization [14]. However, such an argument fails to answer how we may legitimately approach challenges that seem to be a threat to our (humanity) very survival, especially scientifically proven natural threats (asteroids, climate change, earthquakes, coronal mass ejections, radiation) that are predictable (asteroids). As these threats fall into the category of our survival, securitizing them seems to be normatively good – ethical [15]; but in fact, the normativity behind any securitization is not about the threat itself but the *securitization process*.

Robert Cox introduced a dichotomy in security studies

<sup>6</sup> *Cosmopolitanism* has many even contradictory understandings, not necessarily limited to the space community. It was first Diogenes 4 centuries BCE who claimed himself to be a citizen of the cosmos (kosmopolitēs). He meant that there are no differences between people, their moral values, their rights and no identity categories that can artificially create such distinctions. Cosmopolitans treat other people as equal. This article uses cosmopolitan thinking to pinpoint the central agenda of planetary defense as inherently cosmopolitan, either intentional or not, because defending the Earth from asteroids will save us all equally. Thus, taking the decision over Earth defense is cosmopolitan per se.

<sup>7</sup> The article contains terms *state* and *nation state*. The meaning is almost the same with one distinction. I use *nation state* when I want to put emphasis on the identity dynamics behind motivations of the *state*. Some key scholars argue that nation states are not given but are an outcome of talks that led to the Peace of Westphalia (1648) that laid down the following centuries long political development of nation states [56] – they have been constructed as a particular outcome to the particular international situation. Beck then argues that even nations are products of state and not vice-versa because it is the power of state institutions that have kept us save [4]. State representatives talk about *national security* rather than *state security*. It is a suggestive claim that they secure nation but in fact they secure the state institutions running the state. Thus, I use *nation state* in situations when the representatives of a state might have tendency to support their personal power-related policy while arguing for *national interest*.

<sup>8</sup> *Realist* and *neorealist* thinkers were at the beginning of the international relations discipline. While the former depicts states' interest only in power and domination, the later reflected criticism and added to the realism a systemic perspective. According to *neorealists* states exist in a global society of states; thus, their power is defined relatively to other states. Because of the lack of global rules, they co-exist in an anarchic system. The perspective of relative relations between states led to the concept of *security dilemma* [57] explaining the dilemmatic circle of states continuously trying to be more powerful by acquiring more military equipment. These thinkers claim they study the world as it is and resist that it may change.

epistemological approaches defining how the world politics should be studied (see footnote 3). First, the problem-solving theory deals with problems by applying practical solutions to them in the given environment of nation-states and international institutions. The aim of institutions, using the problem-solving theory, is to apply the concept of ‘best effectiveness’ to problems as they arise. The good implications of the ‘effectiveness’ concept are understood as desirable when they achieve the solution in the most effective way, but this way does not need to be *normatively* good; it is just effective. Second, critical theory examines how the order came about; how the problem was set up; was it necessary, and to whom the current setup brings advantages – this is the philosophical background of securitization theory. Critical theory does not take any policy or institutions for granted, however, it does ask where their existence originated from because the division of power and social relations are not understood as given but as an outcome of certain processes [16].

The critical theorists will ask these questions, but the new ethical wave of critical security studies will look for the sincere intentions instead. This is crucial because without well-argued reasoning for the planetary defense efforts *beyond the need of our survival* everything will slide toward the debate over particular national security interests of those willing to proceed with extreme powerful technologies in space. Majority of the public will perceive an asteroid threat as thoroughly thought up even without sophisticated criticism coming from critical security scholars and regardless to scientifically proven facts. We will not avoid this dynamic in any future activity in space as the technology, its effectiveness, and its multiple usability characters will continue to grow. Political reasoning should come first before the rational explanation of the technology application.

Critical security studies have taught us that taking the problem-solving approach to cases such as planetary defense does not necessarily lead to desirable outcomes, to a solution of the problem but can cause another more serious (political) problems. Moreover, critical security studies will undoubtedly study these efforts from the critical perspective and will conjure images of unintentional outcomes that were not part of the objective, but which can denounce the whole effort by pointing to newly empowered actors regardless the sincere intentions. However, the policy design of planetary defense can learn from these lectures and anticipate the criticism that might have the power to deconstruct completely all planetary defense efforts. Various kinds of arguments and impactful literature will very probably emerge to investigate what other interests may lie behind the planetary defense efforts complicating the whole endeavor. I would argue that this can have ethical implications for designing a planetary defense architecture in a cosmopolitan fashion.

Ulrich Beck draws his concept of the *cosmopolitan outlook* as “both the presupposition and the result of a conceptual reconfiguration of our modes of perception [4];” it is a sense of perceiving problems as inherently global with a sense of boundarylessness. Planetary defense presents a *path-defining* case to establish the Beck’s *cosmopolitan outlook* that will help to address even any other fundamental questions and challenges related to our survival and prosperity. Beck’s compelling argument is that promoting any categories describing differences between people is a promotion of aggression and that such thinking is keeping us in the *prison error of identity*. Differences are there but putting them into categories usually caused historical tragedies. Planetary defense, perceived as an agenda for humanity, is what deconstructs this *prison of identity* produced by protectionist politics. Planetary defense efforts may finally lead to what Immanuel Kant called in his masterpiece from 1795 *Perpetual Peace* [17]. In fact, planetary defense brings the common threat – an asteroid – which was by Kant deemed to be the unifying entity.

Buzan recently argued that the English school concept ‘*standard of civilization*’ beside the concepts ‘*barbarians*’ or ‘*savages*’, is currently being cloaked in concepts such as ‘*good governance*’ or ‘*development*’, legitimizing certain policies under indisputable values, such as human

rights, and helped states to act in the name of a civilized elite [18]. This is also a problem in constructing policies on a cosmopolitan level because *cosmopolitan* might have two meanings: the global elite or global inclusivity [15] or make it more confusing – global inclusivity promoted by the global elite. Planetary defense is still reserved for a tiny group of experts and will face sharp criticism during the formulation of the cosmopolitan argument supported by sincere intentions if the majority is not included on a general basis.

In this perspective, I would argue that the planetary defense endeavor needs to focus more on a broader cosmopolitan mindset promoting *cosmopolitan outlook* that cares about our shared human future rather than being formulated as a global survival project that only limited experts can solve and that require massive public spending using questionable nuclear deflection technique. The latter approach provides a workbook-kind opportunity to be criticized as a typical example of exceptional issues driven by securitization discourse of global elite pleading for exceptional policies [19]. The scientific elite that argues with the logic of necessity and empowering their global role by calling for massive spending on their dreams [20]. The special condition of an exceptional threat allows to legitimize a certain technology (nuclear) under a low probability but extinction level threat that is reserved for the chosen – the nuclear states. This dynamics behind planetary defense has already been strongly criticized by world-class scholars [21]. It is not necessary, and this article aims to propose a policy framework to build planetary defense architecture with this possible criticism in mind to avoid it.

Threatening the global society by talking about ‘*global public awareness of the asteroid threat*’ that requires immediate reaction using scientific logic possessed by scientific elite will not bring desirable outcomes; altering the mindset to cosmopolitan and thinking collectively about critical Earth-scale questions will. It is finally not a new idea in planetary defense decades-long discussions [22].

## 2.2. Ethical re-articulation of the securitization theory – the normative move towards legitimate survival efforts

Some scholars are aware of the need that political scientists should be able to deliver the answer in situations when the securitization process or its outcomes are apparently desirable. The principal precondition of the appropriate critical studies approach during the last twenty years of applying securitization theory has been to avoid such normative questions or answers, because giving answers can easily divert the broad analytical focus of a scientist while the study seeks to uncover hidden realities behind the intentions of involved actors. Regardless of these serious arguments, Welsh School has developed an ethical momentum in security studies with a leading scholar arguing that security can be emancipatory [23,24]. Following Booth, Jonna Nyman has recently discussed whether there is a value behind security and that it can be transformed into practical policy through a revival of pragmatism [25] – a normative move and Rita Floyd proposed that some security threats may be objective thereby justifying securitization *ipso facto* – justification move [26].

Jonna Nyman argues for the possibility to discuss the value of the security. For her, security as a political concept is understood twofold: as negative and positive. She read the decades-long debate and proposed two perspectives on the problem: analytic and normative frames (Table 1). In the analytic frame, both positive and negative securities are working together because the negative solves the problem while the positive discusses its implications in enabling certain conditions (as Cox divided the whole discipline); moreover, the positive security adds to the situation something more than just the absence from threats. Applying the critical theory here will bring us an analysis of possible consequences of our decisions, various explanations or likely scenarios but analytically without normative assessment. On the contrary, in the normative frame, the authors are discussing the problem quite differently and focus on the normative implications of the achieved state of



**Table 1**  
Nyman's framework applied to planetary defense.

Analytic frame		Normative frame
Negative	Absence of threat <ul style="list-style-type: none"><li>• no asteroid threat</li></ul>	Security in its bad form <ul style="list-style-type: none"><li>• dealing with the asteroid by disputable technology is causing new problems and threats (nuclear weapons)</li></ul>
Positive	Security-plus <ul style="list-style-type: none"><li>• the chosen technology can be used for additional (commercial) purposes</li></ul>	Desirable/good security <ul style="list-style-type: none"><li>• no asteroid threat achieved by enabling commercial exploitation of asteroids – does not cause new threats</li></ul>

security. Thus, in the normative frame, the positive and negative securities do not work together, and the negative should be rejected as bad – undesirable – state of security [25].

Nyman argues that asking the question ‘*how we want to live?*’ is fully legitimate and should be answered before approaching a solution to a security issue. The question ‘*how we want to live?*’ is a bold move in critical security studies and the way of thinking that falls into a new wave of ethical security studies [5] in which the critical security scholars have found the courage to ask *what kind of security we want*. They left the analytical perspective of a bystander analyst and combined security politics with enlightenment philosophy and ethics. The normative assessment of our decisions is an infinite circle implemented into practical policies through the reincarnation of pragmatism – a pragmatism enriched by the normative assessments. Pragmatism, in general, is context dependent through which it perceives ethical implications and assessments, analyzes practices fulfilling certain political actions and thus is not uncovering the unbeatable determining truths or solutions but is producing context dependent *truths* for variable situations in a reflexive manner as practically useful knowledge [27]. The interesting part of the approach is that even ethics can be context dependent which is giving the nuclear debate in planetary defense a significant boost.

Rita Floyd puts forward three conditions to assess whether a securitization act is justifiable. First, the threat must be objective, meaning that radiation exists, an asteroid is on a terminal trajectory, climate change is happening, all are scientifically provable facts. Second, the referent object must be morally legitimate, meaning that securitizing the threat in relation to the referent object must contribute to human well-being. Third, the security response must be appropriate in relation to the aggressor and the sincere intentions of the securitizing actor. As I argued at IAC 2016 in Guadalajara [28] and elaborated on in detail elsewhere [29], the planetary defense is a crystal-clear example of an objective threat. It is scientifically predictable and eventual impact would not contribute to human well-being; however, claim about sincere intentions behind the efforts still has reserves that can be overcome by the *cosmopolitan outlook*.

In other words, securitization of issues threatening our shared future that can lead to better human well-being in combination with Rita Floyd's three conditions to justifiable securitizations should be the basis for any planetary defense policies proposing technologies sensitive as a possible national security concern.

2.3. Desirability component conclusion

Planetary defense is a path-defining chance to unite all nations in preserving the biosphere, humankind included. Its securitization is ethical, desirable and has the potential to open a new episode of humankind's flourishing. If planetary defense efforts are reduced to the absence of the asteroid threat only, it will face harsh criticism. Planetary defense architecture should be constructed on the normative desirability of our future that is about Earth security and human expansion into the Solar System. It should be designed with this *normative security-plus ambition*.

A lesson for the community of planetary defenders is the commendation that sticking on the most effective technology,

especially the one that is normatively stigmatized, does not necessarily imply the shape of the world we want to live in and will not be the only parameter the decision makers will ask. When the community calls for a ‘global awareness of an asteroid threat,’ which is uncritically understood by the community as the most desirable approach, it has to keep in mind that precisely this activity is the securitization of science to exceptional security politics. Moreover, asking for exceptional political decisions under the pressure of humankind survival is food for hungry critical security scholars that will destroy the efforts in a half of a decade if the whole planetary defense is not ethically framed as a desirable policy for humankind survival and further flourishing.

Planetary defense policy should be ethical in all contexts to be desirable for all – it should recognize its cosmopolitan mission and aim at its capacity to develop the *cosmopolitan outlook* capable of changing the political contexts of needed technologies first.

3. Approaching it feasibly – governance of planetary defense as an ethical cosmopolitan security cause

Planetary defense is generally a defensive effort and refers to the fate of humanity and the whole biosphere. As such, it has inherently enlightened cosmopolitan character. However, defending Earth from asteroids requires technology that could have latent offensive potential. Planetary defense community studies possible deflection technologies, but the same technology can be perceived as an ultimate weapon of war. Strategic studies have experienced a very heated decades-long discussion whether a weapon can be defensive which has never been satisfactorily solved [30]. Claim that it is possible to load a spacecraft with a nuclear payload instead of sending it as a kinetic impactor in case of short response time suffers from the objectivation of scientific facts [31] that equals rational with normative reasoning because it omits what possible implications such proposals will cause on the international level. Here, the used context plays a significant role, but without ethical securitization and the construction of cosmopolitan outlook described in the preceding section, the whole idea is politically unfeasible in the current international system because it will have other than a desirable impact.

3.1. The nuclear dilemma

The most demanding concern emanating from the current mitigation techniques is in the potential role of nuclear technology. Installation or even usage of Nuclear Explosive Devices will be perceived as the deployment of Weapons of Mass Destruction regardless of its highly specific engineering design and long-lasting narrative of the scientific community about their effectivity. Deploying nuclear technology might be technically the best solution against larger asteroids but indeed will not be perceived as an appropriate technology to start with, especially when there is not a single asteroid detected on the terminal trajectory. Nuclear states will not share their technology; non-nuclear states might feel threatened by nuclear powers or might not even be interested in participating in the nuclear solution. The example of South Africa and their voluntary cancellation of the nuclear program and dismantling of all nuclear weapons after achieving them in the 1980s would serve as an example that states do not necessarily like to

possess them. Moreover, with the Nobel Peace Prize awarded to the organization trying to delegitimize fully nuclear weapons in 2017, their deployment is becoming more and more ethically disputable.

The selected deflection technology must be normatively unproblematic and should serve the well-being of humans on various levels, not just their survival. On the other hand, it is hardly defensible not to use the most effective technology in case of the possible extinction event. It would be hardly tenable to rule them out, face an imminent threat, get almost extinct and remember that we ruled nuclear weapons out just before the asteroid had come. Nevertheless, while the entire solar system awareness related to nearby asteroids can be achieved, such a state of knowledge would eventually fully rule out the necessity to use or even possess Nuclear Explosive Devices. On the other hand, the threat from comets given their unpredictability will rule them back in. The context apparently plays a significant role in their assessment. Nevertheless, the dilemma between the risk of extinction and the risk of global nuclear war will stay in place. Thinking about other technologies would help to make the argument of planetary defense policy less sensitive and thus more feasible among the key global actors.

Security from asteroids represents the good and justifiable cause of securitization only if we use the kind of technology that cannot be exploited for other purposes with normatively negative impact. Regardless the objectivity of the threat the selection of the proper technology requires respect to established international norms.<sup>9</sup> The central role the non-proliferation regime has been to produce international confidence. Thus, nuclear solutions are ruled out, for now, however, even in planetary defense literature this impossibility to use them is explained as “nontechnical reasons” [32]. The same authors admits that in future “some entity could maintain a small number of nuclear explosive packages to allow humanity to counter an NEO that could, for example, cause mass extinctions [32].” This claim follows an argument why a world state is inevitable [33] and why the planetary defense architecture will finally require it [34]. Nevertheless, in the current international system, nuclear deflection technique should remain tabooed to keep the global peace despite the argument that they may be the most effective against specific asteroids [35].

When the principal actors – states – realize that some supranational objectives are also in their best interest, planetary defense architecture driven by the cosmopolitan outlook will proceed naturally. I would call this approach a *mechanism of unstrained feasibility*. It is not only about the feasibility of using (near)existing technology while avoiding science fiction visions – feasibility regarding a project engineering achievability. It is also about choosing even normatively acceptable technology and its operational architecture – governance – which is in the interest of others while it does not simultaneously pose a threat to anyone. The project should be opened to any state, any nation, any actor that wish to participate on any level and the economic logic of the architecture must be included as any reasonable planetary defense infrastructure would probably not be paid even by the most active space faring nation for centuries. All of these arguments speak for the cosmopolitan outlook as the political guidance now and for decreasing the sovereignty of nation-states in space during any technology deployment and operation later. Cooperation will also happen naturally through coordinating commercial efforts. However, even in the case of nuclear mitigation method, NASA itself argues that the “*use of a nuclear device would likely require prior coordination*” [36]. Capability and will to coordinate or even institutionalize the cooperation would return the

nuclear solution to the game.

### 3.2. Equal involvement will return confidence

Buzan argued that *macro securitizations*, which are securitizations on a systemic level (global) rather than on a middle level (among nations), will be more successful because macro threats influence everybody without distinction. Macrosecritizations do not create the delimitation line between socially constructed ‘others’ [37] as the concept of nations does. Buzan mentions himself the asteroid threat as an example of future successful securitization. In the end, the *justifiable securitization* requires a morally legitimate securitization actor that cannot be criticized as an amplifier of its national agenda. NASA’s Planetary Defense Coordination Office is well aware of this problem, hence the ‘*co-ordination*’ in the name and their continuous assurance of promoting global cooperation on planetary defense. We, unfortunately, do not have such a global actor, and the United Nations probably will not be the one to decide as the role of UNOOSA is more to coordinate than to decide.

The option that the UN Security Council can approve and order an action probably cannot override the stigmatization of the leading acting actor, whether a national one or under the command of a broader alliance or with the approval of five states in Security Council. Anyone will be stigmatized as the ‘chosen one’ representing the higher ‘standard of civilization’ by those who are excluded.

Developing states during the Kyoto or Paris agreements regarding climate change argued that they have their right to burn their portion of coal to become developed countries because they are still approached as developing countries. This is precisely the way of thinking that divides societies between leaders and followers and which we need to avoid. It is finally the same way of thinking we experienced during the discussion of the code of conduct in space [38]. Participation will bring states a long-term perspective. The participation in the Solar System observations will bring prestigious international scientific cooperation; the participation on the deflection technology development would bring benefits in industrial participation on high-end technologies; the participation in its operation would bring security and confidence because using any kind of technology in space can be understood as a national security concern.

### 3.3. Governance of planetary defense as a commercial endeavor

Recent works on the governance of science and technology have come up with findings that, due to the deepening of the complexity of several technical developments, centralized governance of such projects by solely states has become unbearable. Moreover, due to that incapability states are losing credibility to govern such science and technology projects as internationalization, globalization and networked governance through decentralized epistemic communities<sup>10</sup> or supranational corporations targeting global markets have shown to be quite successful and fruitful for scientific and technological advancements [39]. The whole question related to security and communication technologies in the so-called new national security agenda of cybersecurity serves as a good example [13]. Nation states do not govern the technological development of communication technologies that are responsible for the national cyber security at all levels, from personal privacy concerns to the national critical infrastructure concerns. Cybersecurity is a global security problem per se and even states ritually repeat the need for cooperation. It is a nation state that constructs cybersecurity as a national security concern because we do not have higher authority over them. States may be able to govern how we work

<sup>9</sup> Norms are one way how to develop regulatory or international regimes (a regime under which global governance is exercised); however, the normative regimes are what contain states from doing vicious actions by pointing on the expected behavior. Norms are not treaties but very well written statements in the so-called Confidence Building Measures, a tool broadly used by international organizations to contain free riding problem of participating actors – states. Regimes were famously defined by Stephen Krasner as “*implicit or explicit principles, norms, rules and decision-making procedures around which actors’ expectations converge in a given area of international relations*” [58].

<sup>10</sup> Community of people who know each other by being part of the same scientific community [16] – the planetary defense community is a clear epistemic community that share the same interest.

with particular technologies, e.g., in critical infrastructures but they do not govern the development of these technologies and security of these technologies is based more on the design of the technology itself rather than on the policy how it is governed. States are clearly lost in this problem.

Additionally, there is no rational assurance that state will control technology forever once deployed to space, especially with the emergence of multibillion-dollar companies in the space sector and the probable forthcoming first handover of a colossal space station to private entities. The rocket-speed development of SpaceX and its gradual successes has recently not been visibly respected by high-rank officials in US administration, and it still breaks barriers. Rockets have become private assets to fulfill visions of people who do not care about the perspective of national security but consistently talk about humankind security and our planetary-scale disasters survivability [40]. When we are in an age when funds are poured into the space sector from tourists, we will see a comparable process of states' influence in space activities.

The planetary defense endeavor requires relatively clear knowledge with visible boundaries based on non-consumer high-end technology that is (seems to be) strictly dedicated for its purpose. The detection systems that are capable of detecting various asteroids and the deflection systems to deflect them do not depend on consumer technology but rather on particular high-end engineering capacities focused on narrow-purpose technology. In comparison to consumer electronics, we may observe completely different dynamics of technology evolution unless there is a market of technology for asteroid manipulation and exploitation. Then we may observe the same we have experienced in the internet evolution.

The first goal is to find the most feasible and effective dedicated systems that will build a reliable knowledge base of the asteroid population in the Solar System. The free market can do the rest. This strategy requires centralized investments, public spending, and government-driven operations before the market will expand and small Luxembourg takes this opportunity seriously. Flourishing commerce in asteroid mining will switch the dominance of public sector to the private one, which would eventually change the national security perspective behind the asteroid manipulation because states will have to regulate commercial activities in deep space rather than to be scared of each other. Working on traffic management, commercial exploitation regimes and an international governing entity will help to avoid questions such as why other states need to test asteroid manipulation, deploy sensitive technologies in space or whatever comes to a mind in the classical neorealist thinking because it will become obsolete.

We should approach planetary defense as a commercial opportunity rather than a global security necessity with so-called responsible national agencies thinking in global terms. We have a chance to provide states the credibility related to governance of fundamental security threats through the natural development of humanity in space (security-plus in Nyman's analytic frame) while providing it with normative credibility emanating from the governance of issues related to our prosperity (Nyman's normative frame). It will become a good cause of securitization involving states as principal actors that have to lay down the long-term policy architecture of how we can defend ourselves and prosper at once. This vision of the cosmopolitan role of a nation state [41] is what the national governments have to adopt to avoid a bad form of security while providing a broader vision to others worthy of being followed.

### 3.4. The necessity of a paradigm shift – security cosmopolitanism and the outer space commercial regime

Planetary defense endeavor is about us – the humankind – and security cosmopolitanism is a theoretical lens how to construct planetary defense agenda with cosmopolitan outlook in mind.

As I have argued tacitly throughout the text, the shift from the nation-state perspective of national security to the cosmopolitan

perspective of global security by all states is necessary if we are to succeed in defending the planet from asteroids and to avoid the accusation that our activity serves national interests. There is a broad consensus among political science scholars that global security issues cannot be approached on a national level but must be examined through 'emancipatory global governance,' as Ken Booth argued [24]. Globalization in various sectors (commercial, cultural, international, legal, but also technological) proves the existence of the ongoing process of world cosmopolitanization. Even the issue of national defense is being transformed into a collective defense architecture [42]. However, skeptics of this idealism underpinning the cosmopolitan idea still argue for the 'real order' in the anarchic interstate system described by the neorealist school that is not driven or regulated by international organizations but only by its anarchic nature. Security cosmopolitanism is a reaction to the neorealist short-sighted analysis and value-vacant critical studies that avoid normative assessments. It is emerging as a reaction to the historical narrative of insecurity aimed at the *security of nation states and from nation-states – between nation states*, on which security studies have been focused for decades if not for centuries (considering traditional strategic thought beginning with Sun Tzu, Clausewitz, and other classics).

In our case, we deal with the narrative arguing for the source of insecurity to the global society caused by natural threats such as climate change or asteroid impact. This necessity can be understood as an objective from an analytical perspective (as a predictable threat by the scientific explanation) but also from the normative perspective because the capability to deal with it is undoubtedly essential for continuous human evolution, destiny, prosperity and flourishing. We need to answer the possibly emerging criticism with action if we wish to develop a *feasible* planetary defense policy. The United Nations did not emerge from a vacuum between anarchic barbarian actors through natural evolution but through a mindset of people dedicated to the idea of a united world; the European Union provides a similar example.

Anthony Burke argues that "security cosmopolitanism is not going to arrive, it must be imagined and created" [6]. It has to be a building block of a *global categorical imperative* recalling Kant's moral foundations that each of us has to act with that moral maxim, a universal law, on the foundation of morality that is not culturally bounded but a result of moral rationale in the enlightenment. As Kant argued in his masterpiece *Perpetual Peace*, humanity will unite when it faces a common threat [17]. As we live in the system of nation-states that hardly copy distinct nations but much more construct them (e.g., North and South Korea or all African states), it is up to the states to act, leave the relic of idealized distinct nations that hinder us from thinking as 'us.'

Burke prefers to see the nation states understanding the fact that their survival is dependent on their global participation, obligations, and dependencies – the security policy of a good state from a 'cosmic point of view' [43]. In Burke's terms, the global ethics of security cosmopolitanism means:

*"First, a responsibility of all states and security actors is to create deep and enduring security for all human beings in a form that harmonizes human social, economic, cultural and political activity with the integrity of global ecosystems. Second, all states and security actors have fundamental responsibilities to future generations and the long-term survival of global ecosystems: to consider the impact of their decisions, choices, and commitments through time"* [6].

Burke later argues that the 'results of global security activities' that have effects on human beings, our communities, states, ecosystems, and thus human well-being and prosperity are what matters and should be called 'global security ends' [6]. Despite the fact Burke does not propose a world state, his argumentation normatively coheres with the Wendt's teleological vision of an inevitable emergence of a world state discussed above [33]. World state does not necessarily need to exchange the current nation-state but can emerge from international regimes. EU is currently somewhere in the middle between the federation and an

international regime; thus, we should not perceive political systems as definite but as fluid entities, especially those that are built over the nation states by nation states.

Burke is in an explicit consent with his cosmopolitan global governance model on a universalist ethical basis with arguments re-articulating the securitization theory in literature written by Ken Booth, Rita Floyd or Jonna Nyman. Other cosmopolitan oriented scholars are arguing that these responsible states need to seize their sovereignty, pool them and develop a big political vision to focus on liberal political responsibility through supranational bodies [41]. I would argue that the dynamics emerging around asteroid mining is a unique opportunity to develop something like *commercial asteroid exploitation regime* that naturally includes the capability to defend Earth – an international organization or just a normative regime that will lead all actors in a peaceful development. It is a business opportunity for companies that should begin pressure on their states to set the rules of the game. Planetary Resources has started and been successful in the US Congress [44].<sup>11</sup> The others will follow.

### 3.5. Feasibility component conclusion

Nuclear weapons can be used under one single condition, and that is a cosmopolitan super-state, which remains wishful thinking for the far future shaded by warnings about the emergence of an ultimate totalitarian state [45]. It is a strong argument worth attention. However, security cosmopolitanism is not about centralization of power into a world state as one may think while reading about cosmopolitanism. It is about the cosmopolitan outlook, ethics, and cooperation between nation states in any cooperative political regime. Hence, the principal conclusion is to include all because cosmopolitan thoughts give all the same rights and will return confidence between them. Such a process will decrease the role of states in space which will motivate them to establish a cooperative regime for all involved actors. I propose to name it the *commercial asteroid exploitation regime*.

The feasibility of the planetary defense endeavor in the current political environment needs to respect the system of nation-states, but at the same time, it should remain imaginative towards more responsible global security and visionary cosmopolitan politics. Planetary defense is inherently a cosmopolitan agenda, but it is up to us to choose the kind of technology to deflect an asteroid that will bring consensus, prosperity, and peace. If the technology is at the same time useful for commercial exploitation, nobody will discuss how to avoid threatening each other in neorealist fashion but will instead discuss how to establish a working commercial regime to regulate growing commercial operations in space.

Without the political feasibility of planetary defense technology deployment and its operations, there will be nothing to sustain, and we will never proceed.

## 4. Keeping it sustainable – various kinds of interdependence as a safety fuse in the planetary defense architecture

An accord between dozens (or all) of states still contains the risk of a delusional leader that may have a temper to cancel or threaten the project for whatever reason we can imagine. The temptation for national greatness destroying international cooperative ties is returning with iron-solid certainty because of power thirsty individuals. Adopting protectionist, populist policies can jeopardize years of collective efforts which outcomes have even led to the establishment of international norms or legally binding treaties. Totalitarian and delusional leaders

have been in many cases democratically elected [46], and such leaders possess enough power to disrupt well-intentioned global policies to cement his/her power by injecting the debate with a poisonous discourse based on beliefs and emotions rather than on scientific evidence. However, beliefs are what politics is about, and emotions are stronger drivers than facts while facts may mislead us into normatively questionable policies. Thus, beliefs cannot be omitted in policy making because policy based merely on evidence is empty of ethics, values and normative perspective. Neither democracy in responsible nation states nor a global democracy can be a fuse for a sustainable policy of planetary defense that requires long-term sustainability.

The unilateral action of one state against an asteroid will certainly raise concerns even in case of the possible extinction event. The critics will probably raise the question of the action necessity leading to a defection from any cooperative regime by the acting state. The multinational character, including various corporate actors, will bring interdependence between all actors which can work as a fuse against delusional leaders making emotional decisions to act or defect suddenly.

One of the best solutions to this dilemma is to involve commercial actors motivated by state subsidies. Building infrastructure for the commercial exploitation of asteroids and fabricating resources in space brings several advantages. It will prove the feasibility of the engineering concept and its reliable operability on a daily basis. It will also raise the level of perspective on what we can do as a species on the global/cosmic level, but it will also bring profit for its needed continuous maintenance and upgrades. The requirement for the legitimacy of such a commercial venture will lead to democratic oversight. It will bring us to a future situation in which states will be forced to cooperate to control multinational ventures in *commercial asteroid exploitation regime* instead of being in a classical neorealist anarchic state discussing who should control and pay for a massive planetary defensive infrastructure in standby mode. Having a planetary defense infrastructure anywhere in standby mode for decades is not a wise idea; it does not need to work when the asteroid is detected. It is a much more reasonable approach to use the same infrastructure for commercial mining because, in case of an emergency, its functionality will already have been guaranteed for decades and as operated by all it will not threaten any state. Participation in the *commercial asteroid exploitation regime* will bring more than just security; it will bring prosperity which is the key to planetary defense sustainability.

### 4.1. Origin of the interdependence concept in international relations

In 1973 Keohane and Nye wrote their famous article Power and interdependence [47], in which they talked about the transition from power as a conventional force to the power in economic levers created by direct foreign investments – power that influences the decisions of both sides and creates mutual dependence – an interdependence. They argued that by creating a defensive alliance, politicians created a military interdependence that gave purpose to the big and powerful United States while giving the same purpose to smaller allies. In 1977, the authors published a book to elaborate on the topic that defined the subsequent decades of future international politics [7]. It played a significant role in the amplification of the rising resurgence of neoliberalism, helped tear down the Berlin wall, opened Eastern European countries to the world and finally included Russia in global endeavors such as the International Space Station because all these moves were understood as the only legitimate way forward.

The 1990s was the last decade during which nobody questioned the drawn direction of political development in various kinds of mutual dependence in the so-called state of *complex interdependence* driven by neoliberal logic. Economic interdependence as a part of massive globalization efforts provided peace and ideals to the world in an unprecedented fashion. To what extent economic interdependence, driven by globalization efforts that have led us to the 'end of history,' as

<sup>11</sup> "A U.S. citizen engaged in commercial recovery of an asteroid resource or a space resource shall be entitled to any asteroid resource or space resource obtained, including to possess, own, transport, use, and sell it according to applicable law, including U.S. international obligations."



Francis Fukuyama argued [48], is capable of delegitimizing current emerging nationalist and protectionist policies will be more evident after the assessment of Brexit if it ever happens. However, even today the situation is a battle between emotional nationalist arguments about bringing back the sovereignty and well-reasoned arguments talking about good Brexit outcomes as a fantastical illusion; even during the writing of this article the debate visibly slid towards remaining because emotions usually last shorter than rational reasoning. We do not need to go too far to assess which way is normatively good for global cooperation on various global challenges that do not respect state borders. Perceiving current global political system in deconstruction would be a premature judgment. Nevertheless, the consensus that human flourishing lies in global cooperation remains an indisputable norm because the opposite to cooperation is only war.

#### 4.2. Decentralized regimes and networks as an alternative to leaders

Political science has experienced theoretical battle-type debates on the question of when nation states hold together in cooperation and when they tend toward defection. That discussion is beyond the scope of this paper, but the major debate is still between the neorealist perception of states existing in an anarchic system driven by natural laws [49,50] and the opposing constructivist group of scholars who understand anarchy as a mere byproduct of what states intentionally do [51]. The former group is convinced that the state system is embedded in unalterable natural laws and thus its development is measurable and predictable by natural science methods (positivists), whereas the latter is convinced that the political system is constituted in and by the minds of people and thus can be reconstructed through ideas (post-positivists). The former only say that cooperation is not possible because of the natural state of conflict between nations given the anarchic system in which they exist. The latter perspective offers us both a chance to achieve a political system sufficiently competent to support a sustainable political architecture of planetary defense, but still, as it emphasizes individual minds, it keeps focus on the capabilities of individuals to drive the change. Unfortunately, we also have historical examples of individuals that shook the world politics and caused historical catastrophes (the argument of delusional leaders).

Any version of a global planetary defense policy architecture will be influenced and may be threatened by the sudden emergence of delusional leaders and their emotional decisions. Multilevel interdependence between states driven by security cosmopolitan values securitizing asteroids not as a fundamental threat to humankind but as a key opportunity to flourish in space [29] is the key to the planetary defense endeavor's sustainability, though nonetheless challenging. Delusional leaders would be less threatened by open, constructive, decentralized and multilevel networked cooperation regime in plenty of space-related activities rather than by a strong, effective and centralized program of planetary defense they can easily oppose, denounce or even take control of it. The decentralization of interdependence is the key, and thus the planetary defense endeavor should be based on various modes of international cooperation in space and commercial programs altogether. However, as literature assume, and to make it more complicated, building interdependencies and institutionalize them in international organizations do not only bring substantial interdependence, but it also brings a lack of democracy that lowers their legitimacy [52]. However, I already argued for the need to develop a democratic oversight for any entity dealing with supranational issues. Here lies the foundation of European Union legitimacy with European parliament directly elected by European citizens. All planetary defense architectures do not necessarily require sustainability, but long-lasting, sustainable planetary defense architecture will require legitimacy.

Burke proposes to exchange circles of binding obligations with networks of the same. Quite abstract imagination but what Burke is probably trying to tell us is that instead of having treaties binding states that nobody ever tries to change; it is better to have a fluid set of norms

that can be altered quickly. Thus, practices and newly discovered needs perceived pragmatically can help to alter the norms rather than the opposite when fifty years old treaties are unalterable and pushing actors to their violation as they become obsolete. He sees a networked set of interdependencies rather than obligations beyond all borders [6]; interdependencies lead to regimes, and the call for legitimacy lead to democratization. The ethical call for planetary defense global policy architecture can thus lead to world democracy.

#### 4.3. Technological interdependence

Two examples in recent history can show us how diverse kinds of interdependencies can or cannot suspend delusional emotions to deconstruct global-scale cooperation in impressively successful projects. First, the International Space Station (ISS) in space and second, the International Science and Technology Center (ISTC) in Russia. In the case of the ISS, after about 25 years of well-working cooperation, Russia announced in May 2014 the will of the Russian government to leave the project in 2020 by detaching Russian modules in space to establish a solely Russian space station that will 'fly more over Russian territory.' In February 2015, they prolonged the deadline to 2024. It can be understood as a reaction to the sanctions imposed on Russia for the annexation of Crimea because both announcements were publicly shared during the period of rising international tensions.

There are several compelling arguments on why this idea represents a more political message than a realizable plan. First, all modules mentioned in the Roscosmos announcement are not in space already (MLM, Uzlovoy module, October 2017). Second, the proposed inclination of the new Russian space station created from the detached Russian modules would require approximately 30 launches of Progress space-ships to move the 40 metric tons of weight into a new orbit of 64,85°. Third, detachment challenges are probably merely unachievable due to the interconnections of electrical and plumbing circuits. This plan is therefore driven more by political than rational motives because the feasibility and benefits from such cooperation defection are more fanciful than realistic. However, delusional ideas fueled by striving towards national grandeur are most likely the drivers in this case while the factual feasibility is probably unachievable. The Russian modules will most certainly stay attached to the ISS until its deorbit, meaning the Russians will keep the alliance aboard the ISS. Alternatively, the modules will be handed over to a commercial entity for maintenance and repurposed, but that will not exclude Russia from the project entirely as they will be the only source for the technical support.

In the case of ISTC, we have experienced much easier cooperation cancellation while the implications are more concerning despite the silence and low publicity of the process. ISTC was established in the first half of the 1990s as a civilian institute of nuclear research to employ Soviet nuclear weapons scientists and engineers who may be inclined to sell their expertise to rogue states, including North Korea. It had been working well until 2013 when Russian President Putin announced the will to quit the institute and move it from Moscow to Kazakhstan in 2015. The argument was that Russia is mature enough (again) to govern its nuclear research [53]. ISTC was occupied by various scientists from around the world that shared their knowledge with the Russians and vice versa. The benefits from the cooperation were self-evident as all involved parties were aware of the level of knowledge related to nuclear research including nuclear weapons in the cooperating nuclear powers. Nevertheless, the delusional drive to reassert the global greatness of one nation drove the cooperation project away from its initial objectives with, again, impressively successful results and as we can observe the mutual understanding in media decreased significantly between the two superpowers.

In the case of the ISS, we can talk about resistance to the radical policy caused by the physical constraints of orbital mechanics and engineering design. In the case of ISTC, there were no massive projects to produce strong technological interdependence between the involved

actors as these projects lasted up to several years. Dependence on an unreliable partner can bring instability to the whole project but will contain delusional ideas driving radical political decisions. Leaders may fade out while the projects may be preserved. Focusing on cooperation from the perspective of whether the leader or governing party of the cooperating state is reliable is not essential. The key lies in the technological interdependence, unique benefits and the complexity of the project.

#### 4.4. Sustainability component conclusion

We stand at a very specific moment in human history. We either accept the inevitability of the alleged ‘natural law’ of the international system as neorealists still believe in and will maintain the status quo of that system or we will focus on the ethically justifiable securitization of global security objective threats that have the potential to provide grand visions to humans and their bright flourishing future. Such vision requires a cosmopolitan approach. This contrast is quite clear, we either flourish or fade away into Earth’s geological history. Planetary defense efforts have the potential to create a path-defining agenda – the grand vision of human future – and to produce path-dependency – the impossibility to defect – through a complex political decentralized network of multi-level space activities and technological interdependence among all involved actors. The multipurpose usage of technology can bring profit and resources for the serious exploration and eventual inhabitation of the Solar System. That is precisely how can we conceptualize human flourishing, but we have to be dedicated to that vision to make it real.

#### 5. Conclusion

In this paper, I introduced three connected conditional components for an efficient policy architecture of planetary defense as an ethical global security issue. I argued for these components using recent theoretical research in political science. These components are desirability, feasibility, and sustainability.

Planetary defense endeavor has the potential to make humankind multi-planetary by raising the perspective of our ontological self-reflection to our survival concerns; it can also trigger an entirely new episode in our development. Reducing the agenda to our mere survival is not only a reductionist approach but is also a destructive one. It will lead to the denunciation of the agenda due to the national security perspectives and by critical security scholars’ writings seeking targets in calls for exceptional political solutions of exceptional security threats. Thus, I linked the Beck’s argument of cosmopolitan outlook as the desirable ontological shift.

The aim was to demonstrate that political science has reached a point of research that it has the potential to provide us with fruitful insight into the idea of a viable planetary defense policy architecture and support upcoming planetary defense policy proposals with fruitful ideas from the political theory. The central argument is made on the distinction between negative security – the absence of a threat, and positive security – human prosperity or flourishing. Planetary defense solution cannot emerge without causing severe national security concerns if it does not contribute to the prosperity of humanity in general.

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