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**PROPOSING A HOLISTIC APPROACH TO AN APPROPRIATE LEGAL
FRAMEWORK FOR PLANETARY DEFENCE**

George D. Kyriakopoulos⁽¹⁾

*(¹) Assistant Professor of International Law, School of Law,
National and Kapodistrian University of Athens,
P. address: 34 Socratous Street, 16674 Glyfada, Greece,
Phone: +306947837333,
email: yokygr@law.uoa.gr*

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EXTENDED ABSTRACT

A near-Earth object (NEO) is an asteroid or comet orbiting the Sun with a perihelion distance of less than 1.3AU, in other words a comet or asteroid ranging in size from metres to tens of kilometres whose orbit come close to that of Earth's. According to ESA estimates, more than 20.000 natural space objects in the Solar System are NEOs. The main problem posed by NEOs for Humanity has to do with the possibility of some of them colliding with Earth, which could potentially cause a disaster of such scale as to critically affect life on our planet.

The planetary defence concept provides for mechanisms to detect and give early warning of NEOs that could potentially approach the Earth with a strong probability of collision as well as to stop their course or, if this is not possible, to limit the effects of a collision. ESA's NEOCC and NASA's NEO Observations Program constitute paradigms of action in the context of planetary defence.

This paper discusses, at a first level, the existing legal framework for planetary defence. It finds that existing approaches are national or even regional in nature, whereas the problem is global. At present, the legal assessment of planetary defence is in essence governed by Article IX of the 1967 Outer Space Treaty, which reads as follows:

Article IX

In the exploration and use of outer space, including the Moon and other celestial bodies, States Parties to the Treaty shall be guided by the principle of co-operation and mutual assistance and shall conduct all their activities in outer space, including the Moon and other celestial bodies, with due regard to the corresponding interests of all other States Parties to the Treaty... If a State Party to the Treaty has reason to believe that an activity or experiment planned by it or its nationals in outer space, including the Moon and other celestial bodies, would cause potentially harmful interference with activities of other States Parties in the peaceful exploration and use

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of outer space, including the Moon and other celestial bodies, it shall undertake appropriate international consultations before proceeding with any such activity or experiment...

According to the aforementioned provision, international responsibility could be raised for a State that unilaterally attempted to change the course of a NEO and failed in this attempt – in other words, in case a State undertook such an activity “without due regard for the interests of other States” in relation to planetary defence. It should also be noted that responsibility may also arise from the fact that the State in question did not “undertake appropriate international consultations before proceeding with” the attempt to avoid the collision. In this respect, Article VI of the Outer Space Treaty provides that States (parties to the Treaty) shall bear international responsibility for national activities in outer space, including the Moon and other celestial bodies, whether such activities are carried on by governmental agencies or by non-governmental entities.

Further, obligations for States acting unilaterally to change the course of NEOs may arise under a holistic approach to planetary defence (which the paper essentially supports), through the taking into account of parameters that do not relate to the course of a NEO *per se* but arise from space activities which, in some way, can determine and/or otherwise affect the conditions under which planetary defence can be designed and carried out, such as the use of nuclear weapons in outer space, the exploitation of NEO resources or, again, the inadequate provision of data through Space Situational Awareness mechanisms. In this context, a review of the concept of Space Traffic Management would be desirable. However, it should be noted that: a) The use of nuclear weapons in space is completely prohibited, according to Article IV. para. 1 of the Outer Space Treaty; b) the exploitation and utilization of space resources is currently the most controversial, legally, issue in the context of space activities; whereas, c) space traffic management, although there seems to be a general consensus on approaching it through multilateral schemes, is still in an embryonic stage of development.

What would be the implications of such an approach? At the level of the desirable (*de lege ferenda*), the creation of multilateral mechanisms and institutions (e.g. an international treaty regulating the issue of planetary defence or the establishment of an international intergovernmental organization for this purpose) could provide a collective response, of universal character, to a problem of global importance, a response that would *de facto* have the flexibility and effectiveness that unilateral actions cannot have. For obvious reasons, such a development would be qualitatively upgraded with respect to the most critical factor in the context of planetary defence, which is the decision-making process for intervention. The paper will further elaborate on these perspectives.