

the other hand API Art 55 deals with the survival of the population. Granted there may be an overlap. Nonetheless their difference in perspective is important.

The Convention on the Prohibition of Military or any Other Hostile Use of Environmental Modification Techniques¹¹⁰ is applicable to certain ASAT weapons. Each Party to the ENMOD convention undertakes not to engage in military or hostile use of environmental modification. Environmental modification in turn includes the deliberate manipulation of the natural process, namely the dynamics, composition, or structure of ...outer space¹¹¹. Furthermore, according to Professor Eric David, Article IV of ENMOD makes the violation of ENMOD a war crime¹¹². Could a Van Allen attack be a violation of ENMOD, perhaps so if the attack has widespread, long-lasting or severe effects as articulated in Article I of ENMOD. It is interesting to note that the ENMOD convention does not contain a definition of outer space. The OST defines outer space as being a complete orbit. Considering that Article II of ENMOD refers to the "dynamics" of the environment, it is reasonable to interpret "outer space" within the ENMOD as encompassing orbits. Thus establishing orbits as a natural environment would increase their protection under international law from certain ASAT weapons.

Therefore, depending upon the cognitive perception of the physical phenomenon of an orbit by the LOAC, the result of the targeting analysis is differs. Is an orbit an area to be attacked or is it a natural environment to be protected?

III 3.3 Debris

The creation of space debris must be factored into the proportionality calculus of ASAT weapons. What is important in applying the proportionality principle to space is the environment and vicinage within which the consequences occur. A collateral damage assessment in its' usual application, is a concept which is limited in time and space. However, in space, collateral damage has a greater physical and temporal dimension. Its physical amplitude is magnified by the fact that the resulting effects orbit the planet. Its temporal amplitude is amplified in that the orbiting particles can remain in orbit for a prolonged period. Thus even if orbital parameters and coordinates may be attacked, a similar calculus to that created within arts 35 and 55 API results. However the complexity of the calculus is increased due to the increased variables of the components of the equation.

Furthermore, if the resulting affects of an ASAT weapon cause harm to other satellites of other nations, which are not involved in the conflict, be they civil or military, other legal issues arise. In this scenario the issues to be dealt with are compounded, namely the effects on civil objects and on the rights of neutral States. Damages caused by space debris to military satellites of neutral States are, strictly speaking, not part of the calculus of proportionality but enters in the violations of the rights of neutral States. Space debris is however not only the concern of attacking forces. States must refrain from placing military assets near civilian objects. Thus a military satellite which has the potential to be attacked must not be stationed in the vicinity of civilian satellites.

III 3.4 Jamming and Signals Modifications

To be effective against GPS guided munitions, the jamming of GPS signals must be done over a specified area and not directed against a specific military target. GPS jamming weapons therefore may, depending on the circumstances in which they are used, have difficulty respecting the principle of distinction. Furthermore, the use of GPS jammers may breach other LOAC principles. For instance if GPS jammers are used in a populated area by a defending force, the jamming device may place the civilian population at risk by causing the ordnance to fall uncontrollably off target. On this issue, it is to be noted that defending forces have an obligation to take all necessary precautions to protect the civilian population from the dangers resulting from military operations¹¹³. It is to say the least, very difficult to reconcile this

¹¹⁰ 1977, 1108 U.N.T.S. 151, Reprinted in Roberts & Guelff, supra, note 5, at 409 (hereinafter referred to as ENMOD).

¹¹¹ IBID art. 2.

¹¹² Eric David *Principes de Droit des Conflits Armes*, (Bruylant Bruxelles 1999), at 581.

¹¹³ API art. 58(c), supra note 11.