# 1NC

## 1

#### Interp and violation: Affirmatives may not defend only specific instances of outer space appropriation by private entities as unjust.

#### "The" can either indicate a definite generic or definite description

Ojeda 91 [Almerindo E. Ojeda, PhD linguistics from UChicago, professor of linguistics at UC Davis. "Definite Descriptions and Definite Generics", Linguistics and Philosophy, Vol. 14, No. 4, pp. 367-397, Published August 1991, https://www.harvardlds.org/wp-content/uploads/2019/04/1-s2.0-S0010027718300313-main-3.pdf] HWIC

A definite noun phrase may be taken either as a definite description or as a definite generic. Thus, a noun phrase like the origin of the ballad may denote either the origin of an individual ballad we have been discussing, or else the origin of ballads in general as a literary species. In the first case, the ballad has been taken as a definite description; in the second, it has been taken as a definite generic.2 Notice that the ambiguity between definite descriptions and definite generics can be resolved in certain con texts. Thus, the definite noun phrase the computer is taken only as a definite description in (la), a statement about an individual computer; it is taken only as a definite generic in (lb), a statement about computers in general. Similarly, the definite noun phrase the dodo may be taken as a definite description in (2a) while it must be taken as a definite generic in (2b).3

(1)a. Turing repaired the computer.

b. Turing invented the computer.

(2)a. The dodo is dead.

b. The dodo is extinct.

#### Moral statements are generic normative principles – necessitates the generic interpretation

McDonald 09 [Hugh P. McDonald, professor of philosophy at the New York City College of Technology. "Principles: The Principles of Principles." The Pluralist, vol. 4, no. 3, [University of Illinois Press, Society for the Advancement of American Philosophy], 2009, pp. 98–126, https://www.jstor.org/stable/20708996] HWIC

"Principle" has a great many meanings: origin, beginning, cause, rule, axiom, and so on.5 However, we cannot assume any necessary relation of these meanings. They may be distinct meanings without relations. Neverthe less we can trace some common roots and thereby interconnections of the meanings. I will concentrate here on certain meanings relevant to the prin ciple of principles, that principles are actual. One meaning is that principles are the "ultimate source, origin, or cause of something" or the "originating or actuating agency or force." Principles are connected with the origin and cause of any "something." Moreover, principles may cause the actuality of the something. A second meaning of principles is that they regulate change, whether internally, as the "method of operation of a thing," or as an external cause. That is, principles are regulative, especially including rules for opera tions, involving changes. As rules, they are universal for a kind, although there may be exceptions to them in certain modes. A principle, then, is an originating rule that universally regulates the formation, operation, or other changes of any actuality, which as universal applies to that kind of thing. Machines may be built according to a principle and operate on the same or even a different principle. Ships presume the principle of floatation but may be built according to principles of woodworking or those of other materials. The principle can have different modes?whether necessary, as in logical inference; general, as in scientific laws; or actualization of possibilities, as in machines or as in moral principles that we follow, but could do otherwise.6 I will cover modes below.

Principles are also a cause as regulative, combining cause and rule. The principle can be external, as in a chemical catalyst; or internal, as in geneti cally caused changes.7 Both kinds of causes involve relations. Internal prin ciples exhibit "tendencies," to borrow the word used in the dictionary. They continue to operate across time. Actions that come under principles may be of kinds whose causes are separate in time, since we may cease an action for a time and then take it up again; while genetic characteristics are tenden cies whose causes are connected by reproduction. As causal, principles may be originary for a kind. Especially in new technologies, for example, flying machines, the principle that organisms could fly (birds, bats, and insects) preceded the invention of the technology, although the principles of aero dynamics were discovered later. However, flying utilized and actualized the latter principles. In this sense, principles can be constitutive rules as the origin of a kind, whether generic or specific.

External principles are regulative and not attributes. They regulate change, such that change is not chaotic. Principles are not bodies, objects, or entities but are the basis of the judgment or evaluation that the latter will persist, since they follow or are regulated by principles. Moreover, there is another sense in which principles are not attributes, since the relation of bodies, ob jects, or other terms for actualities implies a common principle, an identity that is regulated and constituted by the same actual principle. "Object" is a principle uniting instances normatively, for example, that solids persist unless acted upon by heat, etc.

Scientific, engineering, and practical laws are cases of principles. The "law of gravity" is the principle of gravity. Rules of "right conduct" also exhibit laws. Principles form an identity of different instances that fall under the law, whether generally or invariably. Laws and rules are regulative identities, applicable to different instances, and whether originary, constitutive, or ex ternally regulative. Voluntary adherence to a rule is bringing actions in line with a principle or enacting a principle.

Since principles are general, the statement of a principle includes an abstraction of some identity element of the instance. Principles, then, can constitute the elements in any instance insofar as there are identical ele ments, such as matter, species, and genera. This abstraction both identifies the instance as alike with other instances in some respect and differentiates it from those that do not exhibit the principle. The instance may contain several principles conjointly, matter, the state of the matter, function, aes thetic element, and many others. Thus principles connect like instances in a very complex set of relations. A diamond and a painting may share aesthetic qualities but their material, functional, and cultural principles may be quite different. Since identity and difference are correlative terms, every identity is also a difference and this principle applies to actual principles in the world, one principle of principles. To identify a rock of a certain type as consisting in certain chemical combinations connects it with that kind of mineral in general but also certain chemical elements in general, their physical proper ties (such as consisting of a certain atomic number of protons, electrons, and the like), and other principles. However, it also differentiates the rock from other types with their own specific principles, although some generic prin ciples may overlap, namely, the physical properties of all chemical elements as consisting in protons, electrons, and other principles of atoms. Principles then mark both a difference and an identity. The principles identify a distinc tion, but such identifications differentiate from other identifying principles. The wavelengths for green light are identical at different times of emission from the sun but are not identical with those for red.

**This applies to the res – 1] Upward entailment test – “appropriation by private entities is unjust” doesn’t imply that “appropriation by entities is unjust” because state appropriation might not be unjust 2] Adverb test – "appropriation by private entities is generally unjust" doesn’t substantially change the meaning of the res**

#### B] Violation – they only defend [plan] . We’ll insert a noncomprehensive list of some others -- https://en.wikipedia.org/wiki/Private\_spaceflight

#### C] Vote neg—

#### 1] Semantics outweigh --

#### A] Topicality is a constitutive rule of the activity and a basic aff burden, they agreed to debate the topic when they came to the tournament

#### B] It’s the only stasis point we know before the round so it controls the internal link to engagement, and there’s no way to use ground if debaters aren’t prepared to defend it.

#### 2] Limits:

**A] Quantitative – the topic is literally too big to count – every specific type of thing a private entity could do from asteroid mining to launching satellites – unlimited topics incentivize obscure affs that negs won’t have prep on – limits are key to reciprocal prep burden**

**B] Qualitative – spec kills unified generics like the innovation DA**

#### D] Paradigm Issues –

#### 1] T is DTD – their abusive advocacy skewed the debate from the start

#### 2] Comes before 1AR theory -- A] If we had to be abusive it’s because it was impossible to engage their aff B] T outweighs on scope because their abuse affected every speech that came after the 1AC C] Topic norms outweigh on urgency – we only have a few months to set them

#### 3] Use competing interps on T – A] topicality is a yes/no question, you can’t be reasonably topical B] reasonability invites arbitrary judge intervention and a race to the bottom of questionable argumentation

#### 4] No RVIs – A] Forcing the 1NC to go all in on the shell kills substance education and neg strat B] discourages checking real abuse C] Encourages baiting – outweighs because if the shell is frivolous, they can beat it quickly

## 2

#### Realism assumes the perspective of a neutral, rational calculator divorced from the gendered nature of nationalism and international relations – their account of state behavior is ahistorical and props up hegemonic masculinities.

Sjobert 12 Sjoberg, Laura (2012). Gender, structure, and war: what Waltz couldn't see. International Theory, 4(1), 1–38. doi:10.1017/S175297191100025X SM

This theme in feminist theorizing in IR suggests that there might be something to the idea that international structures are theorized as genderneutral because men take their perspectives to represent the human. Feminists have characterized conventional knowledge in IR as problematic because it is constructed only by those in a position of privilege, which affords them only distorted views of the world.14 As such, it has been a crucial part of the feminist project in IR to ‘not only add women but also ask how gender – a structural feature of social life – has been rendered invisible’ by working to ‘distinguish ‘‘reality’’ from the world as men know it’ (Peterson and True 1998, 23). Often, in disciplinary knowledges, ‘gender’ is seen as a proxy for ‘women’ because ‘women’ are perceived to have gender, where men are not. Another element of a gendered international system structure would be that, when it is acknowledged that gender plays a role in global politics, 14 Scheman 1993; Garry and Pearsall 1996; Harding 1998. There is a sociology to what is understood as central to the discipline, where what counts as ‘IR’ matches what men do more than it matches what women do at least in part because the perspectives of male scholars have defined the boundaries of the discipline (Sjoberg 2008). 16 LAURA SJOBERG it is often discussed as a corruption of a gender-neutral system rather than a product of a gendered system. For example, work like that of Inglehart and Norris (2002) and Hudson et al. (2009)15 argues that it is states that treat their women the worst that corrupt not only the gender order but the potential for interstate peace, cooperation, and development. This logic is replicated in many discussions of gender in the policy world as well. For example, ‘gender mainstreaming’ agendas (see True and Mintrom 2001; Shepherd 2008) engage in a process of integrating gender concerns into the structures that already exist in governments and organizations. The scenario derived from Acker’s theorizing suggests that when gender subordination is characterized as the exception, rather than the rule, in international political interactions, gender is difficult to see because the masculine is at once assumed and invisible. The recurrent focus in feminist work on the need to ask IR theory ‘where are the women?’ (Enloe 1983) and ‘where is gender?’ (Bell and O’Rourke 2007) suggests that it is plausible that gender is difficult to see in IR because the masculine dominates our visions of the international system. It is important to note that the masculine here involves and implicates, but is not reducible to, men. Waltz ‘tests’ his idea of structure primarily by its predictive power and its indirect manifestations (1986, 72). He argues that, since the anarchical nature of the international system is invisible and thus cannot be directly verified or proven, it must be verified by its manifestations and implications (Waltz 1986, 73). This verification, to Waltz, comes by examining unit function, distribution of capabilities across units, and political processes of unit interaction. The remainder of this section considers whether there is evidence in those three observable parts of global politics that the international system may be gender-hierarchical. Unit function: does state identity have gendered components? In Waltz’s account, ‘a system is composed of a structure and of interacting units’ where ‘the structure is the system-wide component that makes it possible to think about the system as a whole’ and ‘the arrangement of units is a property of the system’ (1986, 70, 71). Waltz sees the system as an anarchy, which by definition specifies that units have the same function. Still, Waltz gives a sense of what would be different if the system was a hierarchy, since ‘hierarchy entails relations of super- and subordination among a system’s parts, and that implies their differentiation’ (1986, 87). Calling states ‘like units’ in Waltz’s terms is ‘to say that each state is like all other states in being an autonomous political unit’ (Waltz 1986, 89). Waltz sees states as performing fundamentally similar tasks in similar ways, and argues that the differences between states are in capabilities not in function or task (1986, 91). This section explores two arguments about gender and the function of the units of the international system. First, it argues that gender can be seen as constituting unit ‘function’ in the international system, whether the units are ‘like’ or differentiated. Second, it proposes that gender hierarchy actually differentiates unit function in the international system. The argument that gender constitutes the function of all units in the international system is supported by the degree to which states define their identities (and therefore the tasks of domestic and foreign policy) in gendered ways. A growing literature on ontological security (e.g. Mitzen 2006; Steele 2008) characterizes state identity in terms of ‘sense of self,’ a language that has long been used in feminist accounts of nation and nationalism. Feminists who have worked on nationalism have argued that national identity and gender are inextricably linked, and that ‘all nationalism are gendered, all nationalisms are invented, and all are dangerous’ (McClintock 1993).16 Feminists have shown that gendered imagery is salient in the construction national identities, particularly when, often, women are the essence of, the symbols of, and the reproduction of state and/or national identity (Yuval-Davis 1997; Wilcox 2009). A number of examples illustrate the link between national identity and gender. Feminist studies have demonstrated that gender has been essential to defining state identity in Korea (Moon 1997), modernizing Malaysia (Chin 1998), Bengal (Sen 1993), Indonesia (Sunindyo 1998), Northern Ireland (Porter 1998), South Africa (Meintjes 1998), Lebanon (Schulze 1998), Armenia (Tachjian 2009), and a number of other states. For example, Niva has noted that, during the First Gulf War, the United States’ identity was understood as a ‘tough but tender’ masculinity where it was expected that the United States military would courageously defeat the Iraqi military, but would at the same time rescue the feminine state of Kuwait from the hypermasculine clutches of the Iraqi state (1998). On the other hand, responding to the United States’ and United Nations’ threats of military intervention in Kuwait, Saddam Hussein’s Iraq consistently used gendered references to hypermasculine understandings of state identity (Sjoberg 2006b). Gendered nationalisms, however, do not just arise in conflict situations. Bannerji has noted that Canadian national identities are constructed through ‘race,’ class, gender, and other relations of power, where subordinate classes and ‘races’ are feminized in relation to the dominant image of Canadian identity, not only within the Canadian state but also in Canada’s external projection of nationalist identity (2000, 173). Taylor’s analysis of the ‘Dirty War’ in Argentina characterizes identity in the conflict as ‘predicated on the internalization of a rigid hierarchy’ of gender and argues that ‘the struggle, as each group aimed to humiliate, humble, and feminize its other, was about gender’ (1997, 92, 34). A brief look at one example recently used in the literature might further illustrate the point. In his book, Ontological Security in International Relations, Steele (2008) notes that honor and shame shape states’ selfperception of their identities. Contrary to the realist logic that state prioritizes prudence and survival over honor and justice, Steele sees honor as a universal part of state self-identity, where states look for honor even sacrificing physical integrity. To illustrate the role of honor in state selfidentity, Steele uses the example of the Belgian choice to fight a losing war against the Germans in 1914 rather than allow Germany access to Belgian territory and avoid the casualties and terror involved in their inevitable defeat. Steele notes that honor was implicated in Belgium’s response to Germany’s ultimatum, given that most policy statements stressed their need to ‘fight for the honor of the flag’ and ‘avenge Belgian honor’ (Steele 2008, 112). Feminist analysis suggests that we cannot understand the role of honor in state self-identity without reference to both masculine and feminine conceptions of honor in the state (Jowkar 1986). Masculine conceptions of honor vary between chivalric and protection-oriented and aggressive and prideful, while feminine conceptions of honor often focus on the purity and innocence of the territory of the state and/or the women and children inside (see Elshtain 1985). Through gender lenses, the Belgian discussion of national honor in 1914 was one where the leaders’ (masculine) honor was tied to not giving in to, and even resisting, the would-be violators of the territory’s (feminine) honor, which was tied to purity. The ‘honor’ of the Belgian government then was tied to unwillingness to sacrifice the ‘honor’ of the innocent, neutral, vulnerable, and untouchable identity and position of Belgium vis a vis its neighboring Germany. It is no coincidence that the following attack was referred to as the ‘Rape of Belgium’ (Niarchos 1995). In the ‘Rape of Belgium’ narrative, the German invasion spoiled the feminine elements of Belgian state identity, and emasculated Belgian leaders as protectors of its feminized territory. Survival or prudence cannot account for Belgium’s actions in 1914; in fact, as Steele pointed out, Belgium acted contrary to both. Honor can explain the Gender, structure, and war 19 behavior, but neither the form nor function of that honor is clear without accounting for the gendered elements of Belgian state identity. The story about gendered state identity can also be read onto Germany (as a hypermasculine aggressor) and Britain (as a chivalrous protector). While some might see the influence of gender on state or national identity as a ‘second-image’ or unit-level explanation,17 Waltz explains that a factor is structural if it is not influencing state identity (and therefore state function) in states individually, but instead influencing the identities (and therefore functions) of states generally. In other words, forces that define one state’s identity or five states’ identities are secondimage; forces that influence all states identities are third-image. Feminist scholars have shown that ‘nationalism is naturalized, and legitimated, through gender discourses that naturalized the domination of one group over another through the disparagement of the feminine’ (Peterson 1999). These gender hierarchies are always present even if specific genders and their orders in hierarchies are fungible. In other words, it is not particular nationalisms that are gendered (and some nationalisms that are not), it is that gender hierarchy as a structural feature of global politics defines the properties and functions of the system’s constituent units, including their national identities. All nationalisms being gendered does not mean that all nationalisms are the same, however. The mechanism through which gender hierarchy can be seen to influence national identity and state function is through the link between any given state’s national identity and the ‘hegemonic masculinity,’ or particular ideal-typical gender that is on top of the gender hierarchy that state ‘units’ are situated in at any given time and place (Hooper 1998, 34). The argument that states’ structures and functions are often defined by masculinities (see Peterson 1992) is not based on the observation that states are (mostly) governed by men. Instead, as Connell explains, ‘the state organizational practices are structured in relation to the reproductive arena’ (1995, 73). Some states’ hegemonic masculinities are aggressive and projected, others are tough but tender, and still others are stoic and reserved. All hegemonic masculinities relate to a feminized other, but they do so in different ways: some encourage violating it, some define themselves in 20 LAURA SJOBERG opposition to it, some understand it as treasured and to be protected, and some mix elements of all of the above. The gendered nature of national identities influences the function of states, particularly in the areas of warmaking and war-fighting, but also in terms of citizenship, economic organization, diplomatic relations, and involvement in international organizations.18 For example, feminists have catalogued throughout the history of the modern state system a relationship between military service, masculinity, and full citizenship (either de jure or de facto) in states (Moscovici 2000). Though the relationship between gender and nationalism generally (and genders and nationalisms specifically) influences the function of units whether they are like units (in anarchy) or not like units (indicative of a hierarchical system in Waltz’s terms), evidence of different gendered nationalisms suggests that gender hierarchy in global politics differentiates between functions of units in the system rather than dictating that all units function similarly. Units in the system (even defined in the narrow realist terms where only states count as units) do have many similar functions in terms of governance, education, health care, and the like. But especially in their external relations, states also have a number of differentiated functions. Some states were/are colonizers, some states were colonized and still deal with remaining markers of colonization. Some states are aggressors, while other states are the victims of aggression. Some states are protectors, while other states require protection. Some states provide peacekeeping troops, international humanitarian aid, and other public goods, while other states do not serve those functions, depending on state identity (e.g. Savery 2007). Some states serve to facilitate international cooperation while others act as cogs in cooperation’s wheels. Some states see their masculinity as affirmed in the interstate equivalent of rape and pillage, while other states see it in chivalry, honor, and a sense of the genteel. While Waltz might classify these differences as merely capabilities gaps, different state functions in the community of states do not map one-toone onto capabilities. Instead, I propose that they map onto the ways that gender shapes state identities and functions. As Peterson (2010) notes, ‘not only subjects but also concepts, desires, tastes, styles, ways of knowing y can be [masculinized or] feminized,’ such that states’ ontological security is related to their gendered identities. For example, a number of feminist analyses of the United States during the first Gulf War identify its policy choices and military strategies as consonant with a new, post-Cold War ‘tough-but-tender’ image of the United States’ masculinity, which maintained the Cold War-era projection of strength, but added an element of sensitivity and a chivalric conception of protecting the weak (e.g. Niva 1998; Sjoberg 2006a). Seemingly inconsonant functions for the US military as at once an attack force and a tool for protection then make sense, because the state does function differently based on its self-perception of identity, which might be seen as (at least in part) a product of structural gender hierarchy in the international arena.

#### The aff’s drive to prevent extinction is a form of masculine survivalism where gendered bodies become the unwilling tools to sustain humanity. You should refuse their obsession with patriarchal reproduction

Mitchell 15

(Audra Mitchell, Audra Mitchell is a settler scholar who lives and works on the Ancestral and treaty lands of the Neutral (Attawandaron), Haudenosaunee and Mississaugas of the New Credit (please see Honouring the Land). She currently holds the the Canada Research Chair in Global Political Ecology at Wilfrid Laurier University. From 2015-18 she held the CIGI Chair in Global Governance and Ethics at the Balsillie School of International Affairs Audra is an Associate Professor at Wilfrid Laurier University, Canada, 8-3-2015, "Gendering extinction," Worldly, <https://worldlyir.wordpress.com/2015/08/03/gendering-extinction/>, JKS)

The reproduction of survival/ the survival of reproduction

Extinction is almost always understood against the horizon of survival and the imperative to sustain it – at least for life forms deemed to be of value to humans. In many cases, this imperative takes the form of deliberate strategies for enforcing existence. Donna Haraway’s influential book When Species Meet devotes considerable attention to the logics, practices and politics of Species Survival Plans. These plans monitor and enforce reproduction amongst ‘endangered’ species, not least by collecting data on populations, genetic profiles and genetic materials to enable selective breeding. This strategy assumes that all organisms can, should, and can be made to exercise their reproductive capacities in order to resist extinction, and it actively mobilizes members of ‘endangered species’ into this project. In so doing, it helps to entrench norms regarding gender, sexuality and reproductive labour that are deeply entrenched in modern, Western human cultures. Attention to these programmes highlights an important way in which extinction is gendered in dominant scientific and policy frameworks. Specifically, strategic breeding programmes share in the belief that reproduction is an imperative for those capable of reproducing if ‘the species’ is at risk’. This belief is directly related to Western norms of the reproductive imperative for women. Indeed, Haraway points out that it is precisely “‘woman’s’ putative self-defining responsibility to ‘the species’ as this singular and typological female is reduced to her reproductive function”. In a similar sense, within SSPs and other strategies of enforced survival, entire life forms are reduced to their reproductive capacities. Moreover, programmes of enforced survival can, in the context of sexual reproduction, disproportionately burden female organisms with the task of avoiding extinction. This logic is particularly fraught in discussions of the possibility of human extinction, in which female fertility (captured in the standard policy language of ‘births per woman’) is framed simultaneously as a threat to survival, and the only hope for escaping extinction (see, for instance, Alan Weisman’s comments on this). In these ways, the securitization of survival entrenches the intersectional categories of gender, species and race discussed above. Dominant discourses of extinction and conservation also entrench and privilege sexual reproduction, in ways that entrench heteronormative assumptions and norms. This is reflected in the way that the subjects of extinction and conservation are framed. The standard object of conservation is the biological ‘species’, a term which is defined by the ability of organisms to reproduce sexually. As Myra Hird has pointed out, this conception of ‘species’ makes it appear as if sexual reproduction is the ‘best’ means of sustaining the existence of a life form. However, Hird’s work demonstrates that Earthly life forms actually engage in myriad forms of reproduction, from the free exchange of DNA between bacteria to the hermaphroditic practices of some fish. The upshot of these arguments is that Earthly life is sustained through a huge variety of reproductive activities that do not conform to biological understandings of life processes or species. Crucially, Hird argues that there is no necessary hierarchy between forms of reproduction. In Darwinian terms, all species that manage to survive are equally successful. However, by conflating survival with sexual reproduction, existing discourses of extinction embed hetero-normative frameworks that devalue other forms of reproduction. They also reduce reproduction to the imperative to survive, ignoring the myriad cultural, political, aesthetic, sensual and other dimensions of reproduction.

#### The impact is hypermasculine war-making- claims of objectivity are patently flawed because they are based in gendered decision-making

Sjoberg 13

(Laura, total bae, associate professor of Political Science @ University of Florida, University of Chicago; Ph.D., University of Southern California School of International Relations; J.D. Boston College Law School, Gendering Global Conflict: Toward a Feminist Theory of War Chapter: “Relations International and War(s),” Gendered Lenses Look at War(s), googlebooks, JKS)

Feminist scholars have also interrogated the unitary nature of the state, pointing out that efforts to maximize the state's security interests often threaten the security of people inside the state. Specifically, as I discussed in the previous section, the state's most marginalized citizens are often made insecure by state security-seeking, making it clear that a state does not have a single interest in interstate interaction but many that conflict. J. Ann Tickner contends that "an explanation of the historical development of state sovereignty and state identities as they have evolved over time does indeed suggest deeply gendered constructions that have not included women on the same terms as men." This is because, according to Tickner:¶ From the time of their foundation, states have sought to control the right to define political identity. Since their legitimacy has constantly been threatened by the undermining power of subnational and transnational loyalties, states' survival and success have depended on the creation and maintenance of legitimating national identities; often these identities have depended on the manipulation of gendered representation. . . . Drawing on metaphors that evoke matrimonial and familial relations, the nation has been portrayed as both male and female. . . . The sense of community implicit in these family metaphors is deeply gendered in ways that not only legitimate foreign policy practices but also reinforce inequalities between men and women.”¶  ¶ Using these gendered metaphors, the state can, while shoring up its "national interest," both threaten the interest of marginalized citizens inside it and reinforce power inequalities among its groups. Catherine MacKinnon has explained that the "state's structures and actions are driven by and institutionalize strategy based on an epistemic angle of vision" that can "distinguish public from private, naturalize dominance as difference, hide coercion beyond consent, and conceal politics beyond morality.” These structures require a certain standard of behavior from some members of the state,” while suppressing the voices of others altogether.”¶ With these tools, the state can appear unitary by suppressing its diversity and presenting one concept of national interest, autonomous of and not necessarily representative of its citizens. In this understanding, the sovereign state can be "an extension of the separation-minded realist man, also autonomous to various degrees from the diverse 'domestic' interests he-it allegedly exists to protect.” Additionally, states are complicit with gender subordination when they fail to intervene in domestic violence, perpetuate a heterosexist bias in education, exercise discrimination in welfare policies, and operate on patriarchal laws.” ¶ In this conception, the unitary state is a misleading and malignant construction. Two implications for the process of state interaction follow; states that interact often promote unrepresentative interests, and those unrepresentative interests exclude gender, racial, and cultural minorities. In this sense, states' elites often make wars (or fail to) "representing" a limited group or groups among their populations, while claiming full representativeness, effectively rendering a significant portion of their supposed "constituency" invisible in the process of interacting with other states. Empirically, this means that there are a number of levels of interstate interaction, many of which are omitted from process-based notions of dyadic war theorizing. Normatively, it suggests that our conceptions of how states interact (and the content of those interactions) are problematically skewed.¶ Rationality in Interaction This skew is particularly evident in the assumption of rationality." The rationality assumption implies that the knower/actor can separate himself/herself from the “other” in interactions with that other. Feminists have argued that knowledge is always perspectival and political; therefore, states and their leaders’ decisions about how to interact with others are not rational, but informed by their situational and political biases. In this view, the rationality assumption may be seen as at once itself a political bias and obscuring other political biases. As Naomi Scheman argues, perceived rational cost-beneﬁt analysis about war-making and war-fighting should “always be seen as especially problematical when... constructed only by those in positions of privilege... [which provide] only distorted views about the world.”78 In this view, rational calculation is not an objective, attainable, and desirable end, but a partial representation of both interest and actors’ representation of those interests. In this way, through gender lenses, rationality has been seen as importantly incomplete, leaving out signiﬁcant (if not the most significant) factors that go into decision-making.79 In addition to understanding the rationality assumption as partial (and therefore unrepresentative), feminist research has pointed out links between rationality and mascuIinism.8° As Karen Jones notes, advocates of rationality as a guide for interstate interactions“ assume: 1. Available... conceptions of rationality and reason represent genuinely human norms and ideals; 2. The list of norms and ideals contained within available conceptions of rationality and reason are sufficiently complete; and 3. The external normative functions assigned to reason and rationality are unproblematic.82 Looking through gender lenses shows problems with each of these assumptions. Feminists have argued that “the identity of the modern subject-in models of human nature, citizenship, the rational actor, the knowing subject, economic man, and political agency-is not gender-neutral but masculine (and typically European and heterosexua|).”83 This impacts not only how we see the rational subject, but how we predict and understand his decisions, at the state level as well as at the individual level. According to Margaret Atherton, the possibility of rationality has “been used in a disturbing fashion to mark a gender distinction. We have, for example, on the one hand, the man of reason, and, on the other, the woman of passion.”84 In rationality assumptions, traits associated with masculinity are normalized and traits associated with femininity are excluded. The impact is compounded because (masculinized) rationality and its (feminized) alternatives are not on equal playing ﬁelds. As a result, Karen Jones notes that “women’s assumed deficiency in rationality” has been used to exclude both women and knowledge associated with femininity from accepted views of the world.85 The alleged gender neutrality of rationality, then, “is often a covert form of privileging maleness”85 and omission of “what has traditionally counted as ‘feminine.’”87 Still, adding women and values associated with femininity to current concepts of rationality is unlikely to create a gender-neutral concept of rationality.88 This is because, epistemologically, the sovereign rational subject constructs artificial gendered boundaries between rationality and emotion, male and female, and knower and known.89 Among states, those boundaries are not benign. Instead, they breed competition and domination that inspire and foster war(s) and conﬂict(s).90 This competition frequently relies on contrasting the state’s own masculinity to the enemy’s (actual or perceived) femininity. This cycle of genderings is not a series of events but a social continuum. In these gendered relationships, as Zillah Eisenstein argues, “gender differentiation will be mobilized for war and peace,” especially moving forward into the age of an American empire focused on manliness.9‘ Feminists have long argued that competitions between hegemonic masculinities and subordinate masculinities play a role in causing war(s).92 Hidden beneath the assumed independence, rationality, and unity of state interaction leading to war are gendered interstate interactions that cause, constitute, and relate to war and wars. Feminist scholars have recognized the extent to which the preeminence of masculine values dominates (particularly conﬂictual) accounts of interstate interactions, wherein “rational” interactions often become “a self-reproducing discourse of fear, suspicion, anticipated violence, and violence” in which “force is used to checkmate force.”93 Interstate interactions leading to wars often show the gendered nature of war narratives, war logics, and war languages, which produce (and reproduce) gendered cycles of violence.

#### The alternative is to reject the aff in favor of an ontological revisionism that deconstructs the myth of the masculine western subject. This is a politics that destabilizes the masculine subject by revealing how its false universality underwrites gender violence globally

Youngs 04

(Gillian, Professor of Digital Economy at the University of Brighton, Feminist International Relations: a contradiction in terms? Or: why women and gender are essential to understanding the world ‘we’ live in\*, International Affairs, 80, pgs 77-80, JKS)

This discussion will demonstrate, in the ways outlined above, the depth and range of feminist perspectives on power—a prime concern of International Relations and indeed of the whole study of politics. It will illustrate the varied ways in which scholars using these perspectives study power in relation to gender, a nexus largely disregarded in mainstream approaches. From feminist positions, this lacuna marks out mainstream analyses as trapped in a narrow and superficial ontological and epistemological framework. A major part of the problem is the way in which the mainstream takes the appearance of a pre- dominantly male-constructed reality as a given, and thus as the beginning and end of investigation and knowledge-building. Feminism requires an ontological revisionism: a recognition that it is necessary to go behind the appearance and examine how differentiated and gendered power constructs the social relations that form that reality. ¶ While it may be empirically accurate to observe that historically and contemporaneously men have dominated the realms of international politics and ¶ economics, feminists argue that a full understanding of the nature of those realms must include understanding the intricate patterns of (gendered) inequalities that shape them. Mainstream International Relations, in accepting that because these realms appear to be predominantly man-made, there is no reason to ask how or why that is the case, stop short of taking account of gender. As long as those who adhere to this position continue to accept the sufficiency of the appearances and probe no further, then the ontological and epistemological limitations will continue to be reproduced. ¶ Early work in feminist International Relations in the 1980s had to address this problem directly by peeling back the masculinist surface of world politics to reveal its more complex gendered (and racialized) dynamics. Key scholars such as Cynthia Enloe focused on core International Relations issues of war, militarism and security, highlighting the dependence of these concepts on gender structures—e.g. dominant forms of the masculine (warrior) subject as protector/conqueror/exploiter of the feminine/feminized object/other—and thus the fundamental importance of subjecting them to gender analysis. In a series of works, including the early Bananas, beaches and bases: making feminist sense of international politics (1989), Enloe has addressed different aspects of the most overtly masculine realms of international relations, conflict and defence, to reveal their deeper gendered realities.3 This body of work has launched a powerful critique of the taboo that made women and gender most invisible, in theory and practice, where masculinity had its most extreme, defining (and violent) expression. Enloe’s research has provided one of the most comprehensive bodies of evidence for the ontological revisionism required of mainstream International Relations, especially in relation to its core concerns. ¶ When Enloe claimed that ‘gender makes the world go round’,4 she was in fact turning the abstract logic of malestream International Relations inside out. This abstract logic saw little need to take theoretical and analytical account of gender as a social force because in practical terms only one gender, the male, appeared to define International Relations. Ann Tickner has recently offered the reminder that this situation persists: ‘During the 1990s, women were admitted to most combat positions in the U.S. military, and the U.S. president appointed ¶ the first female secretary of state, but occupations in foreign and military policy- making in most states remain overwhelmingly male, and usually elite male.’5 ¶ Nearly a decade earlier, in her groundbreaking work Gender in International Relations: feminist perspectives on achieving global security,6 she had asked the kinds of questions that were foundational to early feminist International Relations: ‘Why is the subject matter of my discipline so distant from women’s lived experiences? Why have women been conspicuous only by their absence in the worlds of diplomacy and military and foreign policy-making?’ Tickner, like Enloe, has interrogated core issues in mainstream International Relations, such as security and peace, providing feminist bases for gendered understanding of issues that have defined it. Her reflection on what has happened since Gender in International Relations was published indicates the prominence of tensions between theory and practice. ‘We may have provided some answers to my questions as to why IR and foreign policymaking remain male-dominated; but breaking down the unequal gender hierarchies that perpetuate these androcentric biases remains a challenge.’7 ¶ The persistence of the overriding maleness of international relations in practice is part of the reason for the continued resistance and lack of responsiveness to the analytical relevance feminist International Relations claims. In other words, it is to some extent not surprising that feminist International Relations stands largely outside mainstream International Relations, because the concerns of the former, gender and women, continue to appear to be subsidiary to high politics and diplomacy. One has only to recall the limited attention to gender and women in the recent Afghanistan and Iraq crises to illustrate this point.8 So how have feminists tackled this problem? Necessarily, but problematically, by calling for a deeper level of ontological revisionism. I say problematically because, bearing in mind the limited success of the first kind discussed above, it can be anticipated that this deeper kind is likely to be even more challeng- ing for those in the mainstream camp. ¶ The second level of ontological revisionism required relates to critical understanding of why the appearance of international relations as predominantly a sphere of male influence and action continues to seem unproblematic from mainstream perspectives. This entails investigating masculinity itself: the nature of its subject position—including as reflected in the collective realm of politics— and the frameworks and hierarchies that structure its social relations, not only in relation to women but also in relation to men configured as (feminized) ‘others’ ¶ because of racial, colonial and other factors, including sexuality. Marysia Zalewski and Jane Parpart directly captured such an approach as ‘the “man” question in international relations’.9 I would like to suggest that for those sceptical about feminist International Relations, Zalewski’s introductory chapter, ‘From the “woman” question to the “man” question in International Relations’, offers an impressively transparent way in to its substantive terrain.10 Reflecting critically on the editors’ learning process in preparing the volume and working with its contributors, both men and women, Zalewski discusses the various modifications through which the title of the work had moved. These included at different stages the terms ‘women’, ‘masculinity’ and ‘feminism’, finally ending with ‘the “man” question’—signalling once again, I suggest, tensions between theory and practice, the difficulty of escaping the concrete dominance of the male subject position in the realm of international relations. ¶ The project’s starting point revealed a faith in the modernist commitment to the political importance of bringing women into the position of subjecthood. We implicitly accepted that women’s subjecthood could be exposed and revealed in the study and practice of international relations, hoping that this would also reveal the nature of male dominance and power. Posing the ‘man’ question instead reflects our diminishing belief that the exclusion of women can be remedied by converting them into subjects.11 ¶ Adding women appeared to have failed to ‘destabilize’ the field; so perhaps critically addressing its prime subject ‘man’ head-on could help to do so. ‘This leads us to ask questions about the roles of masculinity in the conduct of international relations and to question the accepted naturalness of the abundance of men in the theory and practice of international relations’ (emphasis added).12 ¶ The deeper level of ontological revisionism called for by feminist Inter- national Relations in this regard is as follows. Not only does it press beyond the appearance of international relations as a predominantly masculine terrain by including women in its analysis, it goes further to question the predominant masculinity itself and the accepted naturalness of its power and influence in collective (most significantly state) and individual forms.

#### The K comes first - policies are constituted by and produce subjects, not blanket assessments of outcomes and impacts. The ROB is to interrogate the gendered nature of the 1AC as a research project.

Bacchi 16

(Carol, University of Adelaide, Adelaide, South Australia, Australia, (2016): Policies as Gendering Practices: Re-Viewing Categorical Distinctions, Journal of Women, Politics & Policy, DOI: 10.1080/1554477X.2016.1198207, JKS)

One important constitutive effect is how we are produced as subjects through the problematizations implicit in such texts, a process described as “subjectification” (Bacchi 2009, 16–17). For example, Foucault (1980) argues that specific problematizations of sexuality (e.g., sexuality as moral code, sexuality as biological imperative) create “subject positions” that enjoin people to become particular kinds of sexual subjects (see Howarth and Griggs 2012, 308). Marston and McDonald (2006) describe how individual subjects are produced in specific policy practices “as worker-citizens in workfare programs, as parent-citizens in child and family services or consumer-citizens in a managerial and marketized mixed economy of welfare” (3). Given the proliferation of practices, the formation of one’s subjectivity is an ongoing and always incomplete process: “the doer/subject/person is never fixed, finally as a girl or a woman or whatever, but always becoming or being” (Jones 1997, 267). Subjectification effects therefore are neither deter- mined nor predictable. People sometimes take up subject positions in ways that challenge hierarchical relations. For example, the discourse of rights creates as one possible positioning that of the human rights advocate. Moreover, as practices “through which things take on meaning and value” (Shapiro 1988, xi), policies have material (lived) effects, shaping the possibilities for people’s and peoples’ lives (Bacchi 2009, 16–18). Policies achieve these constitutive effects through discursive practices, which comprise the “conditions of emergence, insertion and functioning” of discourses (Foucault 1972b, 163), and hence bridge a material-symbolic distinction (Bacchi and Bonham 2014). A particular conception of power underpins an understanding of policies as constitutive practices. Power is conceptualized as productive rather than as simply repressive. Power is not considered to be something people possess (e.g., “he or she has power”) but as a capacity exercised in the production of subjects and objects (Heller 1996, 83). This productive or generative view of power does not conclude that power and resistance are necessarily equal in their effects, however. Such a conclusion would deny the hierarchies by which the organization of discourse takes effect (see Howarth and Griggs 2012, 310). This understanding of policy as constitutive of subjects and objects sits in sharp contrast to conventional views of the policy process, which, in the main, can be characterized as reactive. That is, in general, policy is considered to be a response to some condition that needs to be ameliorated or “fixed.” Policies are conceived as “reactions” to “problems.” By contrast, the understanding of policy offered in this article portrays policies as constitutive or productive of (what are taken to be) “problems,” “subjects,” and “objects” (Allan 2010, 14). It follows that it is no longer adequate to think in terms of conventional policy “outcomes,” understood as the results or “impacts” of government actions. New questions are required, such as the following: What does the particular policy, or policy proposal, deem to be an appropriate target for intervention? What is left out? How does the shape of the proposal affect how people feel about themselves and the issue? And how does it produce them as particular kinds of subjects?

## 3

#### Space mining collapses African economy

Oni 9-24-19

(David, https://africanews.space/the-effect-of-asteroid-mining-on-mining-activities-in-africa/)

At the moment, Asteroid mining poses no threat to terrestrial mining; however, this will not hold for long. The space industry is progressing at such a rapid pace, and the prospects are unequivocally mouth-watering. The big question is, will asteroid mining lure away investors in Africa? The planetary resources company estimates that a single 30-m asteroid may contain 30 billion dollars in platinum alone and a 500m rock could contain half the entire world resources of PGM. Considering the abundance of minerals in asteroids, once asteroid mining materialises, it will severely affect the precious metals market, usurp the prices of rare earth minerals, and a whole lot more because minerals that are usually somewhat scarce on earth will be easily accessible on asteroids. While foreign investors run the majority of the large-scale mining activities in the region, reports say that many African countries are dangerously dependent on mining activities. For some African countries, despite massive mineral wealth, their mining sectors are underdeveloped, and this is as a result of much focus on oil resources and a couple of other challenges. The million-dollar question is, what will become of the mining activities in Africa?

#### African underdevelopment causes civil wars.

Andreas Forø Tollefsen, Peace Research Institute Oslo (PRIO) and Ph.D. in Human Geography from the University of Oslo, ’17, “Experienced poverty and local conflict violence," Conflict Management and Peace Science: 0738894217741618.

Civil wars are more frequent than any other type of conflict in the modern era, with the majority occurring in low-income countries (Hegre and Sambanis, 2006; Jakobsen et al., 2013). While most country-level studies find that poverty and inadequate economic development increase the risk of conflict—a relationship that appears to be causal (Braithwaite et al., 2016)—we lack consensus on the precise mechanisms driving this phenomenon (Justino, 2009). Researchers have explained a correlation between low GDP per capita and conflict using diverse hypotheses, including lowered opportunity costs for individuals to rebel (Collier et al., 2009) and responses to a state’s weak capacity (Fearon and Laitin, 2003).

However, as argued by Hegre (2016), development’s highly correlated indicators make it difficult to distinguish between the theoretical mechanisms underlying the development– conflict nexus. Moreover, previously proposed models often represent processes operating on various geographical scales at individual, group, and state levels. Few researchers have backed up theoretical expectations with data at scientifically fitting levels of analysis, consequently ignoring intra-country variations of explanatory variables and outcomes. Furthermore, aggregated measures are incapable of capturing significant variations in economic conditions (Elbers et al., 2003) and conflict intensity (Rustad et al., 2011) within countries. In addition, conflict areas are, in general, atypical of a nation as a whole (Buhaug and Lujala, 2005), which calls for a subnational level analysis.

Addressing these disconnects—and the fact that most conflict operates at a local level (Rustad et al., 2011)—a recent body of studies has focused on how subnational variations in poverty determine the locations within a country where conflicts break out (Buhaug et al., 2011; Hegre et al., 2009; Østby et al., 2009). To date, their findings are largely mixed, with no consensus yet on strength, direction, or mechanisms behind the relationship. The problem here may be the use of varying proxies for poverty that are only loosely linked to the rationale for conflict and/or insufficient attention on the local sociopolitical context.

The present study’s empirical contributions seek to help rectify the inadequate measures of poverty that have come to characterize the literature. To begin with, the article improves our understanding of whether and where a local poverty–conflict nexus exists by deploying experiential data on individuals’ actual wellbeing—which I argue is more closely connected to people’s motives and rationale for taking up arms. Second, the article examines the sociopolitical context’s conditioning effect on the poverty–conflict nexus. This is achieved by including data on individuals’ perceptions surrounding the quality of their local institutions, the presence of group grievances, and local unemployment rates. These factors, I argue, are more closely linked to reasons for fighting than are common proxies such as night-time luminosity and estimates of economic activity, both of which are often derived from dividing GDP per capita by local population counts.

Poverty—a state in which individuals’ basic needs go unmet—has been shown to motivate people to join rebellions. Humphreys and Weinstein (2008), for instance, found that poverty predicted inscription in the Revolutionary United Front during Sierra Leone’s civil war. Barrett (2011) similarly saw how promises of loot lured the poor to enlist in the 1997– 1998 dispute in Nigeria’s local government area known as Toto. Combatants of the Toto conflict were also more likely to join the rebellion if they stood to gain personal protection, food, and shelter.

For the present study, I developed a dataset by aggregating survey responses from the pan-African Afrobarometer survey to subnational districts and combining the results with information on post-survey violent conflicts. The dataset consists of 4008 subnational districts, spanning 35 African countries. As most districts were only assessed once, thus restricting study of within-unit variation, survey responses were also aggregated to higher-order subnational regions, resulting in a dataset of 111 regions that were surveyed at least twice; this permitted a region-level fixed-effects model design.

Using a pooled cross-sectional dataset of districts, I found that high levels of poverty were linked to increases in local conflict-based violence. Districts with a large share of poor individuals, both in absolute terms and relative to country average, had a higher risk ofconflict than more affluent areas. This relationship held in a coarsened exact matching setup, as well as in a region-level fixed effects design with repeated measurements across time. While the results reveal a local poverty–conflict link, they do not aid in uncovering underlying mechanisms.

Using interactions models, I found that poverty increased the risk of conflict, although only where local institutions are weak. The results also show that poverty-stricken areas in which individuals strongly perceive group injustice have a greater risk of conflict than similarly impoverished regions with no aggrieved population. A departure from the local individual opportunity cost explanation, local economic opportunities do not seem to condition the poverty–conflict nexus. In sum, the results suggest that while poverty is significantly connected to conflict, high-quality institutions and inclusiveness of ethnic groups can prevent violence. Although a wide range of robustness checks and alternative model specifications were implemented, including matching and fixed-effects models, the issue of endogeneity could not be ruled out; doing so would require some kind of exogenous instrument, which I have been unable to identify.

The remainder of this article elaborates on the theoretical framework linking subnational poverty to local conflict-based violence. This is followed by a discussion of existing methods for measuring local poverty and their potential shortcomings. Next presented is the study’s research design and modeling strategy, followed by a discussion of empirical results. The conclusion considers the study’s limitations and proposes avenues for future research on poverty in locations that support rebel groups.

Poverty and conflict

A direct link

A connection between low income and risk of conflict is among the most robust findings in the literature on civil wars (Hegre and Sambanis, 2006). However, there is little consensus on the mechanisms through which poverty may produce conflict. Collier and Hoeffler (1998) claimed that low per-capita income lowers the opportunity cost of rebellion because when they have less to lose from taking up arms, poorer individuals become more inclined to rebel. Fearon and Laitin (2003) observed that poorer countries experience more conflict because they are unable to monitor and control all of their territory, thereby creating pockets of hospitable conditions for insurgents; Tollefsen and Buhaug (2015) identified a similar scenario at the local level.

## case

### 1NC – AT: Debris Advantage

#### Probability – 0.1% chance of a collision.

Alexander William Salter, Economics Professor at Texas Tech, ’16, “SPACE DEBRIS: A LAW AND ECONOMICS ANALYSIS OF THE ORBITAL COMMONS” 19 STAN. TECH. L. REV. 221 \*numbers replaced with English words

The probability of a collision is currently low. Bradley and Wein estimate that the maximum probability in LEO of a collision over the lifetime of a spacecraft remains below one in one thousand, conditional on continued compliance with NASA’s deorbiting guidelines.3 However, the possibility of a future “snowballing” effect, whereby debris collides with other objects, further congesting orbit space, remains a significant concern.4 Levin and Carroll estimate the average immediate destruction of wealth created by a collision to be approximately $30 million, with an additional $200 million in damages to all currently existing space assets from the debris created by the initial collision.5 The expected value of destroyed wealth because of collisions, currently small because of the low probability of a collision, can quickly become significant if future collisions result in runaway debris growth.

#### Time frame – Kessler effect 200 years away.

Peter Stubbe, PhD in law @ Johann Wolfgang Goethe University Frankfurt, ’17, State Accountability for Space Debris: A Legal Study of Responsibility for Polluting the Space Environment and Liability for Damage Caused by Space Debris, Koninklijke Brill Publishing, ISBN 978-90-04-31407-8, p. 27-31

The prediction of possible scenarios of the future evolution of the debris p o p ulation involves many uncertainties. Long-term forecasting means the prediction of the evolution of the future debris environment in time periods of decades or even centuries. Predictions are based on models84 that work with certain assumptions, and altering these parameters significantly influences the outcomes of the predictions. Assumptions on the future space traffic and on the initial object environment are particularly critical to the results of modeling efforts.85 A well-known pattern for the evolution of the debris population is the so-called Kessler effect’, which assumes that there is a certain collision probability among space objects because many satellites operate in similar orbital regions. These collisions create fragments, and thus additional objects in the respective orbits, which in turn enhances the risk of further collisions. Consequently, the num ber of objects and collisions increases exponentially and eventually results in the formation of a self-sustaining debris belt aroundthe Earth. While it has long been assumed that such a process of collisional cascading is likely to occur only in a very long-term perspective (meaning a time 1 n of several hundred years),87 a consensus has evolved in recent years that an uncontrolled growth of the debris population in certain altitudes could become reality much sooner.88 In fact, a recent cooperative study undertaken by various space agencies in the scope of i a d c shows that the current l e o debris population is unstable, even if current mitigation measures are applied. The study concludes:

Even with a 90% implementation of the commonly-adopted mitigation measures [...] the l e o debris population is expected to increase by an average of 30% in the next 200 years. The population growth is primarily driven by catastrophic collisions between 700 and 1000 km altitudes and such collisions are likely to occur every 5 to 9 years.89

#### Status quo solves – mitigation and remediation compliance growing.

Colombo et. al 18—Camilla Colombo, PhD, visiting academic in Spacecraft Engineering within Engineering and Physical Sciences at the University of Southampton; Francesca Letizia, PhD, Space Debris Engineer at ESA Space Debris Office; Mirko Trisolini, PhD, Postdoctoral researcher at the Politecnico di Milano Department of Aerospace Engineering; Hugh Lewis, PhD, Professor within Engineering and Physical Sciences at the University of Southampton (“Space Debris: Risk Mitigation,” from Frontiers of Space Risk: Natural Cosmic Hazards & Societal Challenges, Chapter 5, p 128-136)

5.4 MITIGATION MEASURES The space debris problem is nowadays internationally recognized, therefore mitigation measures are being taken and guidelines discussed. These can be divided into two classes: The avoidance or protection measures and the active and passive debris removal measures. The avoidance or protection measures include the design of satellites to withstand impacts by small debris, or the selection of safe procedures for operational spacecraft such as orbits with less debris, specific attitude configurations, or implementing active avoidance maneuvers to avoid collisions. On the other hand, measures for debris removal currently consist in limiting the creation of new debris (by prevention of in-orbit explosions and ensuring spacecraft subsystems reliability), to free some orbital implementing end-of-life disposal maneuvers protected regions, or to reenter in the atmosphere. Active debris removal is also being considered as a mean to stabilize the growth of space debris by removing from orbit some selected noncompliant objects. The e.Deorbit mission will target an ESA-owned derelict satellite in low orbit, capture it with a net or robotic arm technology, and reenter with a controlled atmospheric reentry (Biesbroek et al. 2014). Acknowledging the fact that the projected growth in the number of satellites orbiting the Earth will increase in the future, space agencies and international organizations have been discussing and building a set of guidelines to ensure the sustainability of future space activities. The InterAgency Debris Coordination Committee (IADC) was founded in 1993 by ESA (Europe), NASA (the United States), the Japan Aerospace Exploration Agency (JAXA, Japan), and the Roscosmos Russian Federation. As of January 2017, the IADC also includes the Italian Space Agency (ASI, Italy), the Centre National d'Études Spatiales (CNES, France), the China National Space Administration (CNSA, China), the Canadian Space Agency (CSA, Canada), the German Aerospace Centre (DLR, Germany), the Korea Aerospace Research Institute (KARI, South Korea), the Indian Space Research Organisation (ISRO, India), the National Space Agency of Ukraine (NSAU, Ukraine), and the UK Space Agency (UKSA, United Kingdom). This international cooperation decided a set of space debris mitigation measures (Inter-Agency Space Debris Coordination Commitee, 2002), which includes: 1. Limitation of debris released during normal operations. 2. Minimization of the potential for on-orbit breakups (resulting from stored energy after the completion of mission operations, or during the operational phases of the mission and by avoiding intentional destruction and other harmful activities). 3. Post Mission Disposal in particular in geosynchronous regions and for objects passing through the LEO region. 4. Prevention of on-orbit collisions. The IADC guidelines were presented to the United Nations Committee on the Peaceful Uses of Outer Space (UN COPUOS) and contributed to the creation of the Space Debris Mitigation Guidelines of the Committee on the Peaceful Uses of Outer Space to be considered for the mission planning, design, manufacture and operational phases of spacecraft and launch vehicle orbital stages” (United Nations Office for Outer Space Affairs 2010): 1. Limit debris released during normal operations. 2. Minimize the potential for breakups during operational phases. 3. Limit the probability of accidental collision in orbit. 4. Avoid intentional destruction and other harmful activities. 5. Minimize potential for post-mission breakups resulting from stored energy 6. Limit the long-term presence of spacecraft and launch vehicle orbital stages in the low Earth orbit region after the end of their mission. 7. Limit the long-term interference of spacecraft and launch vehicle orbital stages with the geosynchronous region after the end of their mission. 5.4.1 Mitigation Guidelines for Post Mission Disposal In this section we focus on the third of the measures dictated by the IADC, namely Post Mission Disposal. A “25-year rule” was defined to limit the presence of satellites in the LEO region to no more than 25 years after their decommissioning. The 25-year limit was selected to ensure that a reasonable reduction in lifetime could be achieved without greatly affecting satellite resources. After 25 years a satellite has to be removed from the LEO protected region by placing it in a graveyard orbit or by disposing of it through atmospheric reentry. According to the IADC Space Debris Mitigation Guidelines (Inter-Agency Space Debris Coordination Commitee 2002) if "a spacecraft or orbital stage is to be disposed of by re-entry into the atmosphere, debris that survives to reach the surface of the Earth should not pose an undue risk to people or property.” The low Earth orbit protected region (LEO region) is the spherical shell region that extends from the Earth's surface up to an altitude of 2000 km. The geosynchronous protected region (GEO region) is a segment of a spherical shell with a lower and upper altitude boundary of 200 km below and above the geostationary altitude of 35,786 km, and which is constrained by a latitude sector extending between plus and minus 15 degrees from south to north (Inter-Agency Space Debris Coordination Committee 2002; United Nations Office for Outer Space Affairs 2010). At altitudes below 600 kilometers, spacecraft with a conventional area-to-mass ratio (i.e., conventional satellites have a value of area-tomass ratio around 0.012 m?/kg) will reenter within a few years due to atmospheric drag. Intervention to remove and prevent further creation of debris above that altitude should therefore be the primary focus of passive mitigation measures. As described in the document on the “Requirements on Space Debris Mitigation for ESA Projects” (ESA 2008) and the "ESA Space Debris Mitigation Compliance Verification Guidelines” (ESA 2015), end-of-life measures can be distinguished in: (1) Disposal, (2) passivation, and (3) reentry. Required measures for disposal currently cover spacecraft in LEO and GEO through a series of Operational Requirements (OR) (ESA 2008): "OR-01. Space systems operating in the LEO protected region shall be disposed of by reentry into the Earth's atmosphere within 25 years after the end of the operational phase." "OR-02. Space systems operating in the GEO protected region shall be disposed of by permanently removing them from the GEO protected region.” The GEO disposal orbit should be almost circular (i.e., eccentricity less of equal to 0.005) and with a minimum perigee altitude above the geostationary altitude, which is given as a function of the solar radiation pressure coefficient of the space system at the beginning of its life and its cross-sectional area. This is done to take into account the eccentricity oscillation due to the effects of solar radiation pressure and to ensure that such oscillation would not make the orbit interfere with the GEO protected regions. "OR-03. Where practicable and economically feasible, space systems outside the LEO and GEO protected regions shall implement means of end-of-life orbit disposal to avoid long-term interference with operational orbit regions, such as the Galileo orbit." OR-04. Launcher stages shall also perform end-of-life disposal maneuvers by targeting "direct reentry as part of the launcher sequence.” Alternatively, they should be injected into a LEO orbit with a maximum reentry time of 25 years. As other space systems, they should be removed from LEO and GEO protecting region and orbit that interfere with other operational orbits such as the one of the Galileo orbit. OR-05. Passivation of the system (spacecraft or launcher stage) has to be completed within 2 months of the end of mission. End-of-life measures for reentry include: OR-06. "For space systems that are disposed of by reentry," an "analysis has to be performed to determine the characteristics of fragments surviving to ground impact, and assess the total casualty risk to the population on ground assuming an uncontrolled reentry.” OR-07. Such a casualty risk has to be lower than 10-4 if an uncontrolled reentry is targeted; otherwise if the casualty risk is higher than the threshold of 10-4, "a controlled reentry must be performed such that the impact footprint can be ensured over an ocean area, with sufficient clearance of landmasses and traffic routes." The rate of compliance of missions to the end-of-life mitigation guidelines was analyzed by the ESA Space Debris Office in 2017). Between 2006 and 2015, the rate of compliance of LEO missions (including naturally compliant missions and satellites performing end-of-life maneuvers) was 53.3%

for the payloads (corresponding to 60.3% of the payload mass), reaching end of life in the LEO protected region (Frey and Lemmens 2017). The compliant objects, with a lifetime after decommissioning of less than 25 years, include naturally compliant objects due to their initial altitude well inside the Earth's atmosphere (this constitutes the biggest part of the compliant share), compliant objects after a deorbit maneuver, or spacecraft having performed a maneuver leading to a direct reentry. In terms of mass, this share is constantly sloping downward. Between 2007 and 2016, 71.6% of the rocket bodies reaching end of life in the LEO protected region was compliant, and this fraction has remained virtually unchanged for 8 years in a row despite an increase in end-of-life maneuver activity. 5.4.2 Passive End-of-Life Disposal In order to meet the mitigation guidelines LEO satellites at the end of their life would use the remaining propellant to perform either a perigeelowering maneuver (to decrease the orbit perigee well inside the Earth's atmosphere to guarantee a reentry within 25 years) or a direct reentry. Spacecraft in GEO are instead currently re-orbited to quasi circular orbits outside the GEO protected ring, with a perigee line aligned with the SunEarth direction (where possible) in order to bind the long-term oscillations in the eccentricity caused by solar radiation pressure. Recently, ESA funded projects on the design of disposal trajectories for medium Earth orbits (MEO) (Alessi et al. 2014; Rossi et al. 2015), highly elliptical orbits (HEO), and libration Earth orbits (LPO) (Armellin et al. 2014; Colombo et al. 2014; Colombo et al. 2015). These have demonstrated the possibility of exploiting natural orbit perturbations for designing passive mitigation strategies for debris disposal. Disposal strategies enhancing the effects of orbit perturbations have been further analyzed in LEO (Alessi et al. 2017), in MEO (Rosengren et al. 2015; Alessi et al. 2016; Armellin and San-Juan; Daquin et al. 2016; Gkolias et al. 2016), in GEO (Colombo and Gkolias 2017), and in HEO (Colombo et al. 2014; Armellin et al. 2015). Indeed, it was shown that, rather than performing an expensive maneuver to lower the perigee, the optimal maneuver should be given in a way to change the disposal orbit to another neighborhood orbit where the effect of orbit perturbations causes the orbit perigee to enter into the atmosphere. Indeed, the effects of luni-solar perturbation causes long-term oscillation on the eccentricity, which can be exploited so that the spacecraft's trajectory over a long period (from 5 to 70 years, depending on the initial orbit) could lead to natural reentry. This effect can be enhanced by solar radiation pressure, especially if considering a spacecraft equipped with large solar panels or a deployable reflective surface (Lücking et al. 2012, 2013). Moreover, resonances with the Earth's nonuniform potential can enhance the eccentricity growth effects. 5.4.2.1 An Example of End-of-Life Deorbiting Exploiting Luni-Solar Perturbations One of the most beautiful demonstrations of how natural dynamics can be enhanced is given by the INTEGRAL mission designed by ESA, the United States, Russia, the Czech Republic, and Poland. The INTErnational Gamma-Ray Astrophysics Laboratory, launched in 2002, gathered some of the most energetic radiation from space (Eismont et al. 2003). A reentry of this spacecraft with a pure impulsive maneuver would have not been possible due to the limited amount of propellant left onboard. In an ESA-funded study, the end-of-life disposal of INTEGRAL mission--expected to end in 2016-was designed with a time window for disposal between January 1, 2013 and January 1, 2029. Reentry solutions with a delta-velocity requirement below 40-50 m/s were found (Colombo et al. 2014). The main perturbations acting on the dynamics of the reentry were luni-solar perturbations, which affect the evolution of eccentricity, inclination, and anomaly of the perigee measured with respect to the Earth-Moon plane. It was shown that depending on the set of initial elements, which depends on the date the reentry maneuver is performed, the proposed maneuver would then aim at further increasing or decreasing the eccentricity. In particular, if we focus on the natural evolution of the eccentricity under luni-solar perturbation and Earth's oblateness, when the nominal eccentricity is low, the optimal reentry maneuver further decrease the eccentricity value; as a consequence, the following long-term propagation will reach a higher eccentricity, corresponding to a reentry. In this case, the maneuver is more efficient (i.e., lower delta velocity is required) (Colombo et al. 2014). Once the initial disposal maneuver is performed, the spacecraft evolves under natural perturbations and the reentry can then be semicontrolled. The high inclination of HEOs represents an advantage as the final reentry phase can target regions at higher latitudes on the Earth's surface thereby reducing the ground hazard. In the case of HEOs, reentry is caused by luni-solar perturbation (not air drag), therefore the orbit reenter with quite a high eccentricity (high apogee and low perigee) and does not circularize. Due to the oscillations in eccentricity, the next optimal window for injecting the spacecraft into a reentry trajectory is between 2013 and the first half of 2018 for a final reentry in 2028. After that, the required maneuver would increase until reaching a next window for performing the maneuver between the second half of 2021 and the first half of 2026, for a reentry in 2028. These analytical studies were used for high fidelity parametric analyses performed by the ESA (Merz et al. 2015) to investigate the effect of a maneuver at apogee to change the perigee altitude. The final maneuver sequence was given at the beginning of 2015 and split into three major burns plus a touch-up for final fine-tuning. The spacecraft is now on its course to reentry in 2028 (see Figure 5.11).