## 1AC Shell

### FW

#### I affirm resolved: the appropriation of outer space by private entities is unjust.

#### I value justice as “unjust” is the evaluative term in the topic. Justice is specifically a question of fair distributions.

Professor Swain in “None so Fit to Break the Chains” 20 writes

Dan Swain (Assistant professor of philosophy and social sciences at the Czech University of Life Sciences in Prague; research fellow at the Institute of Philosophy of the Czech Academy of Sciences). “None so Fit to Break the Chains: Marx's Ethics of Self-Emancipation.” Haymarket Books (October 6, 2020). JDN.

It is worth noting that this entire controversy only makes sense if what is meant by justice is something more specific than simply questions of right or wrong. Indeed, one of the ways in which this debate gets distorted is the sense that justice, in this sense, exhausts normative political theory. There is a marked tendency in some writings to assume that any substantive social wrong must ultimately boil down to a question of (in)justice. Increasingly, it becomes taken for granted that to say something **is unjust** and to condemn it are synonymous. For example, Nielsen, in attacking Wood’s arguments that Marx rejects the language of justice, suggests that this debate might merely be a ‘trivial verbal one’.20 Since Wood accepts that Marx condemns capitalism as severely unequal and exploitative he ‘must agree … that capitalism is indeed, in the plain untechnical sense of the term, an unjust social system’.21 Perhaps it is a symptom of too much political philosophy, but it is entirely unclear to me what the ‘plain, untechnical sense’ of justice is. Of course, if justice is defined differently, either less narrowly concerned with distribution, or more specifically concerned with domination, democracy and power, capitalist exploitation may be more easily integrated into a justice account. Young herself, for example, wants to hold on to the word justice but stresses that domination and oppression should be the primary terms in which it is thought of.22 However, in the main **discussions of justice remain dominated by distributive language**, and in particular by Rawls and the various variations and developments of his core approach.23 In any case, there is a **real difference** between saying something is wrong because it is unjust and saying it is wrong because it denies freedom (or indeed because it is heretical, illiberal, evil, lacks solidarity or many other terms of condemnation). Thus, in denying that exploitation is a matter of justice, I am arguing three things: Firstly, it is not a question of an unfair, unjust or unequal transaction or exchange. Secondly, it is not a matter of distribution, either of starting point or outcome. Thirdly, it is not based on fundamental and universal principles that are derivable independently of given social conditions and integrated into a complete and over-arching theory.24

#### Countries and their people exist within global institutions that transform natural facts that are matters of luck like resources and place of birth into advantages and disadvantages. Other factors like histories of slavery, colonialism, and natural disasters also unfairly influence the opportunities of countries and their peoples. Justice requires correcting for the matters of luck that substantially influence one’s opportunities in life as these natural facts are arbitrary and are unrelated to dessert. Moral equality is valuable independent of consequences.

Professor Tan in European Journal of Political Theory 11 explains:

(Kok-Chor Tan is a professor of Philosophy at the University of Pennsylvania. PHD University of Toronto 1998), “Luck, institutions, and global distributive justice: A defence of global luck egalitarianism “, European Journal of Political Theory, 10(3) 394–421, DOI: 10.1177/1474885111406391 NCS http://ept.sagepub.com/content/10/3/394

Global institutions and luck Let me now indicate how my institutional luck egalitarianism can ground the case for global distributive equality. As mentioned earlier, unlike democratic egalitarians, luck egalitarians do not need to show that there is a global basic structure that exemplifies the ideal of social cooperation as given by the idea of a democratic political order. That is, because they do not tie the value of equality to the ideal of democratic reciprocity or the more basic idea of social cooperation, luck egalitarians do not need to show that the global arena ideally conceived is a democratic political order in order to make the case for some global egalitarian commitments. What luck egalitarians need only demonstrate is that the current global distribution of wealth and/or opportunities does not track persons’ choices and efforts but is profoundly and pervasively distorted and influenced by the vagaries of luck. In this vein, global luck egalitarians typically argue that contingencies such as the natural distribution of the earth’s resources and the place of birth of persons (which are largely matters of luck and not subject to personal choice) significantly influence the life chances of people in the world pervasively and profoundly. But because a just distribution of wealth and resources ought not to be influenced so disproportionately by people’s luck, some global distributive principle is needed to correct for this discrepancy. Hence, Beitz has argued that some redistribution of the earth’s resources, and resource-generated wealth, is required as a matter of justice because of the unequal and arbitrary natural distribution of the world’s natural resources. Also Pogge has argued that, consistent with Rawls’s own construction of a theory of justice (as he understands it), a global difference principle ought to be in place. Likewise, Mollendorf has also defended the idea of global equal opportunity along luck egalitarian lines.42 But my institutional luck egalitarianism will depart slightly from these traditional accounts in how it more unambiguously locates the site of justice. On my account, it will not be the natural fact of earth’s distribution of resources or the fact of person’s place of birth that is the source of injustice, but the fact that existing social and political institutions have converted these natural and contingent facts into social advantages and disadvantages for people. That is, it is not just the brute fact that someone is, say, born south of the river we conventionally refer to as Rio Grande, or the fact that some geographical regions on earth are richer in natural resources than others, that is a matter of justice or injustice. What is just or unjust is how the existing global order makes use of such facts, that is, how global institutions have converted these natural facts into actual social advantages and disadvantages for individuals. That a person is born south of a river is a natural geographical and biological fact that is in itself of no consequence from the point of view of justice; after all, it is just as natural a fact that persons can ordinarily relocate themselves. That another geographical region is richer in natural resources is also of no consequence as a matter of justice, if people from a less well-endowed region can simply move in. These are simply facts of nature that in themselves are unproblematic for justice. In a global state of nature, contingencies such as a person’s place of birth, the spread of the earth’s resources, climatic conditions, etc. do not present issues of distributive justice. In the state of nature where there is free movement (a Hobbesian liberty), natural facts remain natural facts and are neither just nor unjust in themselves, and distributive egalitarian considerations need not arise. What transforms these natural facts into matters of justice is the existence of various kinds of global and national institutional norms, sociopolitical rules and restrictions, such as legally enforceable borders and immigration restrictions that limit people’s natural mobility. Also able to affect this outcome are international legal and political norms that turn the natural territorial distribution of the earth’s resources into actual and enforceable property holdings, or entitlements of governments of states within whose borders these resources happen to be located. Or consider the global market and its trade rules (e.g. patent laws, free trade laws) that restrict opportunities for people within many of their own societies as well as outside.43 For the individual born south of Rio Grande, it is not the fact that she was randomly born south of a geological landmark along with how the globe’s resources are naturally distributed that presents an issue of justice: what is just or unjust is the existence of global norms (such as those governing sovereignty, resource ownership, territorial rights), economic practices (such as trade laws, intellectual property rights laws) and international laws and principles (such as those regulating movement of persons across borders) that turn such natural facts into a significant social disadvantage for her. But it is not just the restriction of individual movement and state territorial ownership that turn natural facts into social advantages or disadvantages. Other forms of global practices and norms and arrangements can have this effect: for example, a world legal order that allows decisions to be made solely in one region of the world or in a single country without justification to outsiders even though these decisions could have some spill-over impact on life opportunities in another region or other countries. It also allows for what Pogge refers to as the resource and lending privileges. The principle of non-intervention is another example of a global norm that has pervasive impact on persons’ life chances. No doubt this principle is important in limiting the tendencies of countries to wage war against each other; but it also at the same time allows states to behave with impunity (albeit within limits) towards their own citizens.44 Thus Moellendorf concludes that ‘the global economy has had a substantial impact on the moral interests of persons in virtually every corner of the world. Due to this association ... duties of [distributive] justice exist between persons globally and not merely between compatriots.45 More examples and evidence of how the global institutional order turns natural facts about the world and its inhabitants into advantages for some and disadvantages for many more can be offered. But I hope enough has been said to illustrate the point. Accordingly, on my global luck egalitarian account, what is unjust is a global order that has converted brute natural facts about persons into significant advantages for some and disadvantages for others. Persons as moral equals and who stand to each other in relations of social equality can demand of each other, regardless of citizenship, that any common order that they are imposing on one another begin from the default position of equality and any departures from which should be acceptable to those adversely affected. On the luck egalitarian view, one who is disadvantaged under such an institutional arrangement simply because of how that arrangement has handled matters of luck has reasonable grounds for objecting to that arrangement. Her standing as an equal moral agent in relation to others is not being respected. From these remarks, it is clear that the notion of ‘institution’ I am using is rather broad and covers not only specific and concrete legal, political and economic arrangements but also common social practices and norms that affect persons pervasively and profoundly. I have in mind what Rawls would call the basic structure of a society – its common political, social and economic institutions and the norms and practices that underlie and sustain these institutions. I am claiming that there is a global institutional order – characterized by specific institutional entities, but also social norms and expectations, accepted practice, legal principles and forms of economic practice – that has the effect of rendering random facts about persons and the natural state of the world into actual social inequalities. In short, because the global arena is not a state of nature but an arena pervasively governed by institutional norms, regulations and expectations, many natural facts about the world and its inhabitants do not remain innocuously facts of nature, but are being transformed by institutions into inequalities in life chances. To the extent that global institutions turn brute natural facts into actual differential distribution of opportunities or resources for persons, that is, to the extent that the global distributive set-up does not track people’s effort and ambition but ‘myriad forms of unlucky and lucky circumstance’,46 it is to this extent unjust. There is a case then for a global distributive principle whose purpose is to strive for a distributive pattern that is more choice sensitive and luck insensitive. My global luck egalitarianism focuses on global institutions and how it handles certain natural facts. But it is a luck egalitarian position because it holds that what is unjust is when institutions are arranged such that the distribution of resources and opportunities does not track persons’ effort and choice but various forms of good and bad luck. Crucially, unlike democratic equality, it frees considerations of global egalitarianism from considerations of the normative character of the global order, that is, whether it is or ought to be a democratic political order in some sense. In spite of my focus on institutions, it should be emphasized that my account does not rely on institutions in the same way as democratic equality. To recall, democratic equality takes distributive equality to matter because of the value of democratic reciprocity that is integral to the idea of fair social cooperation. That is, distributive equality matters only within institutional settings in which the ideal of democracy is endorsed. For many democratic egalitarians, this limits the ideal of distributive equality to the institutions of the state. Global luck egalitarians, on my institutional approach, do not limit distributive justice commitments to members of a (democratic) state, but take the fact of affective institutional arrangements to be reason enough to care about distributive equality, whether or not this affective arrangement is democratic in character. They take egalitarian concerns to be activated whenever there are common affective institutions among persons, regardless of whether these institutions are based on the democratic ideal of social cooperation or not.47 As Van Parijs puts it, to ‘trigger demands of global egalitarian justice ... we need far less than a global democracy ... It is enough to have our life prospects significantly affected by constraints which are not natural necessities but coercive rules on which at least some of us human beings have some grip.’48 This view does not arbitrarily hold that persons so engaged are entitled to distributive claims from each other. That a distributive egalitarian commitment arises is due to the basic luck/choice principle as that principle is applied to social arrangements. The principle holds that a shared social order ought not to be designed such as to privilege some over others on account of random and unchosen facts about persons. It voices the intuition that persons sharing a social arrangement ought not to impose forms of arrangement on others that turn natural and random facts about them into social disadvantages. To be sure the luck egalitarian principle needs further defence; but so does the democratic egalitarian principle that a democratic social order cannot permit inequalities that strain reciprocity. These are different thick claims about the basis of equality and, without further argument, neither one is more or less arbitrary than the other. My aim here has been only to suggest that the luck egalitarian principle is not absurd, that it does not have the results or implications normally attributed to it.

#### Thus, my criterion is consistency with global distributive justice. Additional reasons to prefer:

#### 1) Resource specific – the topic concerns rights to territory in outer space and as such the framework must justify a system of resource distribution.

#### 2) Global focus – the topic isn’t about any single country but rather is about if broadly private appropriation is just. As such a framework must adopt a global lens in order to effectively evaluate the topic.

#### The aff defends that the appropriation of outer space by private entities is unjust. Instead of appropriation any ownership to outer space by private entities ought to be acquired through an auction held by the UN Space Exploitation Registry.

Reinstein 99

Ezra J. Reinstein (JD, Associate at Kirkland & Ellis), Owning Outer Space, 20 Nw. J. Int'l L. & Bus. 59 (1999). NCS. https://scholarlycommons.law.northwestern.edu/njilb/vol20/iss1/7

4. Auction An auction of ownership rights, held by UNSER, would be a much better solution. Under such a regime, anyone, at any time, could request an auction of any unowned site. Ownership rights to the site would go to the highest bidder. Even after acquiring ownership via auction, the owner should not be permitted use of its site until UNSER approvals have been obtained. The auction system has significant advantages. An auction would, by its very nature, put territory into the hands of the firm that values it most. Also, by creating a single market, transaction costs, in the form of information costs, are reduced. Without a centralized auction, a property might be sold at the fringes of the market where only a few buyers ever learn of the sale. A diffuse market with imperfect information means that the party who values a property the most will not always be able to take part in the bargaining. Thus it would be wise to require all sales -- even resale of preowned space property -- to be conducted at UNSER auctions. By creating a clearing-house through which all properties are advertised and sold, allocative efficiency would be heightened.

### C1 – Distributive Justice

#### Contention 1: The auction system aids global distributive justice by allowing the global south to capture much of the financial gain that outer space has to offer. There is a centuries long trend of the global north stealing, exploiting, and oppressing the global south for economic enrichment.

Academics Hickel et al in Aljazeera 21 explain:

(Jason Hickel Academic at the University of London and Fellow of the Royal Society of Arts. Dylan Sullivan Graduate student in the Department of Political Economy at the University of Sydney. Huzaifa Zoomkawala Independent scholar and data analyst based in Karachi.) “Rich countries drained $152tn from the global South since 1960”, Aljezeera, NCS, 5/6/21, DOA 1/7/21, https://www.aljazeera.com/opinions/2021/5/6/rich-countries-drained-152tn-from-the-global-south-since-1960

We have long known that the industrial rise of rich countries depended on extraction from the global South during the colonial era. Europe’s industrial revolution relied in large part on cotton and sugar, which were grown on land stolen from Indigenous Americans, with forced labour from enslaved Africans. Extraction from Asia and Africa was used to pay for infrastructure, public buildings, and welfare states in Europe – all the markers of modern development. The costs to the South, meanwhile, were catastrophic: genocide, dispossession, famine and mass impoverishment. Imperial powers finally withdrew most of their flags and armies from the South in the mid-20th century. But over the following decades, economists and historians associated with “dependency theory” argued that the underlying patterns of colonial appropriation remained in place and continued to define the global economy. Imperialism never ended, they argued – it just changed form. They were right. Recent research demonstrates that rich countries continue to rely on a large net appropriation from the global South, including tens of billions of tonnes of raw materials and hundreds of billions of hours of human labour per year – embodied not only in primary commodities, but also in high-tech industrial goods like smartphones, laptops, computer chips and cars, which over the past few decades have come to be overwhelmingly manufactured in the South. This flow of net appropriation occurs because prices are systematically lower in the South than in the North. For instance, wages paid to Southern workers are on average one-fifth the level of Northern wages. This means that for every unit of embodied labour and resources that the South imports from the North, they have to export many more units to pay for it. Economists Samir Amin and Arghiri Emmanuel described this as a “hidden transfer of value” from the South, which sustains high levels of income and consumption in the North. The drain takes place subtly and almost invisibly, without the overt violence of colonial occupation and therefore without provoking protest and moral outrage. In a recent paper published in the journal New Political Economy, we built on the work of Amin and others to quantify the scale of drain through unequal exchange in the post-colonial era. We found that the drain increased dramatically during the 1980s and 1990s, as neoliberal structural adjustment programmes were imposed across the global South. Today, the global North drains from the South commodities worth $2.2 trillion per year, in Northern prices. For perspective, that amount of money would be enough to end extreme poverty, globally, fifteen times over. Over the whole period from 1960 to today, the drain totalled $62 trillion in real terms. If this value had been retained by the South and contributed to Southern growth, tracking with the South’s growth rates over this period, it would be worth $152 trillion today. These are extraordinary sums. For the global North (and here we mean the US, Canada, Australia, New Zealand, Israel, Japan, Korea, and the rich economies of Europe), the gains are so large that, for the past couple of decades, they have outstripped the rate of economic growth. In other words, net growth in the North relies on appropriation from the rest of the world. For the South, the losses outstrip foreign aid transfers by a wide margin. For every dollar of aid the South receives, they lose $14 in drain through unequal exchange alone, not counting other kinds of losses like illicit financial outflows and profit repatriation. Of course, the ratio varies by country – higher for some than others – but in all cases, the discourse of aid obscures a darker reality of plunder. Poor countries are developing rich countries, not the other way around. Neoclassical economists tend to see low wages in the South as “natural” – a kind of neutral market outcome. But Amin and other economists from the global South argued that wage inequalities are artefacts of political power. Rich countries have a monopoly on decision-making in the World Bank and IMF, they hold most of the bargaining power in the World Trade Organization, they use their power as creditors to dictate economic policy in debtor nations, and they control 97 percent of the world’s patents. Northern states and corporations leverage this power to cheapen the prices of labour and resources in the global South, which allows them to achieve a net appropriation through trade. During the 1980s and 1990s, IMF structural adjustment programmes cut public sector wages and employment, while rolling back labour rights and other protective regulations, all of which cheapened labour and resources. Today, poor countries are structurally dependent on foreign investment and have no choice but to compete with one another to offer cheap labour and resources in order to please the barons of international finance. This ensures a steady flow of disposable gadgets and fast fashion to affluent Northern consumers, but at extraordinary cost to human lives and ecosystems in the South. There are several ways to fix this problem. One would be to democratise the institutions of global economic governance, so that poor countries have a fairer say in setting the terms of trade and finance. Another step would be to ensure that poor countries have the right to use tariffs, subsidies and other industrial policies to build sovereign economic capacity. We could also take steps toward a global living wage system and an international framework for environmental regulations, which would put a floor on labour and resource prices. All of this would enable the South to capture a fairer share of income from international trade and free its countries to mobilise their resources around ending poverty and meeting human needs. But achieving these goals will not be easy; it will require an organised front among social movements toward a fairer world, against those who profit so prodigiously from the status quo.

#### Outer space is poised to be a 21st century gold rush that the global north is best positioned to profit from.

#### The auction regime is best for distributive justice as it allows the global south to massively profit from outer space.

Reinstein 2

Ezra J. Reinstein (JD, Associate at Kirkland & Ellis), Owning Outer Space, 20 Nw. J. Int'l L. & Bus. 59 (1999). NCS. https://scholarlycommons.law.northwestern.edu/njilb/vol20/iss1/7

Under every other system of ownership so far suggested, a concern has always been that developers seem to be acquiring exclusive rights to something -- outer space -- that should be owned by all. Throughout this essay I have attempted to respond to these issues, pointing out that development by the few is actually in the best interests of the many, and that ownership rights are an important way to incentivize development in the right way. 12 Nevertheless, distributional justice concerns may still loom. Distributional justice has not been the guiding principle of this property law, nor, I believe, should it be. Robert Cooter and Thomas Ulen have argued that if wealth redistribution is a §oal, it should be accomplished by means of taxation, not property rights." Even accepting this analysis, there may still be politically-driven distributional justice concerns. The dilemma we are faced with, if we do desire to redistribute the wealth of space, is that no international body has the power to tax the spacefaring nations' space profits. The auction and acreage tax regimes create a centralized pool of money that could then be redistributed. Thus we discover another reason to prefer the auction system. It requires developers to compensate "all humanity" by paying for their sites. By treating auction proceeds as a common fund, UNSER would be able to redistribute funds in any way that the international community determines to be fair and just. In this way, such a regime would help relieve both efficiency and distributional concerns. Everyone is happy: spacefaring nations get ownership, and developing nations get a share of the pie.

### C2 – Efficiency

#### Contention 2: The auction regime is the most efficient and just system to establish property rights for private entities in space.

#### Subpoint A) The aff discourages fraud while providing the best incentive structure for investment.

Reinstein 3

Ezra J. Reinstein (JD, Associate at Kirkland & Ellis), Owning Outer Space, 20 Nw. J. Int'l L. & Bus. 59 (1999). NCS. https://scholarlycommons.law.northwestern.edu/njilb/vol20/iss1/7

It is clear that the prospector's "take" must be calculated based on eventual profits, not on the initial auction price. Although the initial auction price is easier to collect and is more certain, it also creates a significant danger of corruption. If the prospector takes a percentage off the auction price, it is in the prospector's best interest to inflate the price, even by misrepresenting the results of his exploration. By restricting the prospector to a percentage of actual earnings, the incentive to fraudulently inflate the auction price by falsifying data is eliminated. Building prospector rights into the property law creates an additional benefit: specialization. By rewarding space prospecting, the auction-based legal system makes it possible for companies to specialize in space exploration. A mining company could thus concentrate on mining techniques without concerning itself with remote sensing technology. Ordinarily, this could be accomplished through private bargaining: a company interested in learning about a site could contract with a private prospecting company. Within a public auction regime, however, if prospecting were left to the private market, CorpA could pay the prospector to deal exclusively with CorpA and not disclose information to competing bidders. As a result of the non-disclosure contract, CorpB and CorpC would either be forced to hire prospectors of their own (a huge waste of resources), or would be locked out of the auction for lack of information. In order to ensure that the auction runs competitively -- with maximally efficient results and minimum costs -- relevant information must be disseminated. But if prospectors are enjoined by law to disclose their research publicly, they are in no position to bargain for a fee for their services. If the law requires prospectors to "tell all," the law must also compensate them for their services. A percentenary, if set to a level that approximates a fair bargain between the prospector and the recipient of the information, should suffice. Zubrin suggests yet another benefit. At this time, exploration and prospecting are within current technological capabilities. Extensive space mining is not, however; therefore there is little incentive for the private sector to invest in space exploration. If prospectors were given rights at an auction, however, space exploration would have market value now. There might well be speculators willing to invest $100 million to assay an asteroid on the gamble that its percentenary would mature, when space mining becomes feasible and practical, to $10 billion or more.'0 9 Already, companies are planning to launch prospecting missions. SpaceDev, stating that they're "going to use common-sense business tactics to explore deep space," plans to launch a robotic Near Earth Asteroid Prospector ("NEAP") in the foreseeable future." 0 The NEAP will embark on a search for valuable asteroids, the information about which SpaceDev will then sell for "a profit.""' By reserving future financial rights for space prospectors, the legal regime would magnify the current value of prospecting, thereby stimulating private funding of space exploration

#### Subpoint B) Centralization. The auction regime is most efficient as it guarantees territory is awarded to the firm that values it the most and reduces info costs.

Reinstein 4

Ezra J. Reinstein (JD, Associate at Kirkland & Ellis), Owning Outer Space, 20 Nw. J. Int'l L. & Bus. 59 (1999). NCS. https://scholarlycommons.law.northwestern.edu/njilb/vol20/iss1/7

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#### And Space Col is the only way to stop human extinction. Climate change is past the point of no return – even if we reduce to 0 emissions tomorrow the planet is still cooked.

Randers & Goluke 21

(Jørgen Randers (born 22 May 1945) is a Norwegian academic, professor emeritus of climate strategy at the BI Norwegian Business School,[1] and practitioner in the field of future studies.[2] His professional field encompasses model-based futures studies, scenario analysis, system dynamics, sustainability, climate, energy and ecological economics. He is also a full member of the Club of Rome, a company director, member of various not-for-profit boards, business consultant on global sustainability matters and author. His publications include the seminal work The Limits to Growth (co-author),[1] and Reinventing Prosperity. Associate Professor Ulrich Golüke has spent his professional life in business, academia, NGOs and as a freelancer. He is a system dynamicist by training and has worked for over thirty years with systems modelling (in shipping, health care, real estate, economics and climate change). He has taught system dynamics courses and supervised MSc students. He also used scenarios for strategy development, starting in the 1990ties with the World Business Council for Sustainable Development as the Director of the Scenario Unit and since 2000 as free-lancer. Clients have included Fortune 100 companies, universities, and foundations.) An earth system model shows self-sustained thawing of permafrost even if all man-made GHG emissions stop in 2020. Sci Rep 10, 18456 (2020). NCS <https://doi.org/10.1038/s41598-020-75481-z> An Author Correction to this article was published on 02 February 2021

An earth system model shows self-sustained thawing of permafrost even if all man-made GHG emissions stop in 2020 Abstract The risk of points-of-no-return, which, once surpassed lock the world into new dynamics, have been discussed for decades. Recently, there have been warnings that some of these tipping points are coming closer and are too dangerous to be disregarded. In this paper we report that in the ESCIMO climate model the world is already past a point-of-no-return for global warming. In ESCIMO we observe self-sustained thawing of the permafrost for hundreds of years, even if global society stops all emissions of man-made GHGs immediately. We encourage other model builders to explore our discovery in their (bigger) models, and report on their findings. The thawing (in ESCIMO) is the result of a continuing self-sustained rise in the global temperature. This warming is the combined effect of three physical processes: (1) declining surface albedo (driven by melting of the Arctic ice cover), (2) increasing amounts of water vapour in the atmosphere (driven by higher temperatures), and (3) changes in the concentrations of the GHG in the atmosphere (driven by the absorption of CO2 in biomass and oceans, and emission of carbon (CH4 and CO2) from thawing permafrost). This self-sustained, in the sense of no further GHG emissions, thawing process (in ESCIMO) is a causally determined, physical process that evolves over time. It starts with the man-made warming up to the 1950s, leading to a rise in the amount of water vapour in the atmosphere—further lifting the temperature, causing increasing release of carbon from thawing permafrost, and simultaneously a decline in the surface albedo as the ice and snow covers melts. To stop the self-sustained warming in ESCIMO, enormous amounts of CO2 have to be extracted from the atmosphere. Introduction The possibility of points-of-no-return in the climate system has been discussed for two decades1,2,3. A point-of-no-return can be seen as a threshold which, once surpassed, fundamentally changes the dynamics of the climate system. For example, by triggering irreversible processes like thawing of the permafrost, drying of the rainforests, or acidification of surface waters. Recently, Lenton et al.4 summarized the global situation and warned that thresholds may be closer in time than commonly believed. The purpose of this article is to report that we have identified a point-of-no-return in our climate model ESCIMO—and that it is already behind us. ESCIMO is a “reduced complexity earth system” climate model5 which we run from 1850 to 2500. In ESCIMO the global temperature keeps rising to 2500 and beyond, irrespective of how fast humanity cuts the emissions of man-made greenhouse gas (GHG) emissions. The reason is a cycle of self-sustained thawing of the permafrost (caused by methane release), lower surface albedo (caused by melting ice and snow) and higher atmospheric humidity (caused by higher temperatures). This cycle appears to be triggered by global warming of a mere + 0.5 °C above the pre-industrial level. Method We used ESCIMO to simulate the development of the global climate system from 1850 to 2500 under different assumptions concerning the emission of man-made GHGes. ESCIMO is a system dynamics model that includes representations of the world’s atmosphere, oceans, forests (and other land types), biomass—and their interactions. It is described here5. The source code with documentation is available online6. In the first simulation reported here, “Scenario 1”, we assume that humanity reduces man-made GHG emissions to zero by 2100. In the second simulation, “Scenario 2”, we assume that emissions are cut much faster—to zero in 2020. In both cases man-made emissions remain zero thereafter. Results The result is shown in Fig. 1. In both scenarios the global temperature keeps rising for hundreds of years—to around + 3 °C in 2500—after a temporary decline in this century in conjunction with the decline in man-made emissions (Fig. 1c). The sea level rises monotonically to around + 3 m in 2500 (Fig. 1e). Figure 1 figure1 Man-made greenhouse gas (GHG) emissions (a), the global average surface temperature (c), sea level rise (e), and cumulative release of carbon from permafrost (g) in two scenarios from 1900 to 2500, generated by ESCIMO. Also shown are the concentration in the atmosphere of CO2 (b), CH4 (d), H2O (f), and surface albedo (h). Solid black curves show Scenario 1 where man-made GHG emissions are phased out by 2100. Black dotted curves show Scenario 2 where man-made GHG emissions are cut to zero in 2020. In both cases the global temperature keeps rising for hundreds of years after all man-made emissions have ceased. Full size image Scenario 1 Scenario 1 describes the result when we assume that man-made emissions peak in the 2030s and decline to zero in 2100 (see Fig. 1, solid lines). This is the “most likely” scenario as described here7. The historical part of the simulation (1850–2015) and the ensuing 60 years (2015–2075) are intuitive and understandable. Rising emissions of man-made GHGes lead to an increase in the concentration of GHGes in the atmosphere (Fig. 1b,d). This, in turn, leads to a rise in the global average surface temperature because GHG molecules block outgoing long-wave (heat) radiation from the surface. The warming is enhanced by the increased amount of water vapour which accumulates in a warmer atmosphere because H2O is a strong greenhouse gas which blocks other frequencies (Fig. 1f). The warming leads to rising sea levels because of thermal expansion and glacier run-off. Difficult to detect, but of great significance for the years beyond 2150, surface albedo starts a slow and smooth decline as the ice and snow cover melts, making the planet darker and leading to more absorption of short-wave (SW) radiation in the surface (Fig. 1h). In Scenario 1 the temperature passes a temporary peak around 2075 at + 2.3 °C above pre-industrial times. The temperature then falls for 75 years (2075–2150) to + 2 °C. There are two reasons: (a) the concentration of GHGs in the atmosphere declines, and (b) heat is used to melt on-land glaciers and Arctic ice. Furthermore, the concentration of CO2 declines (from its all-time peak of 450 ppm in 2050) through two processes: (a) CO2 is gradually absorbed in the ocean surface (and later transported into the deep ocean), and (b) CO2 is gradually absorbed in the biosphere. CO2 in the atmosphere is converted through photosynthesis into biomass in living matter and soils at a rate that is determined by the temperature and the amount of CO2 in the atmosphere. By 2150 all on-land snow and ice are gone in ESCIMO Scenario 1 (except in Greenland and Antarctica, which require thousands of years to melt). While the developments to 2150 are understandable, developments in ESCIMO beyond 2150 are more surprising (counter-intuitive). As shown in Fig. 1 the temperature once more starts rising. The surprising fact is that this rise takes place 50 years after man-made emissions have ceased, and after the concentration of CO2 in the atmosphere has been significantly reduced through absorption in oceans and biomass. The explanation (in ESCIMO) is as follows. While GHG concentrations—and thus their forcings—fall from 2070 to 2150, the effect of surface albedo continues on its smooth upward path throughout this period. Its time development is much slower than that of GHGes. It is the result of mainly Arctic ice melting—but it has enough ‘momentum’ to push the climate system back onto a path of rising temperatures, with its secondary effects of raising humidity and permafrost thawing, which then in turn help the system become warmer and warmer, even if man-made GHG emissions are zero. A cycle of self-reinforcing processes is established. See Fig. 2a. Figure 2 figure2 (a) The contribution to global warming (“energy radiation trapping”) from water vapour, CO2, CH4, other GHGes, and surface albedo in Scenario 1. After 2150 the main drivers are water vapour and CO2, with albedo in the third place. The contribution of CH4 is much smaller, while the other Montreal and Kyoto gases remain the fourth most important driver of the self-sustained warming and thawing of the permafrost. (b) The relative importance of water vapour in global warming in Scenario 1. After 2150 water vapor has approximately the same effect as the sum of all the other GHGes. Historically, from 1850 to 2000, the ratios in the ESCIMO base run fall well within the uncertainty band reported by Cess, Rind, Hansen and Ramanathan and Inamdar cited earlier. Full size image This cycle consists of decreasing surface albedo, increasing water vapour feedback and increasing thawing of the permafrost, releasing carbon (both as CH4 and CO2), resulting in even further temperature rises, and so on. In a highly coupled feedback model like ESCIMO it is the chain of events, closing in on itself, that matters. Even after no more man-made GHG are emitted, this cycle/chain continues on its own. The process is self-sustaining, at least until all carbon is released from permafrost and all ice is melted. Scenario 2 Scenario 2 (see Fig. 1, dotted curves) was made to check whether humanity could avoid continuing warming from the self-sustained chain of circumstances of decreasing ocean albedo, increasing water vapour feedback and increasing thawing of the permafrost by cutting man-made GHG emissions earlier than in Scenario 1. The answer is no. Figure 1 (dotted curves) shows that even if all man-made GHG emissions were (unrealistically) cut to zero in 2020, the temperature starts rising again after 2150—as a result of the cycle of self-sustaining processes of decreasing albedo, thawing of the permafrost and increasing water vapour feedback. Discussion Unexpected result The unexpected result in Scenarios 1 and 2 is that the global temperature keeps rising for centuries after man-made GHG emissions of are brought to zero. Even more surprising, at first glance, is the fact that the temperature keeps rising after the concentration of CO2 in the atmosphere has declined back to the pre-industrial level through absorption in the deep ocean, biomass and soil. In both cases the explanation (in ESCIMO) rests in the joint action of albedo, carbon (both as CH4 and CO2) from thawing permafrost, and water vapour in warm air—which together ensure that the temperature stays high even when the concentration of CO2 declines. Some additional comments help explain: The planet gets darker: the role of albedo As temperature rises, ice and snow are melted, making the planet darker. Between 2070 and 2300, for example, the average ocean albedo (in ESCIMO) declines from 0.080 to 0.067, and the surface albedo from 0.127 to 0.117, see Supplement Figure 15. As a result, more short-wave radiation is absorbed. In ESCIMO about 1.7 Wm−2—which is enough to trigger and drive significant change in the delicately balanced, global climate system. Water vapour feedback Water vapour exists in the atmosphere because of the balance between evaporation, which increases with temperature, and precipitation from the atmosphere, which also increases with temperature. H2O is not held in the atmosphere because of CO2, or any other GHG. This means that water vapour, and its warming effect, will not disappear when the CO2 concentration declines back to pre-industrial levels—as long as the temperature stays high enough. Comparing the effect of GHGs, albedo and water vapour on the energy balance of earth The relative importance of albedo, water vapour, and release of carbon from permafrost over time can be illustrated in terms of the “radiative forcing” each contributes. There are two ways to estimate radiative forcings, one, using the IPCC8 formulas for GHGs, and two, deducing the radiative forcing from changes in the long-wave radiation back to space (LW-ToA). The first works well, at least historically, for CO2, CH4, N2O and the other greenhouse gases (We show the result of calculating GHG radiative forcing in ESCIMO using the IPCC formulas in Supplement Figure 16), but not for climate feedbacks like water vapour and albedo. For water vapour, “radiative forcing” is generally not used (IPCC8, pg. 666), because it modifies the forcing of other forcing agents (Ramanathan and Inamdar9, pg. 121). Instead, using the effectiveness in absorbing thermal radiation of GHGs, including H2O and albedo, is an acceptable proxy for estimating their “radiative forcing”. This approach was used by Hansen et al.10, Rind11 and Ramanathan and Inamdar9, who built on the conceptual work of Cess12. Figure 2a compares the “radiative forcings”, defined as Ga, i.e. the difference between LWToA clear sky radiation and LW cloudy ToA radiation, normalized to 1850 (for detail, see Rind11, pg. 260) of CO2, CH4, other GHGes, water vapour and surface albedo. “The observed value of Ga = 146 Wm−2 K−1; clouds increase the value by about 33 Wm−2 K−1 (Raval and Ramanathan13).” The values for ESCIMO in 1995 are Ga = 148 Wm−2 K−1; clouds increase the value by about 30 Wm−2 K−1. Surface albedo affects the SW radiation balance at the surface. Thus, to estimate the “radiative forcing” of surface albedo, we follow a similar logic as for water vapour: we compare the SW reflection of the surface at timet to the SW reflection of the surface at time1850. The surface albedos are shown in Supplement Figure 15. Land albedo in ESCIMO rises ever so slightly in historical times, recreating the negative LUC “forcing” reported by IPCC. The ocean albedo in ESCIMO drops, because of the melting of the arctic ice. The declining albedo leads to an increase in the amount of short-wave radiation absorbed in the surface. The “radiative forcing of delta albedo” in the ESCIMO base run is shown in Fig. 2a dotted curve. Numerically, it rises from 0.8 Wm−2 in 2070 to 2.6 Wm−2 in 2300 in the ESCIMO base run, an increase of 1.7 Wm−2. Thus, the drop in albedo is the trigger of the resumed self-sustained thawing of the permafrost after 2150, aided in the real world, and in ESCIMO, by water vapour and the consequent continued release of carbon from the thawing permafrost. Match with other models We have compared ESCIMO with other models, with particular focus on the assumptions that are driving the self-sustained thawing of the permafrost. In ESCIMO we assume that the permafrost melts as a consequence of the transfer of heat from the atmosphere to the frozen soil. We assume that the rate of heat transfer is proportional to the temperature difference between air and frozen soil. Furthermore, we assume that the resulting tundra, after some delay, will start absorbing CO2 through photosynthesis once plants start establishing themselves on the formerly frozen ground. The absorption rate depends on the temperature and the concentration of CO2 in the atmosphere (CO2 stimulates plant growth). Needless to say, the causal mechanisms included in ESCIMO are very aggregate and far from a detailed description of the complex thawing process in the real permafrost. In order to check whether our assumptions lead to reasonable results, we compared the output from ESCIMO with the output from other models, as reported in McGuire et al.14. The comparison is halting, since the temperature path in Scenario 1 differs from the path in the RCP4.5 scenario, which the other models use. We found that ESCIMO Scenario 1 generates a thawing of 2 million km2 of permafrost by 2300, compared to 3–5 in other models. And that ESCIMO Scenario 1 releases an accumulated 175 billion tons of carbon (GtC), all from thawing permafrost, by 2300, compared to plus 66–minus 70 in other models. Sadly, ESCIMO is not sufficiently regionalized to generate numbers for the amount of carbon which is absorbed in the vegetation that forms on the formerly frozen ground (which is 8–244 GtC in other models). ESCIMO only gives numbers for the extra carbon absorbed in all tundra, which, in ESCIMO, does not overlap one-to-one with formerly frozen ground, both old and new, which is 200 GtC. The uptake is due to accelerated humus formation fuelled by increased carbon uptake in the biomass of tundra during the period of high CO2 concentration. The comparison with other models seems to indicate that ESCIMO in Scenario 1 releases more carbon than other models, but it needs further investigation to decide whether this is because the RCP4.5 scenario differs from Scenario 1 in the centuries beyond 2100. Sensitivity analysis We did a conventional sensitivity analysis to verify that the self-sustained thawing of the permafrost is a robust phenomenon in ESCIMO—in other words, we checked that the continuing rise in the global average temperature does not depend on a very specific choice of the parameter values that determine the strength of the various processes in the model system. There are many (ca 100) such parameters in ESCIMO. They all have independent physical meaning, and each got a numerical value based on information from the literature. To do the sensitivity analysis, we first randomly picked 14 uncertain parameters from the model. Next, we independently sampled all 14 parameters from random uniform distributions with ranges of plus minus 10% around their standard value for 200 sensitivity runs. Figure 3 shows the result, for Scenarios 1 (a) and 2 (b). The grey band includes 75% of the 200 runs, for the central variable in ESCIMO, namely the temperature increase relative to 1850. Figure 3 figure3 Sensitivity of the global average temperature to variation in parameter values in ESCIMO, for Scenarios 1 and 2. Sensitivity analysis of 14 randomly chosen uncertain parameters from the model. Sampled independently using Latin-Hypercube sampling from random uniform distributions with ranges of plus minus 10% around their standard value for 200 sensitivity runs. For the parameters see Supplement Table 1. Graph to the left shows Scenario 1 where man-made GHG emissions are phased out by 2100. Graph to the right shows Scenario 2 where man-made GHG emissions are cut to zero in 2020. Parameter variation does change absolute values but does not eliminate the broad pattern of self-sustained thawing of the permafrost. The thick curve in the centre of the shaded area is the mean of the 200 runs. The shaded area covers 75% of all runs. Full size image Our conclusion is that parameter variation has a strong effect on the absolute level of the future temperature in ESCIMO. But much more important, Fig. 3 shows that moderate variation in parameter values does not remove the self-sustained thawing of the permafrost. The impact of the sensitivity experiment on five additional variables is shown in Supplement Figures 1 and 2. This broad pattern of development (in system dynamics language: this behaviour mode) remains the same. This is consistent with the system dynamics literature, which argues that it is normally not possible to predict future events in complex systems, while it is possible to say something meaningful about future dynamics (future behaviour modes). It is, of course, simple to come up with parameter changes that remove the self-sustained thawing of the permafrost—especially if those changes are made in what we already know are the most sensitive parts of ESCIMO, namely the equations that describe water vapour, albedo and clouds. But much more important, it is not simple to find parameter combinations that do so, while still being able to recreate the observed history from 1850 to 2015, as the standard parameter set in ESCIMO does. We also did some further sensitivity analyses with parameters of special relevance for the study of permafrost thawing, as described below. Further experiments to explore what it takes to stop the self-sustained thawing of the permafrost We did further experiments with parameter variation, in order to study the robustness of the self-sustained thawing of the permafrost. We chose to vary three parameters that have significant influence on the self-sustained thawing process in ESCIMO. In Fig. 4 we show the effect of varying these three parameters. Our conclusion is that the effect on absolute rate of permafrost thawing is significant, but that the pattern of self-sustained warming persists. Figure 4 figure4 Sensitivity of the global average temperature to changes in three parameters that are central in permafrost thawing. (1) The fraction of carbon that is converted (by bacteria) from CH4 to CO2 before it leaves the thawing permafrost. (a,b) The shaded area includes 75% of the resulting runs. (2) The slope of the rate of thawing of the permafrost that results from a given temperature. (c,d) The shaded area includes 75% of the resulting runs. (3) The slope of the future relationship between additional blocking of outgoing radiation and additional water vapour in the atmosphere—for values of humidity beyond what has been observed this far. (e,f) The detail about how we change the slope is given in Supplement Fiure 10. Full size image Figure 4 shows the effect on the global temperature, Supplement Figures 3–9 and 11–12 show the effects of each experiment for each scenario on five additional variables. Supplement Figure 10 gives details about the effect of changing the relationship between blocking and the amount of H2O in the atmosphere. Our experiments involved the following three parameters: 1. The fraction of carbon that is converted (by bacteria) from CH4 to CO2 before it leaves the thawing permafrost. The fraction of carbon that is released as CH4 in the real world is still unknown (Schneider von Deimling et al.15, Turetsky et al.16), so we explored the entire physically possible range from 0 (i.e. all carbon released from permafrost is released as CO2) to 1 (i.e. all carbon released from permafrost is released as CH4). See Fig. 4a,b and Supplement Figures 3 and 4. Since Lawrence et al.17 report a fraction between 2.5% for dry soil and 12% for wet soil we also re-ran our sensitivity analysis bounded by 0 and 15% to highlight this restricted range. See Supplement Figures 5, 6 and 7. Our choice of all carbon released from permafrost thawing being released as methane for our base case results from the fact that we originally worked on ESCIMO between 2000 and 2015. At the time, we assumed, falsely as it turns out, that all carbon released from thawing permafrost is released as methane. As reported above, in this paper we run sensitivity analysis where we changed the fraction of carbon released as methane from 0 to 100%, i.e. the entire physically possible range. And we run sensitivity analysis where we changed the fraction of carbon released as methane from 0 to 15%, i.e. around the currently assumed value of around 10%. In all the runs, the characteristic behaviour of self-sustained (in the sense of no more man-made GHG emissions) temperature rise is maintained. 2. The slope of the rate of thawing of the permafrost that results from a given temperature. In ESCIMO, the rate of thawing permafrost is measured in km2 per year. At our chosen reference temperature (4 °C) we assume that 12.500 km2 per year is melted to all depth18,19,20. To calculate the rate of thawing at other temperatures we multiply with the following linear relationship: Effectoftemperature(dimensionless)=1+slope(dimensionless)×(Globalaveragesurfacetemperaturet(∘C)÷Globalaveragesurfacetemperature1850(∘C)−1) See Fig. 4c,d and Supplement Figures 8 and 9. 3. The slope of the future relationship between additional blocking of outgoing radiation as a function of additional water vapour in the atmosphere—for values of humidity beyond what has been observed this far. To make this extrapolation we use the following 3rd order polynomial function: Fractionblocked=−0.2842∗humidity3+1.8244∗humidity2−3.7148∗humiditiy+2.4523 where the unit for humidity is g/kg. The historical part of the relationship has been calibrated to actual global average temperature. For detail, see Supplement Figure 10. See Fig. 4e,f and Supplement Figures 11 and 12. Summary of the three parameter changes The chosen parameter variations do impact the rate of self-sustained thawing of the permafrost and its feedback effect on global temperature. But they do not stop the self-sustained thawing of the permafrost. We believe that the reason for these results in ESCIMO is the importance of surface albedo rise, H2O blocking of long wave radiation and methane release from permafrost. As Fig. 2 above shows, we are seeing in ESCIMO a regime change from man-made emission driven warming until about 2200 to albedo and water-vapour driven warming beyond 2150. Remedial action We did experiments with ESCIMO (see Supplement Figure 13) to explore (contra-factually) in what year man-made emissions must stop to avoid self-reinforcing thawing of the permafrost. The answer is that all man-made emissions would have had to be cut to zero sometime between 1960 and 1970—when global warming was still below some + 0.5 °C. Finally, we explored another strategy to stop self-sustained thawing. We asked how much CO2 humanity must remove from the atmosphere every year from 2020 in order to avoid self-sustained temperature rise in the centuries ahead. The answer, in ESCIMO, proved to be at least 33 GtCO2e per year, for example through direct CO2 capture or biomass CCS (see Supplement Figure 14 (a) and (b)). In other words, building 33.000 big CCS plants and keep them running for ever. This is technically feasible but would be hugely expensive. Cheaper opportunities exist to stop self-sustained global warming (through various forms of geo-engineering), but these will have unintended and undesired side effects beyond lowering the temperature. Conclusion Self-sustained thawing of the permafrost is a robust phenomenon in ESCIMO. It only disappears when man-made emissions are stopped counterfactually as early as in the 1960es. Or by choosing parameter values that do not recreate historical developments. We encourage other model builders to explore these conclusions in their models, and report on their findings.

### UV - T

#### Aff gets RVIs on T

#### 1. 1AR time skew—no chance to cover topicality and still have a fair shot on substance— in a theory debate at least I can read metatheory or my own shell, rvi is the only way to garner offence on t since only I need to be topical.

#### 2. A lack of rvis give the neg a no risk chance of offence, the trade off of a negative reading a nonsense t shell in a world with no rvis is obscene, they have no risk of losing and they can spend 6 minutes just on t, when I get less than 4.

#### 3. RVIs are logical, because false accusations of cheating should be punished.

#### 1. My aff is topical. The auction regime doesn’t constitute appropriation by private entities:

#### A) Appropriation is establishing property rights in something formerly un-owned. The aff vests ownership of all outer space territory to the United Nations before any part would be auctioned.

Dominiak 17

Łukasz Dominiak (Associate Professor at Nicolaus Copernicus University in Poland; he holds a PhD and habilitation in political philosophy and is a Fellow of the Mises Institute). “Libertarianism and Original Appropriation.” Historia i Polityka, 29/2017: 22. Pp. 43-56. JDN. https://apcz.umk.pl/HiP/article/view/HiP.2017.026/13714

Ownership1, or property, on the other hand is a normative concept. To own a thing is to have a right to possess it, i.e. to be in such a juridical position that one’s claim to deal with the thing at will is a justified claim whereas claims of other persons are unjustified or less justified than the owner’s. As Barnett puts it, “rights are those claims a person has to legal enforcement that are justified, on balance, by the full constellation of relevant reasons, whether or not they are actually recognized and enforced by a legal system” (2004). To recognise someone’s ownership is therefore to assert that his possession of a thing is just, rightful, lawful, licit or reasonable etc., is to conclude that he ought to possess the thing if such is his will, even if he actually does not possess it. As Kinsella writes, “ownership is the right to control, use, or possess, while possession is actual control” (2009). Thus, ownership is a threefold normative or juridical relation between the owner, the thing owned and the rest of mankind such as the owner may control the thing to the exclusion of others because he has the best title to do it. Hence, the distinction between possession and ownership is a distinction between factual and normative relation. Having drawn the above distinction between possession and ownership, we are ready to define original appropriation. Thus, original appropriation is acquiring ownership of unowned things. To originally appropriate is to establish property rights, i.e. justified claims to physical things that at the moment of acquisition are unowned. What is important to underline again, is that original appropriation is not about taking factual possession of things that are unpossessed or unowned – this process is called occupation and can be conceived as one of the possible investitive facts that can result in original appropriation but should not be confounded with the latter. Neither is it about acquiring ownership of things already owned. It is about instituting new property rights to unowned things. As Nozick puts it, the topic of “original acquisition of holdings, the appropriation of unheld things includes the issues of how unheld things may come to be held” (2014), i.e. come to be owned. Hence, original appropriation is about creating normative relations between persons and things.

#### B) Private appropriation requires cancelling the claim of common ownership of outer space. The auction system relies on recognition of humanity’s ownership of outer space and permits for the UN (as a representative of all) to choose if and when to sell its assets for the common good. The aff permits for private entities to acquire property rights to outer space, but not through appropriation.

Space Lawyer Pop in Space Policy 2k

(Virgiliu Pop – works for the Romanian Space Agency and is a Romanian Space Lawyer). (2000). Appropriation in outer space: the relationship between land ownership and sovereignty on the celestial bodies. Space Policy, 16(4), 275–282. NCS, doi:10.1016/s0265-9646(00)00037-0

Other authors try to find solutions within the ambit of the current prohibition of national appropriation. They believe that sovereignty in outer space is vested in the whole international society, be it represented or not by the United Nations. On the plane of property rights, this would confer the extraterrestrial lands the character of "public lands" belonging to the international commun-ity. In 1823, the US Supreme Court has decided in Johnson v. M'Intosh that "if the discovery is made on behalf of an existing government, that discovery becomes part of that nation" [32] and that under universal law, discovery of an uninhabited coun-try by individuals, not representing a government, ren-ders the discovery the property of the whole society which acquires in it 'title in common [32]. As Article V of the Outer Space Treaty qualifies astro-nauts as "envoys of mankind", they do not represent a government and do not act on its behalf; they represent mankind and act on behalf of mankind. When asked publica internationalis". This qualification clarifies both the "international law" and "civil law" situation of the moon as a territory: both sovereignty and property are public, i.e. vested in the international society. This is very much in line with article H of the Outer Space Treaty. The Moon is not nationally appropriated, but interna-tionally. Land ownership is therefore also legitimated, but only in the hands of international society; the inter-national public domain cannot be appropriated by pri-vate entities unless subsequently permitted. When referring to the international appropriation of the outer space and celestial bodies as permitted by the Outer Space Treaty, a fundamental issue needs clarifica-tion. International appropriation is not the sum of all the national appropriations. Jenks correctly points that a State cannot escape the prohibition of national ap-propriation by acting jointly with other States. Only as regards a possible appropriation by the United Na-tions acting on behalf of the world community as a whole can the matter be regarded as an open one for the future [8]. The Moon is not appropriated by the USA and Uganda and Cambodia and all the other States, but is instead appropriated by international society as a whole, regardless of its individual components. As an individual is built from living cells, one cannot say that an object is owned by cell number 1 and cell number 2 and cell num-ber n. Cells may not own objects, while individuals may. States may not own the Moon, while international so-ciety may. A proposal advanced by Betancourt calls for amme-nding the Outer Space Treaty by providing for the sover-eignty and jurisdiction over celestial bodies and natural space resources to be exercised by mankind [34, p. 309]. While the dimensions and the scope of the present article do not allow a detailed analysis of the term "human-kind", one must be aware of its twofold meaning as viewed by Dupuy, not only in its spatial dimension (inter-national community), but also in its historical one, hu-mankind being "tomorrow even more than it is today" [35, p. 484]. It is the belief of the present author that humankind exercises sovereign rights on celestial bodies by the means of the United Nations. The owner of celestial bodies is humankind, exercising its ownership rights by means of the international community presently repre-sented by the United Nations. Due to the temporal dimension of humankind, international community holds in trust outer space and celestial bodies for human-kind.

#### 2) Topicality is a floor, not a ceiling. Mutually exhaustive interps means T can always be read against the aff, which they need to be protected from. As long as my aff is consistent with a semantically coherent interp of the topic then it is sufficiently topical.

#### 3) If the neg wins T then reevaluate the AC under the neg interp as A) this is most reciprocal as otherwise T becomes a NIB for the aff B) this stops strategy skew by leveling the strategic value of T that would otherwise be a no-risk issue for the neg which outweighs claims to 1N strategy skew if they make arguments that operate independent of the T press and