

Brightening the Skies: Institutional Solutions to the Societal and Geopolitical Risks of Space Expansionism*

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There is only one rational way in which states coexisting with other states can emerge from the lawless condition of pure warfare ... they must renounce their savage and lawless freedom, adapt themselves to public coercive laws, and thus form an international state (civitas gentium), which would necessarily continue to grow until it embraced all the peoples of the earth (Immanuel Kant 1795).

In pursuing this inquiry, we must bear in mind that we are not to confine our view to the present period, but to look forward to remote futurity. Constitutions of civil government are not to be framed upon a calculation of existing exigencies, but upon a combination of these with the probable exigencies of the ages (Alexander Hamilton 1788a).

Abstract

In his book, *Dark Skies: Space Expansionism, Planetary Geopolitics, and the Ends of Humanity* (Oxford University Press, 2020), Daniel Deudney argues that the expansion of humanity into space will pose unacceptable existential risks for our civilization and, perhaps, our species. Of particular concern are risks of civilization-destroying interplanetary conflict and the rise of totalitarian forms of government, both on Earth and in space. This chapter argues that these risks, although deserving to be taken seriously, may be mitigated by appropriate institutional developments. Near-term possibilities include strengthening the United Nations to give that body greater responsibility for human activities in outer space, and/or the creation of a dedicated World Space Agency. Ultimately, the logic points towards stronger forms of planetary and interplanetary governance organized according to federal principles.

Keywords: World federalism; Interplanetary federalism; Extraterrestrial liberty; Space policy; Space expansionism

1 Introduction

In his important and thought-provoking book, *Dark Skies: Space Expansionism, Planetary Geopolitics, and the Ends of Humanity*, the international relations scholar Daniel Deudney (2020) provides a carefully argued critique of what he sees as overly optimistic visions of a human future in space. He coins the term ‘space expansionism’ for the popular view that an expansion of human activities in space is both desirable and inevitable, and he argues that some

aspects of this agenda are so dangerous that they must be avoided by future generations. In this chapter, I will first briefly summarise Deudney's position as I understand it, and then go on to argue that at least some of his pessimism is misplaced and that appropriate institutional developments will be able to mitigate many of the risks that he foresees. In addition, and of particular relevance for the topic of this book, I will argue that some of these institutional developments will also help mitigate the risks of extraterrestrial tyranny identified by Cockell (2009, 2010).

2 The three 'space expansionisms' of Daniel Deudney

Within the overall ideology of 'space expansionism', Deudney identifies three quasi-independent strands, which he terms "Military Space Expansionism", "Habitat Space Expansionism", and "Planetary Security Space Expansionism" (Deudney 2020, p. 30). Fairly or otherwise, Deudney names these three strands after Wernher von Braun, Konstantin Tsiolkovsky, and Arthur C. Clarke and Carl Sagan, respectively. I will avoid that nomenclature here because I don't think the views and legacies of these very different advocates for a human future in space can be so easily pigeon-holed. However, I do agree with Deudney that von Braun's early involvement with Nazi Germany's war effort, and later advocacy of US military space projects, is deeply problematic and that this should not be overlooked, whereas Clarke and Sagan both had much more peaceable and inclusive visions that deserve to be celebrated.

Deudney's treatment of 'military space expansionism' is, at least to my mind, uncontroversial. We can all recognize the historical truth that the development of rockets and other space capabilities have been intimately connected with military activities, and that space technologies continue to have many military applications. The recent creation of a US 'Space Force' (USSF 2021), and the declaration that space is now viewed as a 'war-fighting domain' (e.g., AFSC 2019), clearly show that the dangers of space militarization are all-too-real. Deudney is right to draw attention to them and to call for their mitigation.

Similarly, Deudney's advocacy of 'planetary security space expansionism', calling as it does for the increasing use of space technologies to monitor compliance with international environmental and arms control agreements, and, if necessary, to protect Earth from asteroid impacts, appears eminently sensible. Moreover, although science isn't explicitly included in the names of any of the three 'space expansionisms', Deudney places space science in this category and argues that it, too, should be greatly expanded. Finally, and this will become important later, Deudney places what he calls "whole Earth identity formation" in this planetary security category (Deudney 2020, pp. 241, 253-4). This refers to the important idea, proposed by multiple authors over the years (and discussed further below), that by increasing the ease of global communications, and by providing images of the Earth in its cosmic context, space activities may help trigger a greater sense of global identity which could help reduce international tensions and thus enhance prospects for global peace and security. All of these 'planetary security' applications of space technology are beneficial, and 'expansion' of these capabilities would seem to be positively desirable.

From the point of view of space advocates (and here I include myself), the most controversial aspect of Deudney's analysis is his negative stance towards what he calls 'habitat space expansionism'. Within this category Deudney includes schemes for human colonisation of other planets, the mining of moons and asteroids for raw materials, and the construction of large-scale infrastructures in space (Deudney 2020, p. 186). He concludes that this will be as dangerous for the future of humanity as military space expansionism, and perhaps more dangerous in the long-term. So dangerous, in fact, that humanity should refrain from undertaking these activities even if, as seems likely, we develop the technical capability to pursue them. Among the potential risks that Deudney identifies are: the possibility of conflict arising out of competition for space resources (exacerbating the risks of near-term military space expansionism); the possibility of armed conflict occurring between human colonies, and between these colonies and the Earth; the deliberate alteration of asteroid orbits (raising the spectre of asteroid impacts being used as weapons of mass destruction); and the distant possibility that human space colonists might evolve into post-human forms that would have little in common with humanity and might even cause our extinction.

It is noteworthy that Deudney's main reasons for opposing habitat space expansionism are based on geopolitical grounds, and result from a lack of confidence that humanity will be able to manage space activities responsibly. As he notes, any expansion into new places, or development of new technologies, carries geopolitical risks, and outer space is no exception (Deudney 2020, p. 292):

For geopolitical theory the question of whether more extensive space or more capable machines are desirable or disastrous depends on whether such enlargements are matched in their scope and powers by configurations of restraining institutions But it provides no guarantee that humans will rise to the occasion to produce and sustain the political restraints vital to avoid disasters.

From this perspective, the question of whether humanity can safely expand into space essentially boils down to whether we can construct sufficiently robust *institutions* to govern human space activities. However, a moment's reflection will show that essentially the same considerations apply to ensuring human well-being on Earth, regardless of whether we expand into space or not. Thus, the question of institution building for human space activities can be seen as just one aspect of developing stronger institutions of human governance that will be required to manage multiple existential threats facing humanity in the 21st century and beyond.

3 Planetary governance in the 21st century

The world currently faces a number of serious problems that can only be addressed effectively at a global level. These include (i) global environmental pollution, including, but not limited to, anthropogenic climate change; (ii) habitat destruction and biodiversity loss; (iii) the continuing risk of military conflict between major powers and the concomitant risk of a civilisation-destroying nuclear war; (iv) threats arising from insufficiently regulated advanced technologies, including biotechnology, nanotechnology, and artificial intelligence; (v) global-

scale natural threats such as pandemics and, on a longer timescale, mega-volcanoes and asteroid impacts; (vi) long-term development challenges, including the satisfaction of aspirations for higher living standards, for a growing world population; and (vii) inefficient, and often irresponsible, management of the global commons.

These problems, while widely recognized, are difficult to address in an anarchic international environment where independent nation-states act as judges in their own cause, and the perceived self-interests of these independent sovereignties are often in conflict. It seems likely that many of these global problems and associated risks will worsen as the 21st century progresses, and that much stronger institutions of global governance will be required to manage them effectively. Indeed, the creation of the United Nations (UN) in 1945 demonstrated that the international community recognized the desirability of limited supra-national governance, at least in the realm of global peace and security, in the immediate aftermath of the Second World War. Moreover, the adoption of the Universal Declaration of Human Rights by the UN General Assembly in 1948, and the expansion of the UN system to include numerous specialised agencies and programmes (e.g., UNICEF, UNESCO, UNDP, UNEP, UNHCR, WFP, etc¹), illustrates a broad consensus that coordinated global action is desirable in multiple areas to work for “peace, dignity and equality on a healthy planet” (UN 2021).

Unfortunately, the UN, like the League of Nations before it, is predicated on the concept of nation-state sovereignty, and this greatly limits its effectiveness. Indeed, in practice, the UN is just one more forum where nation-states are free to exercise their own sovereignty in their own perceived self-interests. As Fremont Rider predicted just a year after its creation, the UN has, like its predecessor the League of Nations, been treated by national governments “as merely another piece to be moved about on the international board in the game for national power – and as not a very important piece at that” (Rider 1946, p. 2). These considerations imply that much stronger systems of global governance will be required to deal effectively with global problems. Reves (1946, p. 279) put it well in the context of nuclear weapons when he wrote:

It follows that the ultimate source of danger is not atomic energy but the sovereign nation-state. The problem is not technical, it is purely political.

This conclusion was reiterated by Derek Heater (1996; p. 205), who argued explicitly that the logic points in the direction of some form of planetary government:

Individual states are at best powerless to prevent wars and environmental degradation, at worst they are the cause of these disasters. Only effective world government can protect mankind from these hazards.

¹ UNICEF: United Nations Children’s Fund; UNESCO: United Nations Educational, Scientific and Cultural Organisation; UNDP: United Nations Development Programme; UNEP: United Nations Environment Programme; UNHCR: United Nations High Commissioner for Refugees; WFP: World Food Programme; for a complete list of specialist agencies and programmes within the UN system, see UN (2021).

Interestingly for the present discussion, in an earlier article Deudney (2018, p. 257) has himself considered humanity's current situation and argued that it

is marked by catastrophic and even existential threats stemming from ... nuclear war, climate change, and biotech pandemics, thus creating powerful *universal interests* that almost certainly require the erection of some version of substantial world government (his italics).

There isn't room here to do justice to the extensive literature on the desirability, or otherwise, of establishing some form of world government, or the many different forms that such a government might take (for book-length treatments see Wynner and Lloyd 1944; Heater 1996; Baratta 2004; Leinen and Bummel 2018; Yunker 2018). My own view (e.g., Crawford 2015, pp. 206-207) is that dealing effectively with planetary scale problems will eventually require a federal system of planetary governance, constituted so as to implement the principle of subsidiarity on a global scale (where the federal world government would be responsible solely for global matters that cannot be addressed effectively at a local or national level).

I am aware, especially in a world where populist nationalism appears to be on the rise, that many people will instinctively object to the whole concept of a world government. Some of these objections may arise from an (in my view unhelpful and outdated) allegiance to the concept of nation-state sovereignty. Other objections, which need to be taken more seriously, will be based on legitimate concerns about preventing the rise of a global dictatorship. In principle, a federal system of world government could retain independent decision-making for nation-states at the national level, and so would be compatible with (limited) national identity, and, as in the case of the US Constitution, be based on balancing powers in such a way as to minimise the risk of totalitarianism (as discussed further in Section 5 below). But, in any case, the sheer facts of increasing global interdependence, and worsening global existential risks, need to be addressed somehow. Those who object to the whole idea of a planetary government will need to explain how these risks might effectively be managed in some other way – bearing in mind that global institutional arrangements short of a world government, such as the League of Nations and the United Nations, have so-far proven to be ineffective.

Of course, even if we agree that a suitably constituted world government would be desirable in principle, formidable political obstacles would need to be overcome to bring one into existence. An important reason for this is that, despite our obvious common interests, the human race currently lacks a sufficiently strong sense of common identity to overcome allegiances to different nations, religions, and other forms of tribal identity that fall short of humanity as a whole. It seems likely that tribalism may be instinctive in *Homo sapiens*, possibly as a result of group selection during our evolutionary past (e.g., Wallace 1871, p. 313; Darwin 1874, p. 64; Wilson 1998, 2012; Wilson and Wilson 2007), and that this gets in the way of developing the kind of global institutions that the world increasingly needs. As Kwame Appiah (2006, p. xi) has put it:

The challenge, then, is to take minds and hearts formed over long millennia of living in local groups and equip them with ideas and institutions that allow us to live together as the global tribe we have become.

The importance of developing a common planetary perspective as a prerequisite for creating global institutions to deal with planetary scale problems has long been recognized in the international relations community (e.g., Morgenthau 1948; Herz 1962; Ward 1966). Significantly, Deudney (2019) has himself summarised the views of the ‘realist’ international relations scholar Hans Morgenthau as follows: “humanity thus faces a tragic impasse: it needs a world state for security, but lacks a sufficiently thick sense of common identity both to make it possible and to prevent it from being threatening.” Because much of this discussion will use the US federal constitution as an example, it seems important to acknowledge Morgenthau’s observation, made while arguing against the feasibility of a world government, that the American colonies had already developed a sense of common identity before the Constitutional Convention of 1787. As he put it, just as “the community of the American people antedated the American State ... a world community must antedate a world state” (Morgenthau 1948, p. 406). Morgenthau himself may have seen this as unrealistic, but it is in this context that some aspects of ‘space expansionism’ may prove helpful.

Any society that is actively exploring the Solar System can hardly fail to be aware that Earth is a very small and isolated planet when viewed in a cosmic context. Over the years, the social, cultural, psychological and political importance of this perspective has been noted by multiple authors (e.g., Clarke 1946, 1951; Hoyle 1950; Ward 1966; Sagan 1985, 1994; Poole 2008; White 2014; Deudney 2018b, 2020; Som 2019; Crawford 2021a). Sagan (1985, p. 280) articulated the core political implications in his science fiction novel *Contact*:

Spaceflight, therefore, is subversive ... The nations that had instituted spaceflight had done so largely for nationalistic reasons; it was no small irony that almost everyone who entered space received a startling glimpse of a transnational perspective, of the Earth as one world.

Although Sagan’s portrayal here is fictional, the psychological impact of seeing Earth from space appears real enough, and has been comprehensively documented by White (2014). In this context, it is especially notable that Deudney (2020, pp. 241, 253-4) identifies ‘whole Earth identity formation’ as an important benefit of ‘planetary security space expansionism’. Indeed, in an earlier essay, Deudney (2018, pp. 273-4) argued that the view of Earth from space has led to widening recognition of a “practical geography of Planetary Earth” where “the Earth as a whole is now a place” and that this “type of Earth-place sensibility amounts to a kind of Earth nationalism.” It seems reasonable to suggest that if a sense of “Earth nationalism,” or what Barbara Ward (1966, p. 148) perhaps more felicitously termed “a patriotism for the world itself,” were to become sufficiently widespread it would imply a stronger sense of global identity. This, in turn, would help provide the psychological foundations on which the institutions of global governance might be built.²

² I should stress that I’m not claiming that space exploration is the only means of engendering unifying perspectives; elsewhere, I have argued that the common evolutionary perspectives engendered by the emerging discipline of ‘big history’ may also be helpful in this respect (e.g., Crawford 2021a; see also Dick 2018; pp. 234-5).

Of course, even with a growing sense of planetary identity, stronger global political institutions will not emerge overnight, and this will be even more true of a federal world government. Rather, this must be an evolutionary process (e.g., Clark and Sohn 1960; Yunker 2018; Leinen and Bummel 2018; Bummel 2021), most likely including the gradual strengthening of the existing UN system (e.g., Weiss 2016; Lopez-Claros et al. 2020). The point here is that, because space activities can help provide a supporting cosmic perspective on human affairs (e.g., White 2014; Crawford 2021a), they may act as a catalyst for the kind of ‘Copernican Revolution’ in humanity’s self-image that Reves (1946, pp. 26-29) argued would be a necessary precursor for the formation of a planetary government.

4 Interplanetary governance

As discussed above, Deudney’s (2020) objections to ‘habitat space expansionism’ rest largely on geopolitical concerns that conflict may arise if humanity expands out into the Solar System, and that such conflict may pose existential risks to the survival of the human race. The risk of asteroids being used as weapons is of particular concern because this could indeed result in an extinction-level catastrophe (e.g., Sagan and Ostro 1994; Crawford and Baxter 2015). Moreover, there are multiple other reasons, ranging from the peaceable and efficient management of space resources to the implications of contact with extraterrestrial life, for wanting to ensure that a human expansion into the Solar System is well-ordered and properly governed (e.g., Crawford 2021b). I therefore agree with Deudney that an anarchic expansion into space would be fraught with danger and must be avoided.

However, we already live in an anarchic geopolitical situation on Earth, facing existential risks of various kinds. We need to find ways to mitigate these risks, whether we venture out into space or not. The major threat facing humanity is therefore not space expansionism *per se*, but the anarchic relationships between human societies, whether on Earth or in space. Deudney (2020, pp. 368-9) recognizes this, when he writes:

Humanity’s problem is not that it is stuck on Earth but that it is stuck in an inherited, fragmented, stratified, and violence-prone international system. If humanity is unable to overcome anarchy to establish mutual restraints and pursue mutually beneficial problem-solving on Earth, where so many factors are supportive, it is more unlikely to be able to do so in geopolitically malefic solar space ... Humans and their institutions are not – and are not likely to become – capable enough to meet daunting solar space governance challenges.

The logic here is that if, *contra* Deudney, we are able to solve these political problems on Earth, which we will have to do in order to ensure our long-term survival, then we can also solve them in space. As discussed above, ultimately the solution to geopolitical anarchy on Earth will be global government, and it follows that the solution to interplanetary anarchy will be some kind of interplanetary government. To be fair, Deudney (2020, p. 352) does recognize this as a potential solution to the geopolitical problem of space expansionism, at least in principle, but then dismisses it as impractical (based on, as it seems to me, a rather forced analogy with failed attempts at federation within the British Empire). To my mind, the relationship between world

and interplanetary government is the central aspect of this whole discussion and merits a much deeper analysis. For now, I'll just observe that the evolution of institutions for both world and off-world governance is likely to play out over a similar timeframe, say the remainder of the 21st century, raising the possibility of mutually supportive synergies between them.

Just as a planetary government for Earth will not emerge overnight but will be the result of a long evolutionary process, the same will be true of governance in space. Elsewhere (e.g., Crawford 1995; 2021b), I have identified a hierarchy of institutional proposals for the future governance of space activities. The nearest term of these proposals would involve strengthening UN oversight of space activities by building on the existing provisions of the 1967 Outer Space Treaty³ and enhancing the roles of UN Office of Outer Space Affairs (UNOOSA)⁴ and the UN General Assembly's Committee on the Peaceful Uses of Outer Space (UNCOPUOS)⁵. Deudney (2020, pp. 241-246, 372) favours this approach as part of what he calls a 'whole Earth security program', and he advocates expanding existing international agreements to include space traffic control and space debris mitigation. Although Deudney's discussion implies that he doesn't believe measures of this kind will be sufficiently strong to cope with the larger risks he associates with habitat space expansionism, it is possible to envisage stronger institutional responses evolving from the present UN system that may be helpful in this respect. One possibility, building on a suggestion by the 1995 *Report of the Commission on Global Governance* (Carlsson et al. 1995, pp. 251-2), would be to repurpose the now defunct UN Trusteeship Council to oversee human activities in space⁶. This would elevate oversight of human activities in space to one of the six principal organs in the UN system, placing them on a par, in principle if not initially in practice, with the deliberations of the Security Council.

In addition, and not incompatible with this suggestion, one could imagine the creation of a dedicated world space agency under UN auspices. To my knowledge, this was first suggested by the British rocket engineer Val Cleaver, a decade before the dawn of the space age, when he suggested the creation of an Interplanetary Agency (IPA)⁷ to facilitate human missions to the Moon and planets (Cleaver 1948)⁸.

³ Treaty on Principles Governing the Activities of States in the Exploration and Use of Outer Space, including the Moon and Other Celestial Bodies (herein the 'Outer Space Treaty', OST); <https://www.unoosa.org/oosa/en/ourwork/spacelaw/treaties/introouterspacetreaty.html>

⁴ <https://www.unoosa.org>

⁵ <https://www.unoosa.org/oosa/en/ourwork/copuos/>

⁶ Carlsson et al. (1995) proposed bringing management of all the global commons, including the Earth's atmosphere and oceans as well as outer space, within the remit of a reformed Trusteeship Council. This suggestion seems to me to have considerable merit, but as human activities in space expand they will likely come to dominate and deserve a dedicated UN decision-making body.

⁷ The actual meaning of the acronym is not spelled out by Cleaver (1948), but the context (e.g., p. 25) implies that he had 'Interplanetary Agency' in mind.

⁸ As pointed out by Deudney (2020, p. 246), an even earlier suggestion for an 'International Interplanetary Commission' to organise future space exploration, with an eye to its possibly beneficial role in reducing international tensions, was made by David Lasser in his excellent and prescient book *The Conquest of Space*

In this pioneering article, Cleaver wrote:

One can visualise, therefore, that the IPA might be an international organisation ... modelled along the lines of the American proposals for an International Atomic Energy Authority, or on UNESCO ... the whole project being sponsored by UNO, or (better still) by a World Government.

Interestingly, proposals for an international space agency briefly received serious political attention once the space age became a reality and were discussed, although not acted on, in the context of the US National Aeronautics and Space Act which led to the creation of NASA (Shepard 1958). At about the same time, a suggestion for a ‘United Nations Outer Space Agency’ was advanced by Clark and Sohn (1960) in the second edition of their book on UN reform, *World Peace Through World Law*. A few years later a ‘United Nations Space Administration (UNSA)’ features in Arthur C. Clarke’s short story *The Secret of the Men in the Moon* (Clarke 1963). More recent proposals for the creation of an international space agency/authority, with or without an explicit linkage to the UN, have been made by Brown and Fabian (1975), Crawford (1981, 1995), Tronchetti (2009), Pinault (2015), Plattard and Smith (2018), Koch (2018), and McKenna (2020).

In the present context, we may note that expanding the role of the UN to include responsibility for outer space affairs, and other transnational domains, would be fully consistent with its evolution in the direction of a federal world government. We have seen that Cleaver (1948) had already intuited such a connection. A more explicit linkage between outer space affairs and world government has been made by the international relations scholar James Yunker (2007, pp. 60-61) where he notes that a future world government might need a “Ministry of External Development” to coordinate human activities in space and suggests (p. 87) that a world government might one day be required to protect Earth from extraterrestrial threats.

Ultimately, however, if habitat space expansionism proceeds to the point where human (and perhaps eventually post-human) colonies become established throughout the Solar System, reliance on an Earth-centric governance structure may cease to be workable or desirable. Yet, for all the reasons that Deudney carefully articulates, unrestrained political freedom for space colonies would amount to interplanetary anarchy and would potentially add yet another layer of existential risk for humanity. We need only recall Kant’s (1795, p. 113) dictum that “the separate existence of many independent adjoining states ... is essentially a state of war, unless there is a federal union to prevent hostilities” to realise that Deudney’s fears are well-founded. In the present context, it is interesting to note that similar concerns were also very much on the minds of the founders of US federalism as they worried about competition between the states in the, as yet uncolonized, interior of North America.

(Lasser 1931, p.74). This long predates the formation of the UN, but it is interesting, and perhaps slightly disappointing, that Lasser does not suggest that the proposed Interplanetary Commission might be overseen by the then-extant League of Nations. However, it is not clear that he had in mind any kind of intergovernmental organisation, as elsewhere (pp. 173-175) he drafted a proposed constitution for his Interplanetary Commission which indicates that he was thinking of a federation of national membership organisations engaged in spaceflight advocacy.

As Hamilton (1788b) put it:

In the wide field of Western territory, therefore, we perceive an ample theatre for hostile pretensions, without any umpire or common judge to interpose between the contending parties. To reason from the past to the future, we shall have good ground to apprehend that the sword would sometimes be appealed to as the arbiter of their differences.

The possibility of “swords” being replaced by space-borne nuclear weapons, or re-directed asteroids, does not bear thinking about. But note that Kant explicitly identified the solution to the risk of such inter-state conflict, namely the creation of a “federal union”, and this was indeed the successful solution adopted by the US constitution⁹. Inter-state anarchy did not develop in the interior of the North American continent and, with one significant exception, wars between the states have been prevented.¹⁰ By analogy, I have argued elsewhere (Crawford 2015) that a federal form of government would be ideally, and perhaps uniquely, suited to the task of maintaining interplanetary peace, essentially for the same reasons that it will also be the most appropriate form of a future world government on Earth.

The main point is that federal forms of government are inherently expandable. In his *The Spirit of the Laws*, Montesquieu (1748, p. 131) defined federalism as a form of government where “many political bodies consent to become citizens of the larger state that they want to form. It is a *society of societies* that make a new one, which can be enlarged by new associates that unite with it” (my italics). This property of expandability was clearly recognized by the founding fathers of US federalism. For example, Hamilton (1788c) stressed that a key advantage of the federal constitution was “the ENLARGEMENT of the ORBIT within which such systems are to revolve, either in respect to the dimensions of a single State, or to the consolidation of several smaller States into one great Confederacy” (capitals in the original), and Madison (1788a) noted that the “practical sphere” of republican government “may be carried to a very great extent by a judicious modification and mixture of the *federal principle*” (his italics). It was this expandability that enabled a federal government, designed initially to

⁹ There is considerable academic debate on whether Kant had in mind what we would today call a ‘confederal’ structure or a ‘federal’ one (e.g., Barrata 2013, p. 254; Castaldi 2013, pp. 242-243; Levi 2013, pp. 37-38; Straus 2013, p. 145; and references cited by these authors), but this distinction doesn’t really affect the essential point made here.

¹⁰ Of course, the United States did suffer a catastrophic civil war between 1861 and 1865, essentially a war of secession by the Southern states over the issue of slavery that was left unresolved by the constitutional convention of 1787. However, as discussed by Straus (2013), it is a mistake to see this as a failure of the federal constitution, not least because it would probably have been impossible to create a constitution that all 13 states could have agreed to in 1787 which would have prevented this conflict, and yet a failure to federate at that time would likely have resulted in many more wars between the states. Straus (pp. 122-3) argues that the North-South conflict over slavery was “not entirely inevitable, but highly probable” following independence from the British Empire (within which the slave trade was abolished in 1807 and slavery itself was largely abolished in 1833). On the other hand, “Federalism (the strengthening of the Union) averted many more potential inter-state wars and in several respects postponed the North-South one ... What endures as an accomplishment of Federalism was to reduce this to only one more war before peace was restored among the colonies/states in perpetuity.” As discussed by Crawford (2015), a comparison of the number of wars fought in North and South America following independence from the colonial powers lends support to Straus’ argument.

ensure cooperation between thirteen former colonies on the Atlantic coast of North America, to expand across the continent.

There is no reason in principle why such a form of government could not expand across Planet Earth (see, e.g., the discussion by Pistone 2013) or, in the fullness of time, the Solar System. In the latter context, note that the islands of Hawaii, admitted as a State of the United States in 1959, might just as well be a colony on Mars as far as the federal institutions are concerned. Moreover, by employing the principle of subsidiarity, federal forms of government are compatible with significant local independence and diversity. This is because matters pertaining solely to individual constituent states are dealt with by each individual state government. This is an especially valuable aspect of federalism when the responsibility of the federal government extends over a large and diverse area, whether this be a continent, a planet, or a planetary system. In an interplanetary context, the component ‘states’ might be individual colonies, or perhaps entire planets (e.g., Mars) on which there are multiple colonies, themselves grouped together in a federal structure.

It might be argued that the Solar System is in some sense ‘too big’ for even a federal form of government to function, but this is easily discounted. In *Dark Skies*, Deudney (2020, pp. 266, 302-3) introduces the important concept of ‘effective distance’, where the effective distance between two points is defined by the time it takes to communicate between them. In terms of effective distance, the whole Solar System is today far smaller than the area occupied by the original thirteen American colonies that devised the US Constitution in 1787: it takes at most 20 minutes to get a message from Earth to Mars, and only about 5 hours to get one to Pluto, whereas getting a message from New Hampshire to Georgia in 1787 might have taken weeks. Thus, if a federal form of government could function in North America in the eighteenth century, it will be able to function throughout the Solar System for any future interplanetary society utilising electromagnetic means of communication.

5 Federalism as a preserver of liberty

In addition to what he sees as an unacceptable risk of interplanetary conflict, Deudney (2020) is concerned that space expansionism will stimulate the development of tyrannical forms of government, both on Earth and in space. There are multiple passages in *Dark Skies* where he recognizes that the answer to international/interplanetary anarchy would be a world/interplanetary government of some kind, but he shies away from advocating this as a solution, fearing that any such government would necessarily become “hierarchical” and totalitarian. Indeed, in *Dark Skies* the phrase “hierarchical world government” is used as an apparent synonym for totalitarian world government at least a dozen times. I was puzzled by this usage because, as it seems to me, *all* forms of government are hierarchical to some extent, including non-totalitarian forms. It is true that Deudney (p. 284) draws a distinction between “hierarchical” and “republican” governments, where the latter are characterised by democratic control and checks and balances in a way that the former are not. However, federal forms of government are republican in Deudney’s sense because individual citizens are represented at

each level (e.g., Miller 1987, p. 151), and the checks and balances between the various levels of a federal system of government minimise the risk of one level usurping totalitarian control. It is therefore at first sight difficult to understand why Deudney never seriously considers world/interplanetary *republican* government as a non-totalitarian solution to world/interplanetary anarchy.

Digging a bit deeper, however, this appears (at least in part) to be because Deudney is concerned that habitat space expansionism may cause a non-totalitarian (republican) world government, which he has elsewhere advocated as a means of addressing pressing global problems (e.g., Deudney 2018), to become totalitarian in a way that would not happen otherwise. This is because external threats (real or perceived) may drive originally republican forms of government towards totalitarianism. This danger was also recognized by the founders of US federalism. For example, consider Hamilton (1788d):

Safety from external danger is the most powerful director of national conduct. Even the ardent love of liberty will, after a time, give way to its dictates. ... the continual effort and alarm attendant on a state of continual danger will compel nations the most attached to liberty to resort for repose and security to institutions which have a tendency to destroy their civil and political rights. To be more safe, they at length become willing to run the risk of being less free.

Deudney's argument is basically the same: if humans do not expand into space, there will be no (human-caused) external threats to Earth, and therefore no pressures on a future world government to become totalitarian. As he writes, "barring substantial space colonisation or threatening aliens, a world polity would be alone and thus not need to mobilize, concentrate, or employ violence capacity against outside threats" (Deudney 2020, p. 308). On the other hand, if "humanity expands into solar space, world government on Earth ceases to be a universal government and becomes one of many world governments" (p. 353) with attendant prospects for inter-world conflict and domestic repression. However, the same solution adopted in 18th century America is open to us here: if new space colonies are embedded within an interplanetary federal government *from the start*, they will not pose a totalitarian-inducing threat to Earth.

It also seems to me that Deudney's argument ignores the fact that any future "world polity" will need to mobilize and concentrate *some* power to overcome the common threats that face humanity on our home planet, quite irrespective of whether there are any external threats to worry about. This is why many people fear that, even if desirable in principle, there is a risk that a world government would eventually devolve into a global tyranny. To the extent that we will need to build institutions of global government capable of solving global problems, this is a nettle that will need to be grasped regardless of whether humanity expands into space or not.

If, despite his entreaties, human colonisation of the Solar System begins to occur, Deudney follows Cockell (2009, 2010, 2015) in arguing that the nature of the space environment will favour totalitarian forms of government within individual space colonies. For Deudney, this is therefore another argument against space expansionism. However, as Converse (2010, p. 109)

succinctly and correctly notes in his study of the lessons of US federalism, “the liberty of any given society of people depends, to a great degree, upon the institutions that exist, or they create, to protect it.” I have argued elsewhere (Crawford 2015) that the simplest institutional way to minimise the risk of space colonies sliding into totalitarianism would be to ensure that all such colonies are, from their foundation, embedded in a larger political framework that guarantees individual rights and liberties in a manner that local administrators would find hard to overturn.

The evolution of American federalism again provides a valuable historical example of how federal systems of government are robust against the encroachment of tyranny. Anti-federalists at the time certainly shared some of Deudney’s concerns; for example, consider George Mason speaking at the Virginia ratifying convention on 4th June 1788 (Kaminski et al. 1990, p. 937):

Is it to be supposed that one National Government will suit so extensive a country, embracing so many climates, and containing inhabitants so very different in manners, habits, and customs? It is ascertained by history that there never was [such] a Government, over a very extensive country, without destroying the liberties of the people. ... Is there a single example, on the face of the earth, to support a contrary opinion?

And Patrick Henry, responding to Madison’s advocacy of the federal constitution, was even more apocalyptic on 24th June 1788, using words that seem almost to anticipate Deudney’s deep-seated concerns (Kaminski et al. 1993, p. 1506):

He tells you of important blessings which he imagines will result to us and mankind in general from the adoption of this system – I see the awful immensity of the dangers with which it is pregnant – I see it – I feel it.

Yet, to respond to Mason and Henry with the benefit of hindsight, history has now shown that the checks and balances of the US constitution, inherent to a federal system of government, have prevented the feared descent into tyranny.¹¹ Not only have the original 13 states retained republican constitutions, but over the following two centuries 37 new states have been added and none of them have lapsed into totalitarianism either. It seems clear that an important reason for this success is that the new states were added to the existing federal structure, which guarantees to each a republican form of government, from their creation.

This, then, provides a possible model for preserving liberties within Solar System outposts and colonies – space expansionism can safely proceed, but only within the framework of a pre-existing federal structure that guarantees the liberties of new colonies from the outset. This interplanetary federal structure will presumably be an extension of the federal government that, as I have argued above, we will need to develop on Earth in any case to tackle pressing global

¹¹ At least to-date. US democratic institutions have recently been placed under considerable strain and, although the guardrails built into the system have so far held, the future emergence of an autocracy cannot be excluded. Nevertheless, the success of the federal constitution in maintaining intra-state liberties for over two hundred years seems sufficient to show that the fears of the anti-federalists were misplaced.

problems. I am aware, as Deudney (2020) also observes, that here is a strong libertarian wing among some space expansionists who view moving out into space as a way of freeing space colonies from all Earth-centred social and governmental restrictions. However, I agree with Deudney that this is a naïve (and, frankly, rather immature) vision. Not only will unrestrained interplanetary anarchy lead to the risk of civilisation-destroying conflict, but it will also permit the evolution of the kinds of intra-colony tyranny feared by Cockell (2009, 2010, 2015).

This point can be illustrated by another example based on US history. In his talk “The Case for Space is Liberty,” presented at the meeting on which this book is based, the libertarian-leaning space advocate Robert Zubrin (2021) argued that totalitarianism is unlikely on space colonies because people will not freely emigrate to totalitarian colonies. That is, potential colonists will ‘vote with their feet’ and choose ‘liberty’. However, even assuming that future colonists will have a choice,¹² this is not an argument for unrestrained freedom in space. Zubrin’s main example was the millions of people who freely have emigrated to the United States over the last several centuries, attracted to a free society, whereas very few have voluntarily emigrated to totalitarian regimes elsewhere in the world. However, it is important to remember that, with the exception of the very first colonists such as the Pilgrim Fathers in the 17th century, these immigrants have not moved to a land without a government. Rather, they have been attracted to a ‘New World’ that was already effectively governed by a federal constitution that provided for a stable society and guaranteed certain political and other freedoms. North America would probably have been a much less attractive prospect for emigration had it consisted of numerous independent, and perhaps authoritarian, states constantly at war with each other, and where new immigrants risked ending up as cannon fodder in pointless wars between, say, New York and New Jersey.

It follows that avoiding government is not the answer the problem of maintaining liberty in space. Rather, the answer is to get the form of government right from the beginning, and there are good reasons for believing that a federal interplanetary government is likely to be best suited to this task.

6 Conclusion

Daniel Deudney (2020) has argued that some aspects of what he calls ‘habitat space expansionism’, and especially the future colonisation of the Solar System, are so dangerous that they should be avoided.¹³ Of particular concern are risks of civilisation-destroying

¹² There are darker possibilities. For example, as noted by Charles Cockell in the discussion following Zubrin’s talk, some space colonies might be established by totalitarian Earth governments, in which case tyranny would presumably be locked in from the beginning. This is exactly the situation we would like to avoid, and why it would be desirable for space colonisation to proceed under the auspices of a democratic federal world/interplanetary government and not be initiated by sovereign nation-states on an anarchic Earth.

¹³ Because of these perceived dangers, Deudney (2020, e.g. 139, 372) argues that all relevant enabling space capabilities should be ‘relinquished’. This would seem to restrict humanity to Earth’s surface until we become extinct owing to some natural or self-inflicted cause. Deudney (personal communication, 28 April 2022) has informed me that this was not his intention, pointing to his statements (364) that “[i]n the very long term, humanity must leave the Earth to survive” but that we should postpone expanding into space for “at least the

interplanetary conflicts and the rise of totalitarian forms of government, both on Earth and in space. I share some of these concerns, but I also think that forever relinquishing many of the activities that Deudney includes under ‘habitat space expansionism’ would severely, and unnecessarily, impoverish humanity’s future (e.g., Lasser 1931; Clarke 1946; Sagan 1994; Crawford 2014; Smith, 2016). Indeed, although Deudney is suspicious of this line of reasoning, there are deeper considerations: as we don’t yet know how common life is as a cosmic phenomenon, self-quarantining humanity on Earth might also impoverish the whole future of life in the Universe (e.g., Dick 2012; Vidal 2014; Tegmark 2017; Rees 2018; Moynihan 2021). To be sure, we need to be clear about our reasons for expanding into space (Schwartz et al. 2021), but rather than throw away a potentially vast future it seems to me that we should identify, and implement, institutional innovations that will allow space expansion to proceed while minimising the attendant risks.

In the short term, I agree with Deudney (2020; e.g., pp. 241, 372, 376) that we should curtail military space programmes, strengthen the existing international institutions dealing with space activities (e.g., the United Nations and its associated treaty regimes), and implement something akin to his ‘Whole Earth Security’ space programme. But whereas Deudney implies that this may be sufficient if habitat space expansionism is curtailed, the logic points to stronger international measures being required if habitat space expansion is to proceed. Medium-term possibilities (say over the next several decades) might include the creation of a world space agency under UN auspices (e.g., Cleaver 1948; Clark and Sohn 1960; Brown and Fabian 1975), and/or the creation of a high-level UN organ at the level of the Security Council (perhaps by re-purposing the now redundant Trusteeship Council; e.g., Carlsson et al. 1995; Crawford 2021b) to coordinate global space activities.

Unfortunately, the strength and efficacy of UN-based institutions will depend on the strength and efficacy of the UN as a whole, which already appears insufficient for dealing adequately with a wide range of pressing global problems. As many others have argued over the years (e.g., Reves 1946; Heater 1996; Leinen and Bummel 2018; Yunker 2018; Weiss 2016; Bummel 2021), in order to deal effectively with global problems it may be necessary for the UN to evolve in the direction of a genuine world government, or for it to be superseded by some other form of planetary government. If we need to create a government for Planet Earth anyway, in order to address multiple common global problems, then it would also make sense for space activities to be placed under its jurisdiction. Importantly, the evolution of world government is likely to occur on the same timescale (say the next century or so) as the initiation of habitat space expansionist activities, facilitating a co-evolution of planetary and interplanetary governments.

Although this would reduce the risk of anarchy in space, Deudney declines to advocate it as a solution to the geopolitical problems of space expansionism because he fears, as do many

next several centuries.” However, by waiting this long, in the hope that we can use the time to solve all the other problems facing humanity, it is possible that we may miss an opening window of opportunity to gain a foothold in the solar system upon which, as Deudney himself acknowledges, our ultimate survival may depend.

opponents of the idea of world government, that any such government may become totalitarian. However, not all proposals for world government are equally objectionable in this respect. Specifically, the multiple levels of political authority and representation, and associated checks and balances, which are inherent in federal forms of government minimises the risks of totalitarianism. Furthermore, by applying the principle of subsidiarity, federal forms of government are able to maintain diversity and local autonomy among their members and are inherently expandable to ever larger spatial scales. For these reasons, I have argued here (see also Crawford 2015) that a federal world, and later federal interplanetary, government would be uniquely suited to minimising the risks of both interplanetary anarchy and interplanetary tyranny. Of course, there can be no guarantee that such a federation will never fail – as Madison (1788b) pointed out in answer to similar concerns regarding the proposed US federation:

It is a sufficient recommendation of the federal Constitution that it *diminishes the risk* of [calamities] for which no possible constitution can provide a cure....” (my italics).

It is true that humanity is still a long way from being able to construct a functioning federal world/interplanetary government, but we are also a long way from being able to colonise the Solar System. My argument here is that both these activities may evolve over comparable timescales, and that mutually supportive synergies may therefore develop between them.

A key reason why a federal world government, even if acknowledged to be desirable, is seen as politically unrealistic is that humanity currently lacks a sufficiently strong sense of global community on which such an institution could be built. However, there seems little doubt that our long-term survival will depend on us developing such a sense of community (e.g., Ward 1966; Appiah 2006; White 2014; Som 2019; Crawford 2021a) and, as Deudney (2020) himself recognizes with his concept of ‘whole Earth identity formation’, space activities have the potential to help create this perspective. Here, I am reminded of a passage in Arthur C. Clarke’s short story *The Lion of Comarre* (Clarke 1949, p.125), where the Council Chamber of a future world government is located in a high orbit about the Earth:

When the members of the Council were in session it seemed as if there was nothing between them and the great globe spinning far below. The symbolism was profound. No narrow parochial viewpoint could long survive in such a setting.

Thus, the perspectives engendered by a human expansion into space may play an important role in laying the psychological foundations on which a federal world, and later interplanetary, government might be built. I am prepared to assert that no other form of political organisation is likely to leave humanity in a better position to maximise the opportunities, and minimise the risks, associated with building an interplanetary civilisation.

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