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Astropolitics: A Political Theory For Space

If there is a minimum bar for space colonization, humans have already hit it as we have kept an *uninterrupted human presence in space since the first year of this millennium*, and intend to keep a human space presence in perpetuity. If the trajectory of human space colonization is to be determined by reflection and choice rather than accident, force, and the pursuit of profit, then it's imperative that political theorists engage with the innumerable normative problems space colonization creates in areas including, politics, ethics, human rights, public policy, global governance, and international law. This paper outlines a political theory research project intended to structure our thinking about the normative problems of space colonization. It is split into three parts. The first (sections 1-4) gives a brief outline of the problems facing political theorists and a proposed methodology that mitigates these problems. The second (section 5) claims that the dominant political theory of liberalism is inadequate to the problem of space colonization by demonstrating the problems within the central ideas of legitimacy, the right of exit, and distributive justice. The final section (6) very briefly puts forward three promising theoretical frameworks for future thinking about space colonization: Tommie Shelby's Dark Ghetto; Judith Shklar's Liberalism of Fear; and, Martha Nussbaum's Capabilities Approach.

I. Introduction

Humankind has maintained at least one member of the species in outer space *every single day, without interruption* since the first year of this millennium. The first components of the International Space Station (ISS) were launched in 1998, and the first three long-duration astronauts began their stay aboard the station on November 2nd 2000 as part of the Expedition 1 mission. They conducted experiments, repaired and maintained the shuttle, and kept themselves healthy through closely-monitored nutrition and exercise for one hundred and thirty-six days, at which point they were replaced by the crew of Expedition 2. In the intervening eighteen years, a new crew has replaced the last without any lapse in human presence on board, and – barring a catastrophic failure – humans will continue to live on the ISS until at least 2028. At this point, another spacecraft may

replace the ISS, or, as new policy shifts portend, it is quite possible that there will (also?) be permanent human colonies on the Moon and beyond. In December 2017, President Donald Trump signed Space Policy Directive 1, which sets NASA with the explicit goal of working independently and with private partners to,

> "Lead an innovative and sustainable program of exploration… to enable human expansion across the solar system and to bring back to Earth new knowledge and opportunities. Beginning with missions beyond low-Earth orbit, the United States will lead the return of humans to the Moon for long-term exploration and utilization, followed by human missions to Mars and other destinations…" (Reinvigorating America's Human Space Exploration Program, 2017)

Upon signing, the President asserted that that aim of this new directive is to "…not only plant our flag and leave our footprints -- we will establish a foundation for an eventual mission to Mars, and perhaps someday, to many worlds beyond" (NASA 2017). As a first public step towards fulfilling the terms of this new directive, in November 2018 NASA released a promotional video charting the "next chapter" in the agency's history, not just place our mark in the heavens and then leave, but to "return[…] to the Moon to stay, and prepar[e] to go beyond" (NASA 2018).[1]

Irrespective of the exact shape of the next steps in human space exploration, there is one requirement that must be met: there will be no lapse when humanity will have no representative in space. As the former Congressman from Oklahoma and current NASA Chief Administrator, Jim Bridenstine recently put the point,

[1] Recent budget proposals from the Trump White House include considerable cuts to the NASA budget, which belies the administration's purported goals for space exploration. The NASA budget has been a point of political contention for decades, so one should take these claims with a modicum of skepticism. What's notably different about the current era that (in my estimation) elevates the importance of these expressed goals for NASA is that the aspirations outlined here overlap with the expressed (and increasingly credible) aspirations of private companies including SpaceX. Moreover, NASA has new and largely unknown competition including notably from the Chinese CNSA, which might, if successful in its aspirations reinforce American commitment to space exploration that matches its rhetoric.

> "Look, there are kids graduating from high school this month that their entire lives, we've had an astronaut in space… We've had people living off the planet their entire lives. We want that to continue in perpetuity forever. So no gap; that's the goal." (Grush 2018)

The conclusion of these recent developments is clear: if there is a minimum bar for space colonization, humans have already hit it as we have and intend to keep a permanent human presence in space.[2]

II. The Space Colonization Predicament

Permanent human space colonization is a new phase in the history of humankind, and it places us in what I will call The Space Colonization Predicament (SCP), which has three main components. Firstly, the choices we make and the ends we pursue now will set the trajectory of human life in space for generations to come in the future. We ought not to elevate our contemporary importance too much, as our current actions will not over-determine future outcomes. However, by establishing a legal, political, economic, civil framework, and incentive structure now (including things like rights to property and the rights of and duties to people in space) a process of space colonization driven by its own internal force and logic (including the pursuit of wealth or fame, a sense of adventure, or a scientific impetus to know more abut the universe) will proceed with a non-negligible amount of path dependency set by our current choices.

[2] It should be said that, the mere fact that the ISS functions as designed and that NASA has declared its intention to continue similar projects in the future is no guarantee that human beings *will* expand into space to such a degree that billions of people will live beyond the surface of the Earth. There are an extraordinary number of technological problems that need to be surmounted before that can occur, and as terrestrial beings that evolved over hundreds of thousands of years on Earth, humans may be constitutionally incapable of living in space in any meaningful way. Consequently, a skeptic may wave away a research project like this as premature, speculative, and incongruent with the *foreseeable* trajectory of human life in space. However, even if the chances of permanent human colonization of space are fairly slim (say, > 1%), we are still warranted in the dedication of considerable contemporary resources to thinking through these problems as the expected utility calculation of even a remote possibility of thousands of generations of humans in space still yields a high number.

Secondly, because our choices now will have a *morally significant* influence upon life chances, expectations, and experiences of generations of future humans – potentially many billions of people – there are innumerable normative problems in a wide array of areas including politics, ethics, human rights, public policy, global governance, and international law that must be parsed through. We have an obligation to produce a normative framework for space colonization that orders and solves as many of these problems as possible and produces fair terms of social cooperation for people in space (both internally between one another, and internationally between colonies, and between colonies and Earth). We need an astropolitics: a political theory for space.

Thirdly, this obligation to produce a normative framework for space colonization is made all the more difficult because of the distance in space and time between future space colonists and humans on Earth now. As Karl Popper cogently makes the case in the *Poverty of Historicism* (2002, xi-xii) and *The Open Society* (2013, 7-9), we cannot cleanly extrapolate the social and political conditions of the future from conditions that existed in the past because of the unpredictable effects of transformative developments, especially including technological developments and the political responses to these developments. Of course, if there is one area of human life that is wholly contingent on future technological development to materialize it is space colonization, as humankind lacks the knowledge and means to safely colonize beyond the Earth's surface. We should therefore be wary of applying contemporary ideas of political organization to polities in the far future who will be influenced in their political organization by new ideas and technological developments that have not yet come to pass.

III. The Problem of Bounded Perspicacity

As it is a fundamental obstacle that confronts any astropolitics, it is worth dwelling upon and refining this third point: the problem of creating a normative theory for the potentially distant (geographic and temporal) future based upon ideas extrapolated from the local present. Let us call this obstacle the problem of bounded perspicacity and define it as follows:

> **The Problem of Bounded Perspicacity:** Many contemporary ideas, values, concepts, and normative frameworks will be inapplicable to human colonies beyond Earth in the far future without considerable, unpredictable, and perhaps even unrecognizable revision.

This problem of bounded perspicacity emerges at two levels that I will distinguish between as *shallow* and *deep*.

> 1) **Shallow Uncertainty:** Future societies will confront problems different to those faced by contemporary society due to technological developments, social developments, and, indeed, pure contingency. Some contemporary concepts and ideas will be appropriate and applicable to these future circumstances, and some will not be. We do not know in advance which problems future societies will confront, nor which contemporary concepts will be appropriate and applicable to them.

This problem of shallow uncertainty is not unique to life in space. One way to read the history of political thought is as a series of thinkers confronting new social, political, and economic circumstances that require similarly new and original ideas to comprehend and navigate.[3] And we continue to be confronted with these problems. We don't have comprehensive knowledge of the societies in which we live, as we fail to appreciate the

[3] So, for example, on this view one may argue that: the introduction to different polities organized according to different values led ancient Athenians to distinguish between nature and convention for the first time and thereby found political philosophy as we recognize it; the sack of Rome in 410 prompted St. Augustine to reckon with Roman values anew and in so doing absolve Christianity of responsibility for the sack; and, Machiavelli's call for an amoral prince to unite Italy is a response to the formation of proto-nation states in Germany and France that threatened the peninsular.

social and technological developments that have already occurred in society, but are yet to fully manifest. We should therefore expect to be confronted by new social and political problems that require new thinking. In spite of these difficulties, the problem of shallow uncertainty does not entail that we should adopt a passive and non-interventionist approach to present and future social and political affairs. We might not know the precise problems that will confront future societies, but it's nonetheless possible to set out a universe of more-or-less likely problems that will emerge and then try to think in advance about how to respond to these in order that we are not caught on the back foot.

As a valuable example of this thinking about the possible trajectory of life in the future consider Marilyn Dudley-Flores and Thomas Gangale's forecast of the political economy of the Inner Solar System (2012). That article is filled with best guesses about the shape of and requirements for future space development, including a need for new (and currently unknown) space-based energy sources (2012, 183), and a forecast that the huge capital investments required to make extraterrestrial societies even minimally habitable will entail that these societies will not spend much time in a "pioneer phase" similar to the Old West (2012, 186). The authors' forecasts vary in their credibility, with some appearing more likely than others to materialize, and in this sense are examples of shallow unknowns. But whatever actually happens, readers have a fairly good idea that only one of a handful of different outcomes within the kind of range put forward by the authors will come to pass in the future. So, as with weather forecasts which produce a credible range of likely outcomes – for example, it will either not rain, rain a little, or pour down – so too can we be quite sure that space colonies will require sources of energy and considerable capital investment, but remain uncertain of the exact form of that

new energy source or the precise amount of capital investment required, who this investment will come from, and to which priorities these parties will direct these capital investments.

One way to summarize the idea of shallow uncertainty is to say that future humans will confront problems in the outside world – problems external to them, like resource, coordination, logistical, and technological problems – that will require new ideas, technologies and developments to overcome. These developments will place pressure upon the terms of social cooperation shared amongst these future humans and likely engender new forms of political organization that are potentially very different to those that currently exist. A pressing task when engaging in issues of shallow uncertainty, then, is to get more precise data as time goes by in order to winnow down the likely paths of development in order to focus political thinking on more rather than less likely developments. The path of future development may lead to societies very different to those currently on Earth, but under the terms of shallow uncertainty it's assumed that the humans that live within these future societies will remain generally as they are now. We can, however, also relax that last assumption, as living in space may affect what it means to be human. Life in space may produce a change in human-self conceptions (akin, perhaps to the shift from the ancient to modern era), which, in turn, produces a new form of deep uncertainty.

> 2) **Deep Uncertainty** in spite of the purposeful creation of colonies in space according to contemporary ideas, beliefs, and values (see point 1 of the SCP), the experience of living in space within these colonies will produce people with self-conceptions and conceptual schemes not captured by these contemporary ideas, beliefs, and values.

To their credit, Marilyn Dudley-Flores and Thomas Gangale recognize this possibility in their note that "in situ experimentation and an influx of new ideas" will shape the contours of Martian colonization. Importantly, they continue, amongst these new ideas will include fundamental shifts in the worldview of the colonists that will have profound effects, [4]

> "Mars's distance from the planetary cradle of Earth will put its stamp on humans living there: on their social organizations, their technology, and how they view themselves and the human ecology of the solar system… The disparity of scale between vast spaces and small places cannot help but leave its imprimatur on perceptions and cognition of those living so far away from Earth. How we deal with being human on an alien world will be a paradigm shift as ideologically shattering as realizing that humans are not the center of the cosmos." (2012, 205)

To be sure, Gallileo's "and yet it moves" challenge to church doctrine was significant, but the Copernican Revolution of which this was a part still doesn't quite capture the profound implications of new modes of thinking on social formation. As a more pertinent example for our present purposes I commend Karl Polanyi's *The Great Transformation*, which charts the elevation of a new set of values and social ends including the pursuit of profit (2001, 31; 43-4), the reorganization of social and economic life by the Enclosure Movement, and the creation of the natural market (2001, 60-8) during the Industrial Revolution, which caused a profound reconceptualization of what it meant to be a human being in industrializing England. On this new model of social life workers (especially) came to see themselves less as a people bound by historical norms and obligations, but instead as commodities (sellers of labor) that can be bought and sold on the newly invented market. Polanyi reasons that "as the organization of labor is only another word for the forms of life of the common people, this means that the development of the

[4] Indeed, even the language we use to describe this phenomenon – "worldview" – belies the essentially terrestrial source of our conceptual schemes that we oughtn't expect to persist in the very different circumstances in space.

market system would be accompanied by a change in the organization of society itself." (2001, 79, see xxii-xxix for a helpful further account of the relation between society and economy in Polanyi's thinking). The notion of human life as a commodity – labor – to be traded on a market would have been incomprehensible a few generations before James Watt's invention of the steam engine, but by the time of the American Revolution Adam Smith could assert with no need of further substantiation that it is the essential nature of humankind to "truck, barter, and exchange" (2002, 13).

What's most valuable about Polanyi's analysis of industrial England for our present purposes isn't merely that there was a tremendous transformation in thought, but that this transformation in thought was the outcome of a planned and organized effort by powerful economic interests to create what we would now describe as a modern economy – as he says, "There was nothing natural about *laissez-faire*; free markets could never have come into being merely by allowing things to take their course" (Polanyi 2001, 145). However, in spite of this intention in creating the modern market economy, the ways of thinking that emerged were not predictable in advance of the creation of that society. What Polanyi shows here, then, is an example of deep uncertainty, as the creation of market society was purposeful and based upon contemporaneous ideas and concepts. However, the shift in human self-conceptions (to view oneself as labor) and the elevation of other new ideas was not predictable in advance. The move to space promises a similar transformation in thought to that described by Polanyi: like the creation of the market system in England, the creation of colonies in space will be purposeful and directed by the ideas and values of the intentional parties, but the effect of the purposeful and intentional creation of society in space according to contemporary ideas and values will

produce new future people and new social and political challenges, beliefs, and values that are not identifiable in advance.

IV. Methodology

In response to the SCP and the problem of bounded perspicacity we should not throw up our hands in despair. This vertiginous new phase in human history and the challenges of The Space Colonization Predicament are daunting, but they are not challenges that we are entirely unique in facing. Over two hundred years ago Alexander Hamilton wrote in Federalist 1 of a similar inflection point in human history, saying,

> "It has frequently been remarked, that it seems to have been reserved to the people of this country, by their conduct and example, to decide the important question, whether men are really capable or not, of establishing good government from reflection and choice, or whether they are forever destined to depend, for their political constitutions, on accident and force." (Publius 2003, 1)

His words here ring true for this generation of humanity, too, but on a much greater scale. On the one hand, if the SCP causes us to shy away from the normative problems that confront humanity in this step into the stars, then the colonization of space risks being driven by the pursuit of profit, the attempt to snatch first-mover advantage by economic actors or military powers, or by short-term political expediency. We could bungle our way into a universe characterized by great asymmetries in power between corporate titans the people who live under their control, or asymmetries between precarious space colonies and Earth. On the other hand, if we instead grapple with the predicament then we can begin to shape the future of space colonization in auspicious ways; what follows is the outline of a research project intended to do exactly that.

A possible goal for a research project parsing through and solving the questions raised by permanent human space colonization would be to produce a *comprehensive*

astropolitics. That is to say, a theory that delimits the precise rights and the duties of and to humans in space; a theory that sets out the reasonable distribution of benefits and burdens in extraterrestrial societies; a theory that ranks and organizes political values including legitimacy, consent, moral equality, democracy, and liberty into a coherent whole that would set the bounds for social cooperation in space.[5] There have been some gestures in this direction,[6] but each attempt at a comprehensive astropolitics will inevitably fail for the same reasons that there is no comprehensive philosophy organizing life on Earth now.[7] And, of course, these problems are compounded when trying to produce a comprehensive astropolitics because of the inevitable distance (in time, space, technological advance, etc.) between the political thinker and the subject of study, as explained in point three of the SCP. Although we are unlikely to strike upon a convincing and enduring comprehensive astropolitics, this does not leave us impotent when thinking through the normative problems that human life in space presents for us. Following especially the ideas put forward by Peter Steinberger in "Rationalism in Politics" (2015), it is possible to produce what I call a *non-comprehensive rationalist astropolitics*

[5] This would be an example of what G. A. Cohen calls the Harvard Approach to political theory, according to which one tries to subsume the diverse vagaries of social and political life under a limited number of principles (2008, 4).

[6] For evidence of the failure of the comprehensive astropolitics consider the proposed "A Code of Ethics," (Connor, Downing, and Krone 2006, 119-126).

[7] There are numerous reasons why humanity has failed to produce a comprehensive philosophy to organize society, each of which convincingly captures part of the nebulous whole of the reasons why such an approach is unfruitful. To some degree, Aristotle is right that "politics is not an exact science," and so "we must be satisfied with only a broad outline of the truth" when it comes to politics, rather than a precise mathematics-like theory (2004, 5). Arendt famously claimed – contrary to people like Isaiah Berlin, who argued that political philosophy is a subfield of moral theory (2002, 168) – that politics is an autonomous sphere of human activity that cannot be reduced to moral principles deduced from without (see the discussion of Arendt in Zerilli 2016, 117-43). More recently, the new Political Realists (Williams 2005, 1-18; Sleat 2013, 71-89) have made the claim that the essential plurality of human values and ways of living necessarily entails that society will never achieve a final harmonious resolution according so an exogenous theory. And, in her own way, Bonnie Honig has made the case that politics is a site of agonistic contention over political ideas that should not be replaced by comprehensive theories (1993).

(NCRA) that identifies a minimal normative foundation for space colonization that is capacious enough to adapt to changes in circumstances.

I cite Steinberger here as the problem of creating a conceptual, moral, and political scheme for space is importantly analogous to the process of creating a rational conceptual scheme that he articulates there. Steinberger's subject of criticism is Linda Zerilli, Raymond Geuss, Chantal Mouffe, Hannah Arendt, and post-modernist theorists who (in their different ways) object that the normative and evaluative views of the world put forward by so-called rationalist political theorists (like, say, Rawls) are not a detached, rational, and an objective mirror of the world as rationalist thinkers like to say. Instead, rationalist political theories are, the irrationalists claim, contingent and often tendentious "social artifacts" colored by prejudice and emotion (Steinberger 2015, 761). In response to this powerful and growing irrationalist trend in political theory, Steinberger traces developments in post-Kantian theories of rationality (from W. V. O. Quine through to Peter Strawson, Hilary Putnam and Donald Davidson) and offers an account of how, in spite of the claims of the irrationalist critics, one can engage in a sound process of rationalist political theorizing.

Rationalist political theory starts by accepting that existing conceptual schemes are not purely rational and objective for some of the reasons given by Arendt et. al. – that they are a system of "traditional prejudice" – but that, even so, these conceptual schemes make the world intelligible to us by providing the "basis of experience" (2015, 760). Once this is accepted, Steinberger says, one can probe the shortcomings of these conceptual schemes by "discover[ing] the connections between the conceptually laden claims" about the world that we can produce through these conceptual schemes. The goal

of critical thought, he says, should be to uncover as much as we can about the system of thought we possess and to then evaluate these conceptual schemes as rationally acceptable representations of the world by virtue of their coherence and fit with the facts of experience (2015, 761).

This rationalist political theory has methodological value for normative theorizing about human space colonization. When engaging in such normative theorizing it is worthwhile to recognize (analogously) that our current conceptual schemes are imperfect and are inadequate tools to organize (the inevitably very different) social order of humans in space. Not only are our conceptual schemes influenced by our history, culture, power inequities and such, but they are also necessarily incomplete because of the circumscribed conceptual horizon identified in the problem of bounded perspicacity. That being said, we can nonetheless probe our conceptual schemes to identify their internal dynamics and judge their fit to the data of the world. In relation to astropolitics, one can take existing political theories like liberalism, parse through their internal structure and connections – like the ideas of legitimacy, individualism, rule of law, etc. – and then assess their ability to fit the (fairly unpredictable) data of the universe in which humans colonize space. Steinberger sums up his rationalist account of politics by saying,

> "If rationalism properly understood is… the effort logically and systematically to discover and explicate the implications and entailments of a shared, though often only tacit or even hidden structure of presupposition about how things in the world really are – a structure that composes, in every case, the very foundations of a way of life – then political rationalism is neither more nor less than the effort to explore and realize through argument and analysis what those shared commitments mean for the pursuit of a coherent, intelligible, deeply situated, and organically contextualized kind of public action" (Steinberger 2015, 762).

Applied to astropolitics, we can probe what a shared commitment to any number of theories of space colonization could mean to the pursuit of a coherent, intelligible, deeply situated, and organically contextualized kind of colonization. For example, how would a

shared commitment to the belief that the universe beyond Earth is *terra nullius* free for economic expropriation affect the incentives for space exploration and the likely forms of social cooperation organized around this effort? What about a shared commitment to environmental stewardship? Or a primary commitment to a set of rights of possible future colonists and their children? In so doing, we recognize that such an approach is imperfectly rational as it is influenced in the first place by our contemporary ignorance and prejudice, but that through a process of critical argumentation we can make progress towards a theory of astropolitics that is markedly superior to the alternative of unprincipled space colonization conducted through entirely unanalyzed conceptual schemes. As a first example of this, over the remaining pages I will probe the "structure of presupposition" in liberal political thought in order to demonstrate the success and (more importantly) the limits of liberalism's applicability to space colonization. Then, I will put forward a few other theories that show promise as supplements to or replacements of liberal political thought.

V. Liberalism

It is appropriate to take liberalism as our starting point for a couple of reasons. Firstly, liberalism is our most established and well-developed strand of political theory and so any proof of the limits of liberalism is more arresting than any other less developed theory.[8] As such, the following is not intended as a refutation that demonstrates how liberalism cannot be made to work in space – indeed, I note several successes. However,

[8] Further to this, as Rawls' Theory of Justice (2008) is the most developed theory of liberalism, Rawls' text forms a primary point of orientation in this article as a way to compensate for the necessarily vague and provisional nature of the speculations about space colonization. The focus on Rawls is merely a first step to open discussion though, as, although some of the remarks below deal with the minutia of Rawls' argument, I'm confident that the thrust of the arguments made are likely to have force for other liberal theories, too.

any failures or lacuna in liberal theory raises the exigency of the astropolitics project by revealing the limits of our strongest strand of political theory. Secondly, since, according to Article VIII of the Outer Space Treaty (United Nations, 1967) vessels and colonies in space remain in the jurisdiction of the nations that launched them, and, as NASA, the European ESA, and Japanese JAXA are three of the most prominent national space agencies, one can expect liberal norms and laws to play a prominent role in at least early colonization.[9] Here I select legitimacy, the right of exit, and the circumstances of justice as three examples of concepts intimately woven into liberal thinking that do not function effectively (without significant alteration) when applied to life in space.[10]

Legitimacy

The modern idea of legitimacy in political theory goes back at least to Rousseau and his conception of moral freedom in *The Social Contract*, according to which, "obedience to the law one has prescribed to oneself is freedom" (2012, 54). This idea was notably refined by Kant in *Theory and Practice*, in his claim that legislators are obliged to "frame his laws in such a way that they could have been produced by the united will of a whole nation" (2011, 79). Skipping forward, Rawls' Kantian contractualism in *A Theory of Justice* builds upon this notion of legitimacy by devising an Original Position in which reasonable, free, and equal individuals would select principles of justice to order the basic

[9] So, according to the Outer Space Treaty, if you're an astronaut on a US ship and commit a crime according to US law in space, you can be prosecuted in US courts once you arrive back on Earth. As an example of the extension of liberal democratic norms to space: following a 1997 law signed by then governor G. W. Bush, astronauts can vote in local and federal elections for representatives whilst in space according to Chapter 106 and Rule 81.35 of the Texas Election Code (1997). For an overview of the history of space law development, see Gabrynowicz (2010).

[10] Here the examples are fairly cursory overviews intended to demonstrate the fecundity of research into these areas. I wholeheartedly welcome suggestions of other liberal concepts or values that I could analyze in relation to space, like, for example, moral equality, freedom, democracy, or tolerance.

structure of society that all other persons similarly situated in the Original Position would agree to (2008, 11). These principles include 1) a maximal amount of freedom compatible with equal freedom for all others, and 2) that social and economic inequalities are to be to the benefit of the least advantaged under conditions of fair equality of opportunity. The first principle of liberty has lexical priority over the second principle (2008, 302). In *Theory*, the idea of legitimacy is tightly connected to stability as Rawls is at pains to show how his principles would win the allegiance of the citizens within society. "Since," he says, "a well-ordered society endures over time, its conception of justice is presumably stable: that is, when institutions are just (as defined by its conception), those taking part in these arrangements acquire the corresponding sense of justice and desire to do their part in maintaining them" (2008, 454).

At this point, one should note that during the early years (decades, centuries?) of colonization, it's not likely that Rawls' two principles of justice would apply. As he says in his discussion of the just savings principle, in the early stages of development, instead of the two principles, a general conception of justice applies (2008, 293).

> **The General Conception of Justice:** "All social values – liberty and opportunity, income and wealth, and the bases of self-respect – are to be distributed equally unless an unequal distribution of any, or all, of these values is to everyone's advantage" (2008, 62).

The reason for this retreat to a general (instead of full) conception of justice in the early yeas of development is that, by being laxer in not requiring the lexical priority of freedom, the general conception of justice is likely to permit greater development growth that benefits all. Applying this to space colonization, it's likely that speedy development will be necessary in at least the early years, so the general conception of justice applies there (while the full conception of justice applies on Earth). Further than this, in order for

a space colony to be stable and legitimate by winning allegiance to it, then, it's necessary for people to acquire a sense of justice and to do their part in maintaining the institutions that advance the general conception of justice.

Although the following remarks call for some speculation, here there is reason to be skeptical that this sense of justice and allegiance will develop amongst all those who are off Earth on extraterrestrial bases. After all, it's rather galling to live one's life on, say, an American colony on the Moon according to the general conception of justice (with its far less stringent protections of individual liberty) while one's peers in the United States of America on Earth live according to the superior full conception of justice. In these circumstances, it's likely that the worst off in the Moon colony would be doing worse than those in the worst off class on Earth (let alone the best off class on Earth). If this is true, then the worst off class on the Moon colony may rightly feel envious of those on Earth. As Rawls notes his his section on The Problem of Envy (2008, 530-34), when the inequalities sanctioned by the theory of justice "arouse envy to a socially dangerous extent," then stability is put in jeopardy, which in turn calls into question the legitimacy of the system (2008, 531). Here, then, the worst off person on the Moon colony may reasonably object to the system of justice they live under as a system of laws and institutions that they do not give to themselves, but instead as a system they are forced to endure for lack of better alternatives.

This is, of course, a complicated issue that deserves to be parsed through in far more detail in a full research project. And I would not want to cast the concept of legitimacy aside entirely. In *Political Liberalism* and important liberal theory influenced

by Rawls, the concept of legitimacy is disentangled from stability and instead more generally defined as,

> "…our exercise of political power is fully proper only when it is exercised in accordance with a constitution the essentials of which all citizens as free and equal may reasonably be expected to endorse in light of principles and ideals acceptable to their common human reason. This is the principle of liberal legitimacy." (Rawls 1996, 137) [11]

This is a valuable definition of legitimacy that upholds moral equality shared by all humans by requiring that political force not be used arbitrarily or to dominate others. Force should not be used arbitrarily against people outside of Earth, and so the idea of legitimacy can do normative work here. That being said, the precise structure of a constitution, the essentials of which both colonists on another planet and those on Earth could reasonably both endorse is not at all obvious, as demonstrated by the untenability of the constitution Rawls himself proposes in *Theory*.

The Circumstances of Justice

It was said in the previous section that especially during the early years of colonization, the economic, social, and structural development of space colonies is likely to be so nascent and rudimentary that rather than Rawls' full conception of justice, the general conception of justice would obtain in order to ensure faster growth. Rawls was working through these ideas in the 1960s and 70s, so one can imagine that when thinking about

[11] For other prominent examples of the liberal idea of political legitimacy see Nagel: "The pure ideal of political legitimacy is that the use of state power should be capable of being *authorized* by each citizen – not in direct detail but through acceptance of the principles, institutions, and procedures which determine how that power will be used" (1991, 8). See also, Waldron: "The thesis that I want to says I *fundamentally* liberal is this: a social order is illegitimate unless it is rooted in the consent of all those who have to live under it; the consent or agreement of these people is a condition of its being morally permissible to enforce that order against them" (1987, 140). Research on the compatibility of this formulation of liberal legitimacy and space colonization would be well served by starting with Enzo Rossi's *Liberal Legitimacy: A Study of the Normative Foundations of Liberalism* (2008, PhD Dissertation), and his subsequent work.

the importance of development he was comparing the difference between a nation like the USA, which was well-positioned realize the two principles of justice, vs. a country like India which, at the time had a life expectancy of almost 49 years (vs almost twenty years more today), and a child mortality rate for those under five almost four times higher than today (UNICEF, 2013). Even though India had considerable room for growth and on reflection Indians may endorse a Rawls-informed position that it would be right to delay implementation of the full conception of justice until the country had developed further, it's important to note that even in 1970, India was far more hospitable to human life than the Moon or Mars is. Unlike the Moon or Mars, on Earth the circumstances of justice obtain, which Rawls describes as "the normal conditions under which human cooperation is both possible and necessary" (2008, 126). The Moon is, of course, anything but normal.

Rawls distinguishes between the objective and subjective circumstances of justice, and, for our present purposes I'll isolate only the former, which Rawls defines as follows:

> "1) many individuals coexist together at the same time on a definite geographical territory. 2) These individuals are roughly similar in physical and mental powers; or at any rate, their capacities are comparable in that no one among them can dominate the rest. 3) They are vulnerable to attack, and all are subject to having their plans blocked by the united force of others. 4) Finally, there is the condition of moderate scarcity understood to cover a wide range of situations. Natural and other resources are not so abundant that schemes of cooperation become superfluous, nor are conditions so harsh that fruitful ventures must inevitably break down." [numbering added] (Rawls 2008, 126-7).

At this point we can distinguish between two possible political units to which the circumstances of justice can apply (or not apply). In the first place we can treat a space colony as an autonomous political unit (even if initially founded by a particular nation on

Earth). In the second, we can treat the space colony and the founding nation on Earth as a single political unit.

In an autonomous colony, conditions 1 and 2 obtain as people of similar physical and mental powers live together. Condition 3 also obtains as the asymmetry in power, wealth, and resources between Earth and any likely space colony entails that the colony is weak to assault by well-resourced parties from Earth. Indeed, one can imagine that the precariousness of life in space may, in some (speculative) circumstances, emulate a state of nature in which the fear of attack by a hostile force from Earth outweighs any other benefits of cooperation amongst the colonists causing them to trade everything for security. Emphatically, though, condition 4 does not obtain. Of course, we do not have a precise accounting of all the resources available to colonists on the Moon or Mars. The European Space Agency notes that Helium-3 mining on the Moon might be economically viable (2019), and the growth in scientific knowledge produced by colonies will certainly be valuable (see also, Wingo, 2004). However, it will most certainly be many generations until these extraterrestrial colonies are developed enough to be anything close to an autarky. In light of this, extensive trade with Earth will be necessary in any foreseeable future.

This dependency upon Earth raises interesting further questions about the duty to non-Earth colonists. If the colonies are established by countries from Earth, and if the circumstances of justices are a necessary but not sufficient condition for just relations between parties, then, even if the space colonies are autonomous political entities, are there meta-justice demands placed upon Earth to ensure that the people in these space colonies are elevated in their material condition enough so that the circumstances of

justice obtain? If we created these colonies, sent people to live on these colonies for extended periods of time (perhaps even to die, or start their own families there), then does this generate an extra-justice duty to trade favorably with this colony and the people in it, so that they can raise their standard of living enough to live under liberal principles of justice? In my estimation, I think, perhaps, the choice to establish space colonies does engender such further duties, and this is a considerable demand to place upon the people of Earth that would need to be accounted for.

Turning to the second case where countries on Earth and the colonies are treated as a single unit: the level of integration between the different geographical parts of a polity depends upon technological development. For example, prior to the development of the railways, car travel, electric communication, and air travel, California and North East America were far less integrated than today. In this respect, the Moon is closer in level of integration to California and the North East c. 1800, than today, because, as it stands, it takes about four days to get to the Moon and the costs are likely to exceed $100m.[12] As happened with rail links connecting the continental United States, in time we may come to see Earth and the Moon as a fairly contiguous unit in which "many individuals live together." Things are rather different for more distant colonies, though. Of course, costs and time to travel increase along with the uptick in technological problems to overcome on a trip to places like Mars. But, perhaps the distance between Earth and Mars, and the impossibility of bridging that divide is more viscerally understood when considering the fact that it takes 24 minutes for radio signals to reach Mars from Earth and return. This means that synchronous conversation is impossible; we

[12] NASA currently spends over $80m to send one person to the ISS, and hopes to reduce that cost to a little under $60m by partnering with Boeing and SpaceX (NASA 2015). No one has been to the Moon since 1972, so costs are speculative, but will, of course, exceed those to get to ISS.

couldn't pick up the phone and have a chat with colonists, like you might with your auntie in Australia. In light of this, point one of the circumstances of justice do not obtain between Earth and these more distant colonies as they are not part of the same geographical area in any reasonable sense.

Point 2 does not obtain, either, as although Moon people, Martians, and Earthers are all human – "roughly similar in physical and mental powers" – their capacities are very different as the power of people on Earth is likely to far outweigh that of people on these other colonies. Put another way, it's likely that Earth will be able to dominate these other colonies, and the fact that Earth can dominate raises the question of whether justice will ever likely exist between these parties with such asymmetries in power. Perhaps with considerable restraint on the part of Earth commodious and just relations could persist, but even here, it's not clear that justice would obtain (as between equals in pursuit of mutual advantage), rather than some kind of paternalistic stewardship on the part of Earth. It would be a very different relationship.

Moving on, moderate scarcity may obtain in the average (if you totaled all the goods on Earth and on non-Earth colonies, and divided it between the total number of people in both). However, the distribution of those resources is likely to be highly unequal as the colonies will likely produce only a small number of valuable tradable goods. As noted above, this raises serious questions about whether considerable transfers of resources from Earth to these colonies on very favorable terms are necessary in order to exist with some semblance of parity between the parties. This is a very tall demand. The NASA budget is already highly contentious, and so it's not at all clear that there would be public appetite for such a transfer of resources to these distant people.

All of this is to say that, no matter how we conceive of these non-Earth colonies (as autonomous from, or contiguous with Earth), the circumstances of justice do not obtain. As Peter Vanderschraaf puts the problem in a recent article, "If we imagine… a world in which any of the conditions of the standard account [of the circumstances of justice] fail, we question the relevance of justice in this world… [when] the conditions of the standard account come near to failing, we find that the parties in these situations tend to ignore the ordinary requirements of justice in their dealings with each other" (2006, 324). We should be concerned, then, that our standard theories and accounts of justice will not be respected due to the pressing incentive to shirk the requirements of justice. Perhaps a more robust account of the duties and obligations owed to the people on non-Earth colonies will helpfully supplement a liberal theory of justice when the circumstances of justice do not obtain. In the meantime, though, the fact that the circumstances of justice do not obtain should lead us to be very wary about rushing into space colonization. The costs to treat these colonists fairly and with equal dignity may be far higher than we realize, we ought to be willing to pay the price before we begin, and we ought to recognize that as the circumstances of justice do not obtain, there will likely be incentives and opportunity to break the demands of justice between Earth and space colonies.

The Right of Exit

Rawls has been a primary focus in the previous sections as the precision and comprehensiveness of his liberal theory of justice compensates somewhat for the speculative nature of thinking about space colonization. Of course, this leads one to focus

on the particularities of his theory, and his particular preoccupations like stability, legitimacy, and leads us to adopt his presumptions about the nature of the polity as a cooperative venture for mutual advantage amongst individuals living under the circumstances of justice. There is, however, an important strain of liberal thinking that places less emphasis upon the search for principles all can endorse, and instead points to the right of exit as a bulwark against an odious life under a polity one cannot consent to.

The right of exit receives clear treatment by Locke who claims in *The Second Treatise* that tacit consent is given to abide by the laws of a commonwealth by the "Possession, or Enjoyment" of any part of that commonwealth by, for example, travelling freely on the highway" (2012, 348). A corollary of this account of consent is that each person must be able to retract their tacit consent by being able to "quit the said Possession," and retaining the "liberty to go and incorporate himself into any other Commonwealth, or to agree with others to begin a new one, *in vacuis loci*" (2012, 348). The virtue of this kind of right of exit is two fold, one of which is promising when thinking about space colonization, whilst the other is not.

Firstly, a right of exit is a method of permitting the free flourishing of diversity and of dealing with diversity in society. So, for example, Robert Nozick endorses a patchwork system of libertarian utopias in which people can form and move between different polities that uphold different moral, cultural, and religious principles, so "each individual chooses to live in the actual community which (putting it roughly) comes closes tot realizing what is most important to him" (1974, 309). Chandran Kukathas, for his part, emphasizes the right to form associations, and, as importantly, the right to disassociate as the cornerstone of the liberal ideal of toleration, and thereby endorses an

liberal archipelago of polities of varying sizes and values that are liberal by permitting individuals within them to leave whilst simultaneously tolerating the values of other polities in the archipelago (2003, 4).

Applied to space these are attractive ideas. Individuals who, for whatever reason would prefer to live in a colony in space are free to do so. On this view, space colonies offer greater diversity in ways of living, which is a good in and of itself. And, indeed, the right of exit may be a promising solution to the problems of legitimacy, stability, and the circumstances of justice mentioned above. If the right of exit is real, then going to work on Moon for set period (3 years, 10 years, 30 years) could be considered akin to choosing to engage in any other dangerous line of work in desolate area, like logging in Alaska, working on an oil rig in the North Sea, or working aboard the ISS. If those future astronauts are well-compensated or receive boosts to their bases of esteem and self-respect, then issues of of circumstances of justice and legitimacy are not prominent.[13] This solution might work in the short to medium term, but even here we ought not to be too cavalier. There should be strict rules to ensure that too much power is not ceded to space companies that allows them to pressure especially the weak and vulnerable to do dirty work for long periods outside of Earth, that are justified on the dubious pretext of choice and consent by the vulnerable to waive away rights and protections they may receive on Earth.

[13] Here, the ideas of consent and exit solve the problems of legitimacy by defining down what a colony is from a polity to something akin to a private enterprise that one can enter into or endorse as it suits them. This is similar to the solution Locke struck upon in his *Letter On Toleration*, by distinguishing religion as a kind of private enterprise distinct from the public enterprise of the polity and thereby bound by different norms, inc. a right of exit. As there, the argument is only as strong as this public private distinction is credible. One can imagine that this would probably aptly describe at least early colonization, in the same way that people choose to become astronauts and can choose to retire freely. But, it's not clear how long this would stand. If people began to spend not just a year, but many years, decades, and especially if they established families in space, then the colony no longer resembles a mere private enterprise but assumes a public function.

A second virtue of the right of exit is that the choice not to leave the polity provides, if not exactly tacit consent as Locke claims, then at least some superficial evidence that the benefits conferred by the society outweigh the costs of living in that society. In this way, a right of exit that is clearly *not* exercised provides some attenuated form of legitimacy – the people may not live under laws they have specifically chosen to create, but they at least live under laws they have not chosen to repudiate. Precisely how attenuated this legitimacy is depends upon the costs of exit. If the costs of exit are high, then the benefits of that society could conceivably be very low and the legitimacy of the polity similarly low. Whereas one could take a car and move from one state to another state in the US, or to a different country within the European Union, comparatively, the costs of leaving a space colony could be prohibitively expensive. At the very least a rocket needs to come from the Earth to pick up the passenger, which, at the moment, costs at least many tens of millions of dollars. Beyond this, it's not at all clear whether people even can come back to the Earth after living in space for extended periods. The deterioration of muscle and bone while in low-G environments is well-established, and can be countered fairly effectively by strict exercise regimes. The effect of extended time in space upon the rest of the body is far less understood, though. For example, we're yet to understand whether or not extended life in space could, say, weaken the immune system to such an extent that reintroduction to disease on Earth could be fatal.[14] Perhaps the greatest unknown question is whether humans can successfully procreate in space,

[14] NASA took the first steps to understanding these kinds of questions with their recent Twins Study (NASA 2018b). Astronaut Scott Kelly's spent a year-long stint aboard the ISS and underwent a comprehensive battery of tests comparting his physiology with that of his identical twin brother who remained on Earth. We are still awaiting results, but preliminary data (NASA 2019) suggests that Scott Kelly's immune system remained robust in its response to the Flu vaccine after a year in space with no appreciable difference in response with his brother, so a Flu epidemic on Earth may not be a fatal worry for future long-term astronauts.

and whether children born in space are viable. If it's possible to have children in space, then, whether they could ever come to Earth, given the effects of low-G upon the growing fetus and young body is an open question that would have profound political and moral consequences. At the very least, the right of exit becomes considerably less powerful as a tool for political legitimacy. Of course, the specific difficulties of returning to Earth from space (or, indeed, going to Earth for the first time for those born on other planets) call for considerable speculation. But, the conceivable range of costs are certainly higher than the similar costs of exit for people on Earth. Because of this the right of exit is not a panacea that solves all outstanding questions about the rights and duties owed to those living in space.

VI. Alternative Theoretical Frameworks

The colonization of space raises a number of considerable normative difficulties. It's not clear that a liberal political approach is able to solve these concerns without revision, and so part of the step into space must require amendment to liberal political thinking. In addition to this, though, supplementation and augmentation of liberal thinking by other (often overlapping) political theories can help. In this section I will briefly outline three possible avenues of research that can help in this area.[15]

[15] In addition to these three, I believe that epistemic liberalism might also be promising as this area of thought emphasizes the physical characteristics of the polity: the geographical size, the disbursement of people throughout the polity, and the impossibility of fully understanding the incentives, needs, and ends of the people within the polity. These epistemic limits of the polity entail that it is sound to delegate much political decision-making to non-political systems. The most famous and well-researched example of this is the price mechanism within a free market system that, on the epistemic liberal view, rightly ought to replace central political control (Hayek). Recently Adam Tebble (2017) has employed these epistemic liberal ideas and applied them to new areas of research, especially multiculturalism. This is promising and suggests the generalizability of the epistemic liberal approach to other problems, perhaps including space exploration. Moreover, the epistemic liberal concern with geographic space is appropriate to space colonization as people in space colonies are spread apart from central political structures in normatively

Tommie Shelby & The Dark Ghetto

In his recent work, Tommie Shelby grapples with the moral and political obligations shared between people in the "dark ghetto" – "metropolitan neighborhoods visibly marked by racial segregation and multiple forms of disadvantage" (2016, 38). Shelby's contribution is to say that the ghetto is a particular form of bad place: it is the product of racial discrimination and that, by denying opportunities to and by discriminating against its denizens, the ghetto is a site of injustice. This work is an important contribution to non-ideal theory as over the course of the book Shelby explains precisely how and why the ghetto is unjust along several axes, including the family, work, and the criminal justice system. He then proposes that remedies to these injustices fall within four different sets:

> (1) Principles of reform and revolution are standards that should guide efforts to transform an unjust institutional arrangement into a more just one.
> (2) Principles of rectification should guide attempts to remedy or make amends for the injuries and losses victims have suffered as a result of ongoing or past injustice.
> (3) Principles of crime control should guide the policies a society relies on when attempting to minimize and deter individual noncompliance with what justice requires.
> (4) Political ethics are the principles and values that should guide individuals as they respond to social injustices and that serve as the basis for criticizing the failure of individuals to promote just circumstances and to avoid complicity with injustice. (Shelby 2016, 12).

Shelby's work is helpful for astropolitics in several ways. First, it is an attempt, as Johnathan Wolff says in a recent review of the book, "to broaden the range of topics and concerns that can legitimately be regarded as within the scope of the discipline [of political theory]" (Wolff 2018). If Shelby is right that questions of justice can be applied

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important (and perhaps epistemically relevant) ways. I have not, however, explored this idea in great depth, so leave it here only as an aside for possible further analysis.

to the ghetto, then this opens up the promise that a similar approach can apply to space colonization – a site of possible future injustice.

Secondly, Shelby's non-ideal approach and identification of four avenues in which principles of remediation of injustice must fall is helpful. Like the ghetto, there is reason to think that space colonies will be sites of injustice with their own particular qualities. Moreover, in spite of all best intentions, we will make mistakes and act unjustly to future generations in space as we muddle through the normative questions that arise as we colonize beyond the Earth. In light of this, a clear set of organizing principles to remediate injustice, including principles of reform, rectification, crime control, and a political ethics will help. A non-comprehensive rationalist astropolitics should work on both ends – the ideal and non-ideal – by 1) attempting to identify a minimal set of normative obligations to space colonists that is capacious enough to adapt to the particular normative problems that arise, and, 2) thinking through effective ways to correct for injustices that do arise as we make mistakes in this process of colonization.

Finally, Shelby's work is helpful as, by its success, it demonstrates the likely limits of research into astropolitics. Shelby's work is excellent because of the detail he is able to bear upon the subject. As he notes early on, there is a long tradition of sociological research intended to comprehend the dynamics of the ghetto that is often motivated by a desire to help the people who live within them (2016, 6-7). Shelby ultimately concludes that a justice approach to the ghetto is required in the place of a sociological analysis of the causes of things like abject poverty in the ghetto. In spite of his ultimate repudiation of the sociological approach, he effectively uses this research to describe the conditions, incentives, moral ethos, and actions of people in the ghetto that

explains and to various degrees excuses and holds accountable denizens of the ghetto for their actions.[16] We lack this data for space exploration. There are no space colonies we can look to in order to understand the obligations we have to the people in those colonies, so we should not expect astropolitics research to be as comprehensive as Shelby's good work (see comments on the need for good data in relation to shallow unknowns on p. 7 of this text).

Judith Shklar & Liberalism of Fear

Any space colony is likely to be at a severe asymmetrical power disadvantage in relation to Earth. Things may change in the distant future, but in short to medium term we can expect that the people in space colonies will rely upon Earth (and the companies or nation states thereon) for trade and assistance. This condition is ripe for exploitation and Judith Shklar's work offers helpful insight on this dynamic.

Shklar's book Ordinary Vices "ramble[s] through" (1984, 6) the vices of cruelty, hypocrisy, snobbery, betrayal, and misanthropy that have characterized the relationships between people since time immemorial. While humans may have a tendency to view themselves as good and just, the historical record demonstrates our simultaneous ability to mistreat others in devastating ways. Out of all the forms of mistreatment, Shklar singles out cruelty as the most especially worst harm one can commit upon another human being and concludes that we ought to put cruelty first in our normative thinking. "To put cruelty first," she says, "is not the same thing as just objecting to it intensely. When one puts it first one responds as Montaigne did, to the acknowledgment that one

[16] I have in mind here especially his analysis of crime in the ghetto, and theory of when it is morally permissible for denizens of the ghetto to break the law (2016, 203-228).

fears nothing more than fear. The fear of fear does not require any further justification, because it is irreducible. It can be both the beginning and an end of political institutions such as rights" (1984, 237). In her later article *Liberalism of Fear*, Shklar refines these ideas further by making the case that, historically, it is the polity that has been the primary source of the most egregious cruelty inflicted upon people. She says, "the fear and favor that have always inhibited freedom are overwhelmingly generated by governments, both formal and informal" (1991, 21). In light of this she largely endorses a liberal political regime in which individuals ought to be free to make their own choices about their own lives without interference by governments and public authorities (1991, 23).

As we have seen, it's not at all clear whether a liberal political regime would be the most appropriate regime for space colonies as many of the ideals that undergird liberalism do not transfer to space. That being said, Shklar is helpful as we should always remain mindful that the polities (and companies) on Earth remain in a position to inflict great harm upon those in other colonies, and so we ought to remain cognizant of this dynamic in our integrations with those outside of Earth. There may be considerable mileage in "putting cruelty first" in our relations with nascent colonies, in order to ensure that the people there are not forced to endure cruel and unduly burdensome conditions, which might be a remarkably demanding ideal that requires more than merely leaving these colonies alone, but also subsidizing them at a high rate for the foreseeable future.

Martha Nussbaum & The Capabilities Approach

Over the past few decades, Martha Nussbaum has been developing a normative philosophical theory designed to "provide the philosophical underpinning for an account of basic constitutional principles that should be respected and implemented by the governments of all nations, as a bare minimum of what respect for human dignity requires" (2008, 5). On her theory, people have a set of basic needs and capabilities, including the need for shelter, food, drink, and are capable of affiliating with others and engaging in practical reasoning, amongst other things. A minimal theory of the good would allow people to be capable of exercising these capabilities free from the degradations of not having their needs met, which Nussbaum articulates as a list of ten capabilities including: being able to live to the end of a complete human life; being able to avoid unnecessary and un-useful pain; being able to form a conception of the good; being able to laugh, to play, and to enjoy recreational activities (2002, 70-1 see also 1992, 224). A minimally just society is one that provides the structures and institutions necessary to ensure people have these ten capabilities.

What most interests me here is the adaptability of Nussbaum's capabilities approach. Over the years Nussbaum has applied it to problems of feminism (1999), to animals, to disability, and to global justice (2006). This adaptability can be attributed in part to her invocation of Aristotle and Marx as the source of her theory of human good. It's notable that in The German Ideology Marx articulates a social and political conception of the person according to which human needs and, indeed, human nature adapts and changes as society progresses (1972, 149-63). The things requires to live a fully human life increase and augment as society changes and becomes more complex,

and, when turning to the Capabilities Approach, as human nature changes, so too ought the list of ten capabilities that constitute a thin theory of the good change. The political obligations to these people similarly change as their capabilities change, as the polity has to provide different rights, duties, and protections as their fully human self-changes (for Nussbaum on Marx see 2006, 74; 277-8).

This theory is very promising when applied to space exploration and conditions of deep uncertainty. If, as I've speculated, the experience of living in space within these colonies will produce people with self-conceptions and conceptual schemes not captured by these contemporary ideas, beliefs, and values, then Nussbaum's Aristotelian/Marxist account of human nature is propitiously poised to capture many of these changes and integrate them into her theory of the good. As people change and their capabilities change, so too must the duties and obligations of the polity to these people. If all parties accept some form of Nussbaum's Capabilities Approach as the right way to organize society, then the adaptability of the theory to changing circumstances promises to keep all parties on the same page for the foreseeable future.

VII. Conclusion

There is a saying in finance that to be early is the same as being wrong (McLean & Nocera 2011, 262). This might be true in a profession with its sights circumscribed to the quarterly financial reports, but political theory is different. The horizon of engagement is much longer as we both productively read the works of thinkers from the world centuries before we were born, and can produce political ideas of value that will endure for centuries after we die. Because of this, the implications of political theory are potentially

far more considerable than the short-term highs and lows of financiers. Political theorists ought to recognize this particular quality of their enterprise and, as we now enter a second space race, theorists should turn their attention to the political problems of space colonization. My research program is intended to be an early step to prevent that from happening. Here I have laid the ground work for this by first identifying the SCP and the problem of bounded perspicacity. Using Peter Steinberger's arguments on the issue of rationalism vs irrationalism in political theory I have proposed a methodology that allows theoretical progress to be made within the confines of the SCP and problem of bounded perspicacity. And, as a first step I have identified several limitations of the prominent theory of liberalism when applied to that demonstrates the need for further research into these questions. Unless robust and comprehensive theorization of this ilk is done now and in the next few decades to decide the sound and reasonable duties and obligations to future generations of people living in space, then the forces of economic power and political expediency will make these decisions for us.

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