

Beneficiaries of the NewSpace Age Governance by Acknowledging the Benefits to All Humankind

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Abstract

Among the fundamental principles of outer space law is that space is to be for the benefit of all. This paper demonstrates how the economic implications of this principle are often overlooked or misrepresented in interpretation. The possibility of a more practical, and conveniently moral, interpretation of that principle is explored, ultimately for the benefit of decision makers in space governance. By examining the net social value of space activities through economic observations, this paper suggests a recalibration away from the narrower benefit sharing approach. The paper proposes that a value-oriented interpretation of the principle better ensures NewSpace activities actually bring greatest benefit to humankind and to states.

Keywords: Economics, NewSpace, law, benefit.

1. Introduction

1.1. Overview

All space activities, whether under the coordination of an individual, companies, states or international organisations, are ultimately governed by international space law. This field of law is comprised of soft law acting as guidance and actual law which forms the enforceable rules. Both types of law are first and foremost established through the instruments under the auspices of the United Nations.

Soft space law instruments often come about by way of resolutions adopted by the United Nations General Assembly. Enforceable space law is established through treaty regimes whereupon states party to those treaties accept that those laws will be binding upon them.

Under both soft and enforceable international space law exists a principle declaring that the uses of outer space must be for the benefit beyond the

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actors who engage in actual space activities. Though often labelled “benefit-sharing”, this paper considers this “Benefit of All Principle” more widely and seeks to bring discussion outside the limitations of the term “sharing”.

While the Benefit of All Principle is the subject of much discussion, it is yet to meet any consensus as to its interpretation or application. This paper discusses that principle and offers a view which, if respected when implementing the principle, enables a greater social impact. Accordingly, the discussion herein may serve as consideration to assist decision makers who rely on or who employ the Benefit of All Principle as a method to facilitate measurable improvement in society.

1.2. Significance

Both the soft law and enforceable laws concerning the Benefit of All Principle came about prior to any significant privatisation of space activities and without NewSpace considered at all.¹ Outer space was the domain of states. Consequentially, the Benefit of All Principle is not designed to facilitate the opportunities and risks of commercial or other non-government space enterprises.

While academic literature and discussion in the United Nations often consider the Benefit of All Principle, there is a lack of definitiveness as to how to either the United Nations or states ought to reasonably and appropriately implement the principle in a way which does not deter NewSpace activities, particularly activities concerning in-space resources, as to which see part 3.2 below. This paper suggests the absence of a consensus is at least, in part, explained by the international space law community not having adequately considered the economic realities of space activities, particularly the extent of the value those activities unlock to individuals and to groups in society, and despite of any specific nationality, degree of technological capability or even the use of the space-derived product or service.

Examining the term “benefit of all” using an economic approach allows a consistent interpretation and application of the Benefit of All Principle to be the interests of international cooperation and the peaceful use of outer space. It is the economic approach, rather than a financial, fiscal or scientific approach, which serves as novel in the greater discussion on the Benefit of All Principle.

In considering the economic implications of space activities, relevant decision makers, namely states and international organisations, may follow the rationale outlined in the present paper. Doing so increases the likelihood that more of the public will benefit from space technologies than would be the case if the principle is implementing using the widely accepted “benefit-sharing” approach.

1 The term “NewSpace” refers to space actors in the non-government sectors reducing their dependency on public monies, including subsidies and government contracting.

1.3. Methodology

In arguing for the Benefit of All Principle to be seen in the context of economics, the present paper first outlines how the principle itself came into being, its drafting and how it is usually interpreted. More recent proposals on how to deal with the principle in the context of space resources are considered, forming an example of how the principle may be applied using the traditional, non-economic, interpretations.

Part 4 of this paper identifies basic economic principles to emphasise how the “value” of space-derived goods and services benefits society despite no “benefit sharing” obligations or actions on the part of those involved in the upstream activities. Part 5 breaks down certain terminology in the drafting of the Benefit of All Principle, particularly in relation to the meaning of “benefit” and considering who is intended as the recipient of that benefit. Part 6 concludes the discussion with a proposal for further consideration towards a proactive and a more moral implementation of the principle.

2. The Benefit of All Principle

2.1. The Declaration of Legal Principles and the Outer Space Treaty

Following the peak of the Cold War, states undertook efforts using the forum of the United Nations in an attempt to void the domination and the weaponization of outer space by any one power. The initial manifestation of this intention was resolution 1721 (XVI) adopted by the General Assembly in 1961 which emphasises the importance of international cooperation and the peaceful uses of outer space.²

The following year saw the adoption of the Declaration of Legal Principles Governing the Activities of States in the Exploration and Use of Outer Space (“Declaration of Legal Principles”).³ After several years of further discussion, in 1967, the Outer Space Treaty⁴ opened for signature. The Outer Space Treaty then became, and has persisted as, the primary legal authority in international space law.⁵ Both the Outer Space Treaty, and the Declaration of Legal Principles from which it is based, establish an ambitious and rather vague ideal for space activities to be carried out “for the benefit and interests of all.”

2 UN Resolution 1721 (XVI) International Co-operation in the Peaceful Uses of Outer Space, 1961.

3 UN GA Res 1962 (XVIII), Declaration of Legal Principles Governing the Activities of States in the Exploration and Use of Outer Space.

4 Treaty on Principles Governing the Activities of States in the Exploration and Use of Outer Space, including the Moon and Other Celestial Bodies 1967.

5 By virtue of its article VI, the Outer Space Treaty is also the primary instrument in domestic space law, not only international space law.

This ideal is introduced comprehensively in part 2.2 below. Yet, three immediate questions arise when reading the terminology of that drafting “for the benefit and interests of all”:

- a) what is the meaning of “benefit”
- b) who is captured by the term “all” and
- c) who determines what is in the interest of all?

The international space community until today remains uncertain on what the answers are to these three questions. In concentrating on the meaning of, and connection between, “benefit” and “all”, the present paper explores only the first two questions. However, in so doing, the answer to the third is revealed *a priori*.

2.2. . . . for the Benefit of All

The two primary instruments serving as the foundation of the Benefit of All Principle are the Declaration of Legal Principles and the Outer Space Treaty. This part 2.2 recites the relevant drafting of each. Most significantly, both instruments imply a distinction between benefiting “mankind”, or “humankind” on the one hand and “states” on the other, the implications of this distinction are discussed in part 5.3 below.

Paragraph 1 of the Declaration of Legal Principles reads the “exploration and use of outer space shall be carried on for the benefits and in the interests of all mankind”. For further context, the preamble of the declaration notes the General Assembly believes that space should be carried out “for the betterment of mankind and for the benefit of States irrespective of their degree of economic or scientific benefit”.

The preamble of the subsequent Outer Space Treaty largely encompasses this notion by noting the states parties to the treaty believe “that the exploration and use of outer space should be carried on for the benefit of all peoples irrespective of the degree of their economic or scientific development”.

The legal implications of this principle, however, go further than the Declaration of Legal Principles and the preamble of the Outer Space Treaty and make it into the actual (enforceable) treaty provisions. Article I of the Outer Space Treaty reads that the “exploration and use of outer space . . . shall be carried out for the benefit and in the interests of all countries, irrespective of their degree of economic or scientific development, and shall be the province of all mankind”.

Furthermore, albeit more of an aside, the Moon Agreement’s,⁶ preamble reads (emphasis original) “[b]earing in mind the benefits which may be derived from the exploitation of the natural resources of the Moon and other

⁶ Agreement Governing the Activities of States on the Moon and Other Celestial Bodies 1979.

celestial bodies”. Albeit with a low ratification number, the Moon Agreement, if followed, requires, under its article 11, an international regime be established with one of its purposes as enabling an “equitable sharing by all States Parties in the benefits derived from those resources, whereby the interests and needs of the developing countries, as well as the efforts of those countries which have contributed either directly or indirectly to the exploration of the Moon, shall be given special consideration”.

Of final significance is the the United Nations General Assembly adopted “Space Benefits Declaration”⁷ in 1996, which came about largely due to states with low standards of living seeking the international community give further attention to the Principle. The Space Benefits Declaration is discussed in part 3.1 below.

2.3. Context of the Principle

The origin of the Benefit of All Principle came about from the founding ideals of the United Nations on the Committee of the Peaceful Uses of Outer Space through GA Resolution 1348 (XIII). Among these ideals is the desire to “promote energetically the fullest exploration and exploitation of outer space for the benefit of mankind”.⁸ During development of the Legal Principals Declaration, the matter of exploitation of space was raised, with select states in the South American continent seeking to draw by extension that “exploitation” meant all states are entitled to benefit from the uses of outer space.

When it came time to agree on what the enforceable rules of the Outer Space Treaty will be, the Soviet Union’s proposal (in response to the position of the United States) suggested the purpose of such a treaty should be to states to explore space for the benefit of all mankind.⁹ This position was thereafter discussed in some detail, namely as to whether the Benefit of All Principle should be exclusive to the treaty’s statement of ambition in the preamble or also be included as an enforceable provision.

There remained an imbalance among the delegation as to what legal status to give the Benefit of All Principle. The desire of developing nations was to place a barrier to the more developed nations monopolising outer space on the one hand. Yet those more developed nations, mainly those of the west, argued the vagueness of the drafting would pose challenges for implementation. The settlement of this deliberation was, as Lai¹⁰ puts it, for the states to reach a compromise by adding the Benefit of All Principle in the treaty as a provision,

7 GA Res 51/122, Declaration on International Cooperation in the Exploration and Use of Outer Space for the Benefit and in the Interest of All States, Taking into Particular Account the Needs of Developing Countries.

8 GA Resolution 1348 (XIII).

9 UN Doc A/6341 (31 May 1966) Letter of 30 May 1966 to the UN SG.

10 Lai, Albert K, *The Cold War, the Space Race and the Law of Outer space* (Routledge, 2021), 121-122.

but doing so within the first article. The intention here was that the primary article would serve as an “introduction”, bringing the principle outside of merely an aspiration in the preamble but not to go so far as a strict duty.

The final drafting of article I, however, reads the use and exploration of outer space is for the benefit of not humankind, but for “all countries”. This reference to benefiting states rather than humankind is a distinction between the substantive text of the Outer Space Treaty and that of the Declaration of Legal Principles. The term “humankind” in the Outer Space Treaty, in this context, is tied to the province of outer space being for humankind, not the “benefit” of outer space being for humankind – that benefit is for countries.

Another note on the final drafting, pointed out by Mason-Zwaan and Hoffman,¹¹ is that while article I may apply to the “exploration and use of outer space”, it does not necessarily apply to the Moon and other celestial bodies. If this particular interpretation is accepted, it draws distinction between space activities generally compared to activities specifically concerning space-derived resources (as to which see part 3.2 below).

3. Approaches to the Benefit of All Principle

3.1. Interpretations

On the aspirational level, it is widely accepted that the Benefit of All Principle intends to facilitate the output of space activities going beyond the state engaging in or earning revenue from those activities.¹² The common approach to this notion is to either enable, encourage or enforce “benefit sharing”. The application of the principle under the benefit sharing approach is generally considered by international community under one of two interpretations – globalist and restrictive.

The “globalist interpretation” sees the Benefit of All being fulfilled only when profits obtained through non-government actors in outer space are distributed to state actors, whether or not those states on the receiving end of the sharing were involved in achieving those profits.¹³

The “restrictive interpretation” also focuses on the actors engaging in space activities sharing their fruits but suggests the this does not apply to financial gains of using outer space but, rather, to the scientific information about

11 Masson-Zwaan, Tanja and Hoffman, Mahulena, *Introduction to Space Law* (4th ed) (Wolters Kluwer, 2019), 17.

12 See, e.g., Hobe, Schmidt-Tedd and Schrogl (eds.) *Cologne Commentary on Space Law: Outer Space Treaty* (Wolters Kluwer, 2009), 163-164.

13 See e.g., Marcoff, Marco G, “Implementing the Contractual Obligation of Art I, Para I of the Outer Space Treaty 1967” *Proceedings of the Seventeenth Colloquium on the Law of Outer Space* 136 (1974), 137.

outer space.¹⁴ Moreover, the restrictive approach does not limit the sharing obligation only to state actors, as does the globalist approach. The interpretation of the Benefit of All Principle outlined in the Space Benefits Declaration of 1996 (33 years following the Outer Space Treaty) is more restrictive rather than globalist in nature. Instead of explicitly indicating profit-sharing between states, or between non-state actors and states, paragraph 3 of the declaration reads:

[a]ll States, particularly those with relevant space capabilities and with programmes for the exploration and use of outer space, should contribute to promoting and fostering international cooperation on an equitable and mutually acceptable basis. In this context, particular attention should be given to the benefit for and the interests of developing countries and countries with incipient space programmes stemming from such international cooperation conducted with countries with more advanced space capabilities.

This approach has established a legal, albeit soft law, pathway for implementing the Benefit of All Principle in under the restrictive interpretation. One noteworthy example of this concept is the discussion on how space may be for the benefit of all in the context of space resources.

3.2. Implementation: Space Resources

The advent of space resource activities, including mining and in-situ utilisation, has garnered increasing interest particularly within the last dozen or so years. This field largely comprised of NewSpace actors raises several questions in international space law and the Benefit of All Principle is no exception, whereby stakeholders must consider how to practically give effect to the longstanding approach of “benefit sharing”.

In 2019 the Hague International Space Resources Governance Working Group published the *Building Blocks for the Development of an International Framework on Space Resource Activities* (“Hague Building Blocks”). The Benefit of All Principle is considered in the first paragraph of the Hague Building Blocks which suggests that an international framework should “create an enabling environment for space resource activities that takes into account all interests and benefits all countries and humankind”.¹⁵ While somewhat echoing the sentiment of the Moon Agreement’s requirement for an international regime, the Hague Building Blocks suggest

¹⁴ See, e.g., Gorove, S, *Interpretations of International Space Law for Private Enterprise* (ADAS, 1982).

¹⁵ The Hague International Space Resources Governance Working Group, *Building Blocks for the Development of an International Framework on Space Resource Activities* (2019), para 1.1.

an international framework propose recommendations for states, rather than establish an obligation for any regime to be established.

When it comes to actual approach taken to the meaning of the Benefit of All Principle, paragraph 13 of the Hague Building Blocks mostly follows the restrictive interpretation. Paragraph 5 proposes that “States and international organizations responsible for space resource activities shall provide for benefit-sharing through the promotion of the participation in space resource activities by all countries, in particular developing countries”.

More specifically, paragraph 13 gives examples of what “benefit sharing” may look like, including:

- a) developing space science and technology and of its applications
- b) developing relevant capabilities and cooperation in education and training for interested states and
- c) access to and exchange of information.

Following these examples, paragraph 13 makes it clear that any international framework dealing with space resources “should not require compulsory monetary benefit sharing”. Through this statement, the Hague Building Blocks rejects the globalist interpretation to the Benefit of All Principle.

The rationale for the restrictive interpretation taken by the Hague Building Blocks is to recognize “the interests of pioneer operators, assuming the early risks and burden of a novel and complex space activity”.¹⁶ Indeed, this remains the primary conflict in the Benefit of All Principle discussion, where a balance is sought between rewarding the actors who make the efforts and take on the risks on the one hand and preventing those same actors from dominating the space environment or all space-derived capabilities at the expense of non-space fairing states on the other.

This lack of clarity surrounding the Benefit of All Principle decreases the likelihood of any real growth in confidence setting in place amongst the non-government sector, as well as limiting the development of the NewSpace itself.¹⁷ Fortunately, clarity can be achieved, at least in a large part, by approaching the principle with lessons in economics.

16 de Bittencourt Neto, Olavo et al. (eds), *Building Blocks of an International Framework for the Governance of Space Resource Activities: A Commentary* (Eleven, 2020), 33.

17 Froehlich, Annette (ed.), *A Fresh View on the Outer Space Treaty* (Springer, 2018), 125-126.

4. The Economic Approach: End-Beneficiaries and Value

4.1. Consumers and End-Beneficiaries

Economic terminology (including the term “economics” itself) are seldom used in accordance with their proper, that is technical, meanings. Defining certain terms associated with economics and applying them to space activities allows decision makers, or others applying the Benefit of All Principle, to consider a novel and practical approach to its interpretation. Such an approach may alleviate the need to deal with the competing interests of commercial entities against government agendas, as well those between states themselves. An economic approach further encourages a collaborative discussion on how to benefit society generally rather than focusing on whether the implementation of the globalist or restrictive interpretation is the better way forward.

In the context of the Benefit of All Principle, an important distinction exists between the economic meaning of “consumer” and “end-beneficiary”. The former is typically used to refer to a consumer purchasing a good or service, an example being a wheat farmer who purchases a satellite-derived Internet of Things (“IoT”) system to increase efficiency of their agricultural and logistical operations. An end-beneficiary, however, is often further removed from the space capability, and from the consumer’s transaction concerning that space capability. Nevertheless, the end-beneficiary, like the consumer, benefits from the space-derived service. By the wheat farmer using the IoT system, benefit flows on to those who then gain added value when accessing wheat products such as flour, pasta and cake. The benefits in the form of greater cost cutting and quality, for example, enabled by the IoT system’s use in wheat production means consumers of wheat products have cheaper, more and a greater quality flour, pasta and cake.

Under this context, an end-beneficiary of IoT satellites are the children of a low-income parent who purchases bread at a bakery to feed those children, or the recipients of a food bank after a bakery donates bread to the foodbank. We can see here that the end beneficiary need not even make the purchase of the wheat product which was enhanced or reduced in price because of the farmers use of satellite applications. They are farther removed. Such stakeholders have no involvement in, or contribution to, the mission supporting the satellite which provides the wheat farmer’s IoT system. Neither do they receive any monetary or scientific gift from the space activity, at least not directly. Yet, their lives are improved, in some cases drastically, as they are fed cheaper, better or with more bread because of those actors who did contribute to making the satellites operational.

This reality of benefit-flow is perhaps more directly visible, but no more or less true, when considering the satellites which provide services supporting emergency management or environmental protection measures. Such examples illustrate how satellite-derived services offer society a greater value

to, for example, disaster victims (or people who do not experience a disaster because of the information from the satellite data) and communities in environmentally threatened areas. This value is not possible unless those satellites were developed, launched and operated. The value is not dependent on those satellite developers, launchers and operators sharing profits or scientific knowledge with those people or communities.

4.2. What Is Value?

The economic approach, then, brings a necessary discussion on the concept of value. As value has different meanings within economics as a discipline, it serves to firstly do away with what we do not mean by the term “value” in the context of the present paper. We do not mean the labor, sometimes referred to as cost, theory of value.¹⁸ Nor do we mean exchange, or price, value.¹⁹ In the context of an economy generally, value is represented by people acting in accordance with their personal preferences or needs, whether or not that action is to engage in a transaction with another person.²⁰

This concept of value as a means for satisfying individual, or common, preferences or needs is not evident in the “benefit sharing” approach to the Benefit of All Principle, irrespective of whether one applies the globalist or restrictive interpretation. Most of the deliberation on the principle sees “benefit” not as value but as an obligation to for space actors to actively distribute something whether or not it contributes to people satisfying their preferences or needs. By contrast, a value interpretation sees benefit as a representation of enjoyment, opportunities, security or alleviated unease experienced by individuals, organisations or communities. As part 4.1 sought to illustrate, there is ample room for further consideration on how non-space actors are better off because of the efforts of and risks taken by space actors, state and non-state alike.

The economic approach uses the concept of value to place the Benefit of All Principle in a mindset which acknowledges the advantageous realities that are brought about because of space activities. Such an approach allows decision makers to implement relevant policy more concretely and not against the preferences or needs of those in society.

A situation where recipients of bread having been donated by a bakery or an aid organisation experience value both by those with low food security who receive the bread, as well as the individuals involved in providing the bread.

18 The labor theory of value is perhaps most famously proposed by Adam Smith, *An Inquiry into the Nature and Causes of the Wealth of Nations* (1776) ch 5 and by Karl Marx, *Capital <Das Kapital>* (1867) ch 1.

19 See also, the concept of marginal utility.

20 See, e.g. Ludwig von Mises, *Human Action* (1949) ch IV pt 2 and the description of the “general expression” of value in Eugen von Böhm-Bawerk, “The Ultimate Standard of Value” (1894) *Annals of the American Academy of Political and Social Science* (5) 149-208.

In both cases, people have acted upon a decision based on their value judgments. The recipients valued eating the bread and those who provided the bread valued the task of alleviating lack of food security of those recipients.

Expressed in this way the concept of value itself is generally not novel or profound but its application to the Benefit of All Principle does provide new avenues for decision makers to give effect to that principle. The positive implications of value through this economic approach, if followed by states and international organizations are significant, which is illustrated when considering this approach when exploring the meaning of “benefit”.

5. Sharing Money or Offering Value

5.1. What Is “Benefit”?

Both the globalist and restrictive interpretations of the Benefit of All Principle discussed in part 3 above assume that space activities benefit only those who engage in those activities. Part 4 sought to make the case that when considering the meaning of value, the economic approach to applying the Benefit of All Principle unveils many end-beneficiaries of space activities who are far removed from those activities. Part 4 showed how these beneficiaries are not considered in the narrower “benefit-sharing” approach, as it does not incorporate the meaning of value. This part 5 demonstrates how the globalist and restrictive interpretations of the benefit-sharing approach dismiss those economic observations of value.

The globalist approach is paradoxically more restrictive in application than the restrictive approach, in that it only considers money as the means to give effect to the Benefit of All Principle. This is immediately a narrower scope in which to consider benefit of space activities than the value interpretation of the economic approach, the latter which shows how people experience increased value despite the space-actors sharing any money with them.

While the restrictive interpretation of the benefit-sharing approach does not consider benefit in the context of money, it nevertheless is based on the notion that those engaged in space activities are not compliant with the Benefit of All Principle unless they engage proactively, and presumably directly, with “developing countries”.²¹

Considering the meaning of benefit as value experienced by people means the Benefit of All Principle is best able to benefit society when an open playing field exists for NewSpace actors to engage in space activities and provide those products or services to an unrestricted customer-base. The reason is evident when we think about who actually experiences value from those activities. That is to ask who is “all” under the Benefit of All Principle?

²¹ Space Benefits Declaration, paragraph 1.

5.2. Who Benefits from Space Activities?

An apt starting point for a comprehensive discussion on space's benefits to humanity generally, is Olla's 2009 collection *Space Technologies for the Benefits of Human Society and Earth*.²² While international organisations certainly do not dismiss the benefits to humanity which naturally derive from space activities,²³ somewhat ironically, this perspective seems less appreciated (or, certainly less prevalent) when it comes to governments, international organizations and academics actually deliberating on the Benefit of All Principle itself. This part 5.2 seeks to address that gap in the discussion.

Rather than only looking to the immediate outputs of a space mission, that is the mission's objectives, scientific advances and any revenue or political capital which comes as a result, the economics approach to the Benefit of All Principle allows greater consideration for those in society most in need space-derived products and services. This is irrespective of whether governments, international organisations or any non-state or NewSpace space actors are aware of those groups.

Part 4 demonstrated how social good comes from many satellite services, using IoT, disaster management and environmental protection as examples. However, when it comes to space-based resources, social good is less visible, but no less present. Like any mining operation, the end-beneficiaries of resource exploration and extraction are not the customers of iron ore or lithium, for example. Many people, of high and low standards of living alike, benefit by the goods, services and opportunities those minerals produce and provide, not least steel for housing and transport and batteries for medical devices and smart phones. The benefits from space resources, as opposed to on-Earth resources are numerous and include the value experienced by scientific organisations, non-for profits, governments, universities, and all their respective stakeholders, by way of in-space operations being more efficient, reliable or cheaper.

The lack of discussion on this “flow-on” effect of value introduced in part 4 may stem from one of the distinctions between the principle as it appears in the Declaration of Legal Principles and in the Outer Space Treaty. The substantive text of the former, still being soft law, encourages the “exploration and use” of outer space be pursued for the “benefits and in the interests of all mankind”. The substantive, enforceable, text of the Outer Space Treaty seems to have clarified what “mankind” means in this context. Article I of the Outer Space Treaty retains the “exploration and use” element be for mankind but does not seek the “benefit to and in the interests of all” elements be for mankind. Rather, article I reads “. . . for the benefit and in

22 Olla, P (ed.), *Space Technologies for the Benefits of Human Society and Earth* (Springer, 2009).

23 See, UNOOSA, *Benefits of Space for Humankind* (2003), <https://www.unoosa.org/oosa/en/benefits-of-space/benefits.html>.

the interests of all countries”. A not uncommon phenomenon in law, where the change of one word can have significant consequences to its interpretation.

A “country” and a “humankind”, or a state and society, are not the same thing and each hold vastly different desires and needs. This leads to differing values and priorities and how each act in respect to their interests and to scarce resources. This is not to say a state and society are always misaligned in their desires, but the vice-versa is neither true. A state is an institution with special authority on law and many other services and has incentives which are not often present outside of state actors. By contrast a society is a collection of individuals and groups who are answerable to a state not only in space activities, through article VI of the Outer Space Treaty,²⁴ but in many other areas of human ambitions and endeavours. The interests of those in society are not always aligned with those of the state. For instance, the interests of a family, a small business or small community living in an area affected by a natural disaster, are not immediately the same as the agenda of the state under whose authority that family or community lives. In such situations, interests and incentives are usually vastly different. A pertinent question, then, is whether uses of space, and by extension the Benefit of All Principle, is intended to benefit states or intended to benefit the individuals and groups of those states. The economic approach to the Benefit of All Principle shows how both states and non-state actors are beneficiaries of space activities, thus removing any conflicting means in interpretation and application of the principle when it comes to variety of beneficiaries identifies in the space law instruments, being “all”, “humankind”, “states” and “countries”.

5.3. International Law and End-Beneficiaries

By orienting the Benefit of All Principle towards the interests of countries rather than humankind, the Outer Space Treaty refines the scope of the principle to favour states in preference over the societies under a state’s jurisdiction. A reading of the Space Benefits Declaration (see part 3.1 above), which came three decades after the Outer Space Treaty, supports this approach, the title of which also makes clear: “... for the benefit and in the interest of all states”.

It seems international space law does not prioritise end-beneficiaries in its frameworks and, by extension, does not invite, although without excluding, the economic approach to implementing the Benefit of All Principle. We can, then, identify comparatives to consider where other areas of international law

24 Article VI of the Outer Space Treaty obliges states to bear international responsibility for non-governmental entities and to require non-governmental entities to obtain authorization from the state for outer space activities.

focus on society rather than the state foremost. Perhaps the most obvious example is international human rights law.

The Universal Declaration of Human Rights was adopted by the General Assembly in 1948 following World War II in attempt to recognise equal and inalienable rights of every “human”.²⁵ Article 27 speaks explicitly about benefits, whereby “[e]veryone has the right to freely to participate in the cultural life of the community, to enjoy the arts and to share in scientific advancement and its benefits”. Here, international law has given an express right to individuals to benefit from scientific advancement. Moreover, article 27 does not restrict itself to finances or science, but to art and culture but, importantly in contrast to the international space law, the benefits of science. This is a right to enjoy those benefits, not a right to have them provided by the actors who create them, which is contrary to the more transactional “benefit-sharing” approach we see in discussion on the Benefit of All Principle.

On the other hand, the right to enjoy under the Universal Declaration of Human Rights is in line with the value interpretation of the Benefit of All Principle which considers end-beneficiaries of space activities, and does not impose an obligation on space actors to transact with non-space actors. Without using the value interpretation when implementing the Benefit of All Principle, the Human Right Declaration is more in line with economic reality and individual rights than the Outer Space Treaty.

While the Human Right Declaration is not actual law, but an instrument of soft law, there are treaty frameworks which include legally binding obligations for states to respect the rights of individuals in society, rather than for states or non-state actors to share anything with those individuals. Examples include:

- a) the European Convention on Human Rights,²⁶ (which stems from the Human rights Declaration introduced above)
- b) the International Covenant on Civil and Political Rights²⁷ and
- c) the International Covenant on Economic, Social and Cultural Rights.²⁸

Such rights-oriented frameworks establish obligations on the state to protect members of society, and not for state or non-state actors to share the benefits of their activities with society or other states. This notion is less replicated in

25 UN GA Res 217 A (III), Universal Declaration of Human Rights, 10 December 1948.

26 Council of Europe, European Convention for the Protection of Human Rights and Fundamental Freedoms, as amended by Protocols Nos. 11 and 14, 4 November 1950, ETS 5.

27 Adopted by the United Nations General Assembly on 16 December 1966.

28 Adopted by the United Nations General Assembly in 1966, entered into force on 3 January 1976.

international space law, and even explicitly reversed when it comes to the Benefit of All Principle. Albeit unlikely the intention when drafted, Article I of the Outer Space Treaty, as well as the Space Benefits Declaration decades later, places an obligation on states and non-state actors engaged in space activities to, in fact benefit one or several (other) states. By adopting the economic approach, that is to use the value interpretation, space actors remain within the scope of article 1 of both the outer Space Treaty and paragraph 1 of the Benefits Declaration when it comes to their activities being for benefit of all.

6. Conclusion

6.1. Moving forward

Froehlich²⁹ suggests that international space law generally is inadequate to deal with the challenges of NewSpace, that is non-government actors becoming increasingly greater drivers of space projects. The solution proposed by Froehlich to this challenge is to enable greater ground-up law-making on the international scene. However, the discussion in the present paper suggests the first step before embarking on any such journey is for both non-government and state actors to achieve greater alignment on the meaning of “benefit” and of “all” within the context of the Benefit of All Principle. Then any ground up law making has a defined foundation and determined parameters.

As to literature on the terminology in the Benefit of All Principle, Simpson³⁰ proposes several avenues for reaching a workable definition of “benefit”, among them include:

- a) a multilateral accord which would supplement the Outer Space Treaty or a new bi- or pluri-lateral agreement
- b) state-to-state benefit and collaborative sharing agreements and
- c) direct funds sharing or training services.

Such proposals are variations on how to give effect to the meaning of benefit following the “benefit sharing” approach and not an economic approach. Moreover, such proposals do not consider who is “all”? Does “all” mean states, or does all mean humankind? The present paper suggests the prerequisite to implementing the Benefit of All Principle is to consider those two key terms within their economics definitions, which are as follows:

29 Froehlich, Annette (ed.), *A Fresh View on the Outer Space Treaty* (Springer 2018), 125.

30 Simpson, M, “Benefit in Space Law: Principle and Pathway” *Air & Space Law* 45(2) (2020).

- a) “benefit” means the value derived from an activity, however closely or remotely related
- b) “all” means any individual or group and does not discriminate by nationality, by degree of development or between state and non-state entities.

Using these meanings has the added advantage of avoiding the imperative to consider the principles, third questions introduced in part 2.1, of who determines what is in the interests of all. That is to say, the economic approach to the Benefit of All principle renders any discussion on specific question of what is in the “interests” and who determines those interests as moot. It is the beneficiaries themselves who determine their interests under an economic approach, not any state, international organization or non-state space actor.

6.2. Closing Remarks

The Benefit of All Principle is one reason why article I of the Outer Space Treaty is one of the most discussed provisions of that instrument. Considering the principle by way of the economic implications of how NewSpace activities enable value to be experienced by those in society, and implementing it in a way which does not hinder or redirect those benefits inappropriately means the Benefit of All Principle facilitates to the following three trends simultaneously:

- a) greater standards of living
- b) increased international cooperation and
- c) incentives for using space for peaceful purposes.

Accordingly, not only does a value-focused interpretation of the Benefit of All Principle better foster benefit to all humankind, but it also better secures the remaining objectives set out in article I of the Outer Space Treaty. Importantly, this is despite any active, whether voluntarily or legally required, transactional benefit sharing upon the actors engaged in space activities. Applying the economic approach to the Benefit of All Principle allows the era of NewSpace to continue growing and for decision makers in the law and policy domains to facilitate the value from those activities to be enjoyed by society. Optimism is afoot with an important first step having already been taken. The economic approach to the Benefit of All Principle is in effect adopted by the United Nations Office of Outer Space Affairs.³¹

31 UNOOSA, *Benefits of Space for Humankind* (2003), <https://www.unoosa.org/oosa/en/benefits-of-space/benefits.html>.