

AEL 2023/03  
Academy of European Law  
European Society of International Law Paper

# WORKING PAPER

**Allocation of the radio-frequency spectrum and  
satellite orbits: Jurisprudential Perspectives\***

Georgia Eleni Exarchou



European University Institute

**Academy of European Law**

European Society of International Law

Annual Conference, Utrecht, September 2022

**Allocation of the radio-frequency spectrum and satellite orbits: Jurisprudential Perspectives\***

Georgia Eleni Exarchou

**ESIL Paper Series editors:**

Adriana Di Stefano (University of Catania)

Federica Paddeu (Queens' College, Cambridge)

Catharine Titi (CNRS-CERSA, University Paris Panthéon-Assas)

ISSN 1831-4066

© Georgia Eleni Exarchou, 2023

This work is licensed under a [Creative Commons Attribution 4.0 \(CC-BY 4.0\)](#) International license.

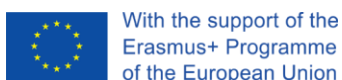
If cited or quoted, reference should be made to the full name of the author(s), editor(s), the title, the series and number, the year and the publisher.

Published in June 2023 by the European University Institute.

Badia Fiesolana, via dei Roccettini 9  
I – 50014 San Domenico di Fiesole (FI)  
Italy  
[www.eui.eu](http://www.eui.eu)

Views expressed in this publication reflect the opinion of individual author(s) and not those of the European University Institute.

This publication is available in Open Access in [Cadmus](#), the EUI Research Repository:



The European Commission supports the EUI through the European Union budget. This publication reflects the views only of the author(s), and the Commission cannot be held responsible for any use which may be made of the information contained therein.

## Academy of European Law

The Academy of European Law coordinates several important research projects and offers advanced-level courses, including the annual summer courses in human rights law and the law of the EU, resulting in an extensive publications programme. The Academy also hosts the Secretariat of the European Society of International Law (ESIL), and assists in the organization of ESIL events.

Papers presented at ESIL events in 2011-2019 can be downloaded from [SSRN](#). As of 2022, the papers are available in the EUI CADMUS Research Repository.

[More information about the Academy of European Law](#)

## European Society of International Law

The European Society of International Law (ESIL) is a dynamic network of researchers, scholars and practitioners in the field of international law. The Society's goals are to encourage the study of international law, to foster inquiry, discussion and innovation in international law, and to promote a greater understanding of the role of international law in the world today. The Secretariat of the Society has been based at the Academy of European Law since 2004 when the Society was set up.

[More information about ESIL](#)

## ESIL Paper Series

The ESIL Paper Series features papers presented at ESIL events (Annual Conferences, Research Forums, and Interest Groups events). Publication in the ESIL Paper Series enables authors to disseminate their work widely and reach broader audiences without the usual delays involved in more traditional means of publication. It does not prevent the subsequent publication of papers in academic journals or edited collections.

[More information about the ESIL Paper Series](#)

## 2023 ESIL Annual Conference, Utrecht, 1 – 3 September 2022

The 17th Annual Conference of the European Society of International Law was held in Utrecht on 1-3 September 2022. The overall theme of the conference was 'In-/Ex-clusiveness of International Law'. The 2022 Annual Conference was hosted by the Utrecht University School of Law.

[More information about the 2022 ESIL Annual Conference](#)



## **Abstract**

Outer space is the new frontier for humankind. Its utilization depends on two distinct natural resources, the radio-frequency spectrum and the orbits around the Earth. The rapid advancement of technology in these fields simultaneously necessitates the introspection of principles upon which international law is construed. As the international policy and law makers face the future for the exploration of outer space and the capabilities of the radio spectrum, some conflicting considerations arise that can be scrutinized through the lens of jurisprudence. This paper discusses the allocation and distribution of those scarce natural resources between developed and developing countries, currently in the hands of international organizations, mainly the International Telecommunication Union. It critically reflects upon the in/exclusiveness of international law and the potential unequal relationships between developed and developing nations while managing some of the Global Commons. It examines the established practices from two neighbouring schools of thought and around two central concepts, fairness and efficiency.

## **Keywords**

Commons, TWAIL, ITU, radio frequencies, law and economics, equity, efficiency

## **Author Information**

Georgia Eleni (Giolena) Exarchou is currently working at BODENHEIMER, an international arbitration law firm in Germany and is admitted to practice law in Greece. She graduated from the international and comparative law program at The George Washington University Law School where she completed her Master of Laws with highest honors as a Fulbright and a Thomas Buerghenthal Scholar. She further holds a first degree in Greek law from the University of Athens, a minor in Economics from the American College of Greece and a certificate in Transnational law from the University of Geneva.  
gexarchou96@law.gwu.edu

**Table of Contents**

Introduction ..... 1  
1. Preliminary Remarks ..... 2  
2. A Law and Economics Approach and the Notion of Efficiency ..... 4  
3. TWAIL and the Notion of Equity ..... 8  
4. The Dialogue between the two schools of thought as an Epilogue ..... 15

**Introduction**

Outer space is the new frontier for humankind. Its utilization depends among others on two distinct natural resources: the radio-frequency spectrum and the orbits around the Earth. Radio-waves being part of the continuum of the electromagnetic spectrum allow the transmission of data, whereas the positioning of satellites that grant unmeasurable benefits to the countries capable to construct and operate them requires both the use of orbital slots and of radio frequencies.<sup>1</sup>

The rapid advancement of technology in these fields necessitates simultaneously the introspection of law and public policy matters. The allocation and distribution of those scarce natural resources between developed and developing countries, currently in the hands of international organizations, mainly the International Telecommunication Union<sup>2</sup> (hereinafter ITU), has a major philosophical significance as the established practices, mainly the “first come, first served” rule can be examined from two neighbouring schools of thought revolving around two central concepts: equity and efficiency.

A preliminary literature search on the topic revealed just a few attempts to reconcile the main rule of the economic analysis of law around efficiency with the notion of equity, particularly developed as a canon of critical legal scholarship by the movement known as Third World Approaches to International Law (hereinafter TWAIL).<sup>3</sup>

The present paper begins with some preliminary and definitional remarks to set the stage for the normative analysis that follows. The second part of the paper is devoted to a Law and Economics approach applied to the allocation of scarce space resources with the goal of

---

\* The opinions expressed in this paper are those of the author solely.  
\* The author would like to express her deepest appreciation to Ralph G. Steinhardt, Lobingier Professor of Comparative Law and Jurisprudence at GW Law for his feedback and guidance during the early preparation of this paper.  
<sup>1</sup> Apart from the telecommunications sector, satellites are used in an immense variety of services including but not limited to maritime communications, earth observation, aviation security, national security and defence.  
<sup>2</sup> International Telecommunications Union, see <https://www.itu.int/en/Pages/default.aspx>.  
<sup>3</sup> TWAIL supporters stress *inter alia* the limited geography of places and ideas with respect to international law. See James Thuo Gathii, *The Promise of International Law: A Third World View* (2020).

efficiency. The third part will then shift to TWAIL, focusing on the notion of equity and the importance of the principle of equitable access for developing countries as a prerequisite to their economic advancement and gradually freedom. The conclusions will be drawn upon the synthesis or antithesis of the two schools of thoughts and the normative role for international law today.

## 1. Preliminary Remarks

The ITU is an intergovernmental organization with the goal of ensuring the rational, equitable, efficient and economic use of the radio frequency spectrum by all radiocommunication services. Through its Radiocommunication Bureau<sup>4</sup> frequency assignments are registered after notification by national administrations.<sup>5</sup> Under the ITU complex regulatory regime, the world is divided in three regions,<sup>6</sup> each having different spectrum allocation tables. The role of the ITU is mainly focused on technical and legal aspects,<sup>7</sup> whereas issues of sovereignty and interference are mainly dealt within the UNCOPUOS (the United Nations Committee on the Peaceful Uses of Outer Space)<sup>8</sup> and the United Nations General Assembly.

---

<sup>4</sup> The ITU has a complex governance scheme promoting the cooperation between governments and the private sector through a unique process.

<sup>5</sup> It is important to note that the management of the radio frequency spectrum at the international level regulated currently by the ITU is distinct from the management at the national level. The ITU encourages countries to give “recognition to the radio spectrum as a national resource and the need to govern it in the interest of all citizens”. See Daavid Panhans et al., *The Coming Battle for Spectrum*, BCG (Feb. 11, 2020), <https://www.bcg.com/publications/2020/coming-battle-for-spectrum>. The approaches adopted at the domestic level are trichotomous. In their search to apply the optimal regulatory regime most countries have developed the administrative approach of “command and control”. In debates about radio spectrum policy reforms, two alternative systems have been supported. First, a liberalizing spectrum trading system as a secondary market of exclusive licenses that can be traded and end up to the users with the highest valuation of the spectrum. This idea originated from Coase supporting that the spectrum should be treated in a way similar to property rights in a bidding system with auctions (taking into account though that if the transaction costs between the market players are high enough they would decrease the trading). Auctions have been criticized though, as they could exacerbate parity of access disputes between developed and developing countries. See Bob Frieden, *Balancing Equity and Efficiency Issues in the Management of Shared Global Radiocommunication Resources* (2014) at 6. The second approach is that of a “spectrum common” approach led by technical innovation, as a non-exclusive utilization of the spectrum.

<sup>6</sup> Region One (Europe, Middle East and Africa), Region Two (the Americas), Region Three (Asia and Australia). See Audrey L. Allison, *17 THE ITU AND MANAGING SATELLITE ORBITAL AND SPECTRUM RESOURCES IN THE 21ST CENTURY* (2014).

<sup>7</sup> See also Article I of the ITU Constitution. For definitional clarity on the terms used, it is noted that allocation signifies the distribution of frequencies for services, allotment the distribution of frequencies or orbital slots to countries and assignment the distribution of frequencies to radio stations.

<sup>8</sup> United Nations Office for Outer Space Affairs, Committee on the Peaceful Uses of Outer Space, see <https://www.unoosa.org/oosa/en/ourwork/copuos/index.html>.



The main task of the ITU is stipulated in Article 44(2) of its Constitution which reads as follows:<sup>9</sup>

in using frequency bands for radio services, member states shall bear in mind that radio frequencies and any associated orbits, including the geostationary satellite orbit,<sup>10</sup> are *limited natural* resources and that they must be used *rationally, effectively and economically* in conformity with the provisions of the Radio Regulations, so that countries or groups of countries may have *equitable access* to those orbits and frequencies, taking into account the *special needs* of the developing countries and the geographical situation of particular countries.<sup>11</sup>

Given that radio frequencies and satellite orbits are limited natural resources, said article stipulates the two major, but not necessarily compatible, principles that govern the use and regulation of radio frequencies and orbits: rationality, efficiency, and economy on one hand and on the other hand, consideration for the special needs of the developing countries and the geographical situation of particular states to promote equitable access to the resources.

From the first Administrative Radio Conference in 1963<sup>12</sup> to the most recent World Radio Conference (WRC) in 2019,<sup>13</sup> the ITU addresses the regulation of spectrum/orbit usage. The rule of article 44 has been further elaborated on a series of expansive technical provisions in the Radio Regulations which is a binding international treaty updated regularly in the WRCs.<sup>14</sup>

The existing regulations applying to the use of frequencies and orbits by satellite networks are based today on two major mechanisms: first, the *a priori* planning procedures (in Appendices 30B for fixed satellite services and 30A for broadcast satellite services) and second, the *coordination* procedure based on advance publication to the Radiocommunication Bureau of the ITU, coordination (where required) with potentially affected networks and notification (Radio Regulations Articles 9 and 11).<sup>15</sup>

The coordination procedure, or “the first come, first served” rule focuses on the actual usage of the orbits/frequencies.<sup>16</sup> *A contrario*, under the planning approach that has been supported by developing countries and was adopted in the World Administrative Radio Conference (WARC) of 1985, plans are made for future use and orbital slots may be reserved by all

---

<sup>9</sup> Constitution and Convention of the International Telecommunication Union, 1825 U.N.T.S. 331/1825 U.N.T.S. 390, adopted on 22 December 1992, entered into force on 1 July 1994.

<sup>10</sup> GEO is a circular orbit located almost 35,800 kilometres above the earth’s equator. For a “legal geography” of the GEO see Christy Collis, *The geostationary orbit: a critical legal geography of space’s most valuable real estate*, 57 THE SOCIOLOGICAL REV. 47 (2009).

<sup>11</sup> Emphasis added. It is interesting to observe that throughout the drafting history of those instruments the text has changed. The previous edition mentioned the “needs and technical facilities at their disposal” making the use of the resources dependent upon the “readiness of technical facilities of countries” and “demonstrated needs”. These wordings have now been abandoned and the readiness or needs of the countries are no longer prerequisites.

<sup>12</sup> Extraordinary Administrative Radio Conference to allocate frequency bands for space radiocommunication purposes (Geneva, 1963), see <https://www.itu.int/en/history/Pages/RadioConferences.aspx?conf=4.89>.

<sup>13</sup> World Radiocommunication Conference 2019 (WRC-19); Sharm el-Sheikh, Egypt, 28 October to 22 November 2019, see <https://www.itu.int/en/ITU-R/conferences/wrc/2019/Pages/default.aspx>.

<sup>14</sup> Radio Regulations Articles, Edition of 2020, see <https://www.itu.int/pub/R-REG-RR>. See Article 4 para. 3 of the ITU Constitution.

<sup>15</sup> ITU Radio Regulatory Framework for Space Activities, available at [https://www.itu.int/en/ITU-R/space/snl/Documents/ITU-Space\\_reg.pdf](https://www.itu.int/en/ITU-R/space/snl/Documents/ITU-Space_reg.pdf)

<sup>16</sup> *Infra* note 25, Zannoni at 689.

countries on a system of predetermined orbital positions and frequencies.<sup>17</sup> However, it has been observed that allotment resembles a right of coordination priority, because the actual position and frequency is available on the basis of the “first come, first served rule” and only upon notification the “allotment plan becomes a factor in the distribution process”.<sup>18</sup> So, the planning procedure does not provide an orbital slot registration or a legal right, but a “nominal” orbital slot.<sup>19</sup>

The system in place is a combination of the *a priori* and *a posteriori* procedures.<sup>20</sup> It is a “dual approach, with allotment planning for certain bands and planning through improved procedures for certain other bands”.<sup>21</sup> A state may file a request to obtain the allotment of frequencies and with the successful registration procedure with the Master International Frequency Register,<sup>22</sup> the use of the frequencies by the specific network/station gets international recognition.<sup>23</sup> The state that registers first within the ITU, has, no legal obligation to accommodate the frequency usage for late comer states<sup>24</sup> (only in a spirit of mutual cooperation to facilitate the entry of the newcomer),<sup>25</sup> but the other administrations shall consider previous frequency assignments when making their own to avoid harmful interference. Such a practice could be considered as a *de facto* appropriation of the space orbit resource,<sup>26</sup> as notification gives legitimacy and preferential treatment to the early registrants.<sup>27</sup> At the same time, each state has the right to claim at least one position on every orbit for future activities (despite its economic, financial or scientific power).<sup>28</sup> Today, the regulatory regime which for some services is based on an *a priori* planning to guarantee equitable access for future use, has marked the shift from the initially dominant *a posteriori* rule.<sup>29</sup>

Having explained the main ITU mechanism, the following sections will proceed with a critical review of those rules by the two neighbouring schools of thought, Law and Economics and TWAIL.

## 2. A Law and Economics Approach and the Notion of Efficiency

Contrary to its widely accepted use in other areas of law (like antitrust, property, or torts) arguments stemming from the economic analysis of law are nascent in the field of public

---

<sup>17</sup> Under this system: “each country has a predetermined GSO orbital position associated with the free use at any time of a certain amount of frequency spectrum”, *Supra* note 16 at 2.

<sup>18</sup> *Supra* note 6, Frieden at 11, footnote 18.

<sup>19</sup> *Supra* note 6, Frieden at 20.

<sup>20</sup> Dunk Frans G. von der and Fabio Tronchetti, 801 HANDBOOK OF SPACE LAW (2015).

<sup>21</sup> Richard E. Butler, *ORB (1): Guaranteeing Equitable Access to the Orbit. Editorial*, 52 TELECOMMUNICATION JOURNAL 589 (1985).

<sup>22</sup> Under Article 11 of the Radio Regulations, frequencies become internationally recognized and enjoy protection against interference.

<sup>23</sup> *Supra* note 16 at 4.

<sup>24</sup> Diego Zannoni, *The Radio-Spectrum: International Regulation and Current Challenges*, 40 ANNALS AIR & SPACE L. 679 (2015).

<sup>25</sup> *Supra* note 16 at 8.

<sup>26</sup> Jung, Joon-Sik and Hwang, Ho-Won, *A Review Essay on Legal Mechanisms for Orbital Slot Allocation* 204, 209 (2014).

<sup>27</sup> *Supra* note 6, Frieden at 3.

<sup>28</sup> *Infra* note 106, Schladebach at 259.

<sup>29</sup> Stephen Hobe, 146 SPACE LAW (2019): An incident of abuse of the “first come, first served” rule was the case for TONGASAT in 1987 when Tonga claimed priority rights over free orbital positions and leased them to the highest bidders.

international law. Law and Economics, however, favouring the application of economic tools and methods into the legal analysis and prescribing the methods to maximize what a society values by a *lex ferenda* approach<sup>30</sup> could add empiricism in international law and guidance to the “institutional choice” problem.<sup>31</sup>

In the centre of every economic problem lies the ultimate question of how to allocate limited resources to satisfy unlimited human wants and the answer is found around the concept of efficiency as a fundamental rule of economics.<sup>32</sup> Efficiency as a multidimensional concept based on the context used will have different meanings in micro or macroeconomic analysis (on the objectives of the fiscal or monetary policies for instance as for tax distribution purposes and so on). In a rather simplified, but not simplistic way, efficiency for most economists is achieved when the potential of private actors is unleashed and the market and price systems determine the equilibrium level.<sup>33</sup>

The first difficulty one should supersede when trying to apply economic analysis to international law is its suitability and appropriateness for that level of analysis. For instance, economic theories usually begin by the assumption of the *homo economicus*, that is the individual, who rationally acts on self-interest grounds.<sup>34</sup> Even the very acceptance of rationality is doubted as seen by Adam Smith’s *theory on moral sentiments* indicating that individuals apart from maximizing their utility have other motives such as altruism, fairness, or morality that ultimately affect their behaviours.<sup>35</sup>

Could the same stand true with respect to states? It seems that the assumption of states being rational utility maximisers is less acceptable as social choice theory and public choice suggest.<sup>36</sup> States seem to act like self-regarding units; sometimes though, they trade their autonomy to get some benefits by relinquishing parts of their sovereignty. The assumption that states are self-interested, rational actors is a unquestionably a provocative one.

Efficiency at an international level would require the maximization of the utility of states by driving innovation, investments and economic growth through the use of the resources. The employment of market mechanisms to achieve economic efficiency defined by economists as the “Pareto optimality” is the situation where the utility of one person cannot be raised without reducing the utility of someone else: the distribution of resources is allocatively efficient when they cannot be redistributed without making certain people worse off.<sup>37</sup> This could hold true for states; however, it would raise the problem of the interstate comparison of utility. In the context of the ITU, the efficient, rational and cost-effective utilization of the frequency/orbit resources was manifested *via* the “first come, first served” procedure (coordination before use) based on the *actual* usage of the resources once some basic requirements are fulfilled. If applied correctly this rule offers indeed efficient management in the present, but the fears for

---

<sup>30</sup> Joel P. Trachtman, *The Methodology of Law and Economics in International Law*, 6 INT’L L.F. D. INT’L 67 (2004).

<sup>31</sup> Jeffrey L. Dunoff & Joel P. Trachtman, *Economic Analysis of International Law*, 24 YALE J. INT’L L. 1,4 (1999).

<sup>32</sup> *Infra* note 134, Savage at 2.

<sup>33</sup> *Infra* note 38, Cooter and Ulen at 38.

<sup>34</sup> *Infra* note 134, Savage at 2.

<sup>35</sup> Adam Smith, 9 THE THEORY OF MORALS SENTIMENTS (1790).

<sup>36</sup> See Guzman’s critique on the national interests of states which do not have rationality of their own. *Supra* note 32, *Trachtman* at 20.

<sup>37</sup> Robert Cooter & Thoman Ulen, 14 LAW AND ECONOMICS (2016).

progressive exploitation, the likelihood of saturation of the geostationary satellite orbit and the pre-emption of the orbital positions by advanced nations still remain.

Looking at the nature of those resources, radio frequencies and orbital slots have an international character, they cannot be depleted, but can be degraded as a result of pollution and congestion.<sup>38</sup> They cannot be referred to as “public goods” in the sense that as of the current state of technology they are rivalrous<sup>39</sup> (but in the future this might change). The geostationary orbit and the frequencies are also limited as they can accommodate a maximum number of satellites. This scarcity with regards to outer space has mainly technical aspects (for instance different bandwidth requirements can be used for different types of transmissions or particular slots are suitable for particular regions). The use of the radiofrequency spectrum and of the orbital slots also manifests the issue of negative externalities, namely costs imposed on third parties. Typical examples include the overcrowding, the collisions between satellites in the same orbit, harmful interference from late-comers and the environmental degradation of the space environment by the accumulation of space debris.<sup>40</sup> These interference externalities reduce the ability of the markets to work efficiently.

In these types of resources, a recurring legal argument central to communal property systems and applied by scholars in the spectrum usage as well is the “tragedy of the commons” problem. This theory states that an open access resource will be depleted as a result of overuse. In the words of its creator: “Therein is the tragedy. Ruin is the destination towards which all men rush, each pursuing his own best interest. Freedom in the commons brings ruin to all.”<sup>41</sup> The inefficient overconsumption will ultimately provoke the exhaustion of the resource showing the detrimental effect of unregulated access when agents benefit by exploiting to the maximum the common resource while the cost is spread-out over-all users.<sup>42</sup> This problem of overuse of the global commons has further been attributed to “states abusing their sovereign privilege”.<sup>43</sup>

To overcome this problem, there are many proponents for the application of market-based approaches to the use of the spectrum. However, it is “bad” economics to assume superiority

---

<sup>38</sup> Harvey J. Levin, *The Radio Spectrum Resource*, 11 J. L. & ECON. 433, 447 (1968).

<sup>39</sup> A public good can create market failures and has two main characteristics being non-rivalrous and non-excludable. A commodity has non-rivalrous consumption, when the consumption of the public good by one state -if we apply the concept for the subjects of international law- does not leave less for the other. The second characteristic is that of non-excludability as public goods are too costly to exclude others from enjoying the same goods. See *Supra* note 38. Also, see Daniel Bodansky, *What's in a Concept? Global Public Goods, International Law, and Legitimacy*, 23 THE EUROPEAN JOURNAL OF INTERNATIONAL LAW, 651, 652 (2012).

<sup>40</sup> Sarah Anne Hook, *Allocation of the Radio Spectrum: Is the Sky the Limit*, 3 IND. INT'L & COMP. L. REV. 319 (1993).

<sup>41</sup> Garrett Hardin, *The Tragedy of the Commons*, 162 *Science* 1243 (1968). Carol Rose in her paper *The Custom, Commerce, and Inherently Public Property*, 53 THE UNIVERSITY OF CHICAGO LAW REVIEW 711 (1986) explored the 'opposite' idea: that access to public resources creates positive externalities, benefits for all users. On page 768, one reads: “this is the reverse of the “tragedy of the commons”: it is a “comedy of the commons,” as is so felicitously expressed in the phrase, “the more the merrier.”

<sup>42</sup> With regards the commons, there are additional applications of Law and Economics such as the free rider problem in commons and the prisoner's dilemma: as long as benefits outweigh the costs, rational users acting in their self-interest will ignore future gains and continue exploitation in Erin A. Clancy, *The Tragedy of the Global Commons*, 5 IND. J. GLOBAL LEGAL STUD. 601, 604 (1998).

<sup>43</sup> Petra Gümplöva, *Normative View of Natural Resources- Global Redistribution or Human Rights-Based Approach?*, 22 HUMAN RIGHTS REVIEW 155, 168 (2021).

of the markets to bureaucratic allocation as the results are always empirical.<sup>44</sup> The market-based argument relies on the fact that in absence of property rights in outer space the congestion on the geosynchronous orbit which is already crowded will be worsened. If an international spectrum market was created to avoid the pricing out of less affluent states which have a right to share the spectrum value, the redefinition of the rights would be necessary to enable the leasing to other states without forcing the owner state to use its slots directly.<sup>45</sup> Thereby, a secondary market would be allowed after the initial allocation of the resources by the ITU.<sup>46</sup> But, this depends on the initial distribution of the slots and whether considerations of equity are involved in the process. Why such a market driven solution has not been implemented yet can also be explained by economic terms. Economic theory would suggest that transaction costs (the costs of negotiations between states, the costs for monitoring or policing the system) are so high hampering the establishment of private or common ownership of the resources. Having compared the spectrum to real estate, it has been supported that the system of property rights outperforms administrative allocation of the resources and the problems of scarcity constraints are allocated efficiently through the price system.<sup>47</sup> This is the solution proposed by economists to avoid the *abusus* of a congested resource, establishing ownership of the resource as a method of restricting access. At least in the domestic level the voices claiming for the establishment of property rights as a tool to coordinate the productive use of economic resources and which, although being costly to be defined in a society, have many social benefits are being multiplied.<sup>48</sup> This free exchange is said to promote efficiency as the resources will end up in the hands of those that value them the most.<sup>49</sup> The radio frequency spectrum and the orbits are scarce global resources that for the time being remain beyond the control or ownership of states; that is why they require international management, with the ITU having undertaken this mandate.

While developing nations are reasonably asking for *a priori* solutions, the counterargument supported by many developed nations is that technology itself will be the catalyst; as technology improves, the use of the spectrum and of orbital slots will be further expanded allowing the developing countries that are in real need of those resources to eventually use them. This is already the case, as technology improvements have *inter alia* reduced satellite spacing (the distance needed for satellites to be operated without interferences problems).<sup>50</sup> A further solution could be that spectrum conservation technologies are imposed as an affirmative duty upon developed nations.<sup>51</sup> As far as market driven solutions are concerned, though, it has been argued that developing nations have more to lose from a commercialized

---

<sup>44</sup> *Supra* note 31, Trachtman at 67.

<sup>45</sup> Harvey J. Levin, *Spectrum Allocation without Market*, 5 J. REPRINTS ANTITRUST L. & ECON. 553 (1973).

<sup>46</sup> Such a secondary market for orbital rights seems to exist both for developed and developing nations showing the (inevitable?) commercialization of outer space.

<sup>47</sup> "Land, labor and capital are all scarce, but thus, of itself, does not call for government regulation" in R.H Coase, *The Federal Communications Commission*, 2 THE JOURNAL OF LAW & ECONOMICS 14 (1959).

<sup>48</sup> Thomas W. Hazlett, *A Law & (and) Economics Approach to Spectrum Property Rights: A Response to Weiser and Hatfield*, 15 GEO. MASON L. REV. 975, 977 (2008).

<sup>49</sup> *Infra* note 86, Scheraga at 896.

<sup>50</sup> Mark Holmes, *Hot Orbital Slots: Is There Anything Left?* (March, 2008), see <https://www.satellitetoday.com/uncategorized/2008/03/01/hot-orbital-slots-is-there-anything-left/>.

<sup>51</sup> *Supra* note 6, Frieden at 41.

market,<sup>52</sup> and as such the efficiency argument reinforces the injustices against the Global South.

### 3. TWAIL and the Notion of Equity

The very structure of international law is based upon the axiomatic premise of sovereign equality.<sup>53</sup> This *Grundnorm* of the system is juridical and does not presuppose or lead to substantive equality. Corollary to sovereign equality is equity as a wider notion relating to the ideas of fairness and justice. As states are sovereign equal<sup>54</sup> for areas beyond national jurisdiction, the method of allocation of the available resources should be that of equitable sharing as equity dictates the common resources to belong *ab initio* to all states. This is justified by the facts that the natural resources are finite and exist without human or state interference, and a common ownership regime would mean that no one has a prior claim.<sup>55</sup>

Starting from the undisputed fact that countries today are in a state of considerable communicative inequality and in disparity in economic or political terms,<sup>56</sup> there have been worldwide demands for a new era of freedom of information. It has been calculated that ten percent of the world's population controls today almost 90 percent of the spectrum indicating the gross inequalities in the distribution of the radio frequencies between developed and developing countries.<sup>57</sup>

This uneven participation in ICT (information and communication technology) widens inequality in the development status<sup>58</sup> and enlarges the gap in the everlasting conflict between the North and the South. The "spectrum divide" and the unavailability of spectrum to different parties on equal terms leads to a digital divide between the rich and the poor and impacts adversely the living conditions of the latter.<sup>59</sup>

To understand the problem, TWAIL provide an alternative narrative for international law. As a critical school of jurisprudence<sup>60</sup> it pinpoints the present weaknesses of the international legal order and advocates for a just universal system that should compensate for the inequalities of the past. Under a TWAIL critique, third world nations remain in continuous western guidance,<sup>61</sup> while a new world order should be established to bring new economic relations providing simultaneously a remedy for past deprivations and injustices. According to TWAIL, this New

---

<sup>52</sup> *Id.*, Frieden at 9.

<sup>53</sup> Juliane Kokott, *States, Sovereign Equality* in MAX PLANCK ENCYCLOPEDIA OF PUBLIC INTERNATIONAL LAW para. 1 (Rüdiger Wolfrum ed., 2010).

<sup>54</sup> U.N Charter, art. 2 para. 1: "The Organization is based on the principle of the sovereign equality of all its Members."

<sup>55</sup> For the idea of the common ownership of the Earth and each human's "equal moral entitlement" to it see *infra* note 80, Boonen at 135 and 136.

<sup>56</sup> *Infra* note 62, Lung at 354.

<sup>57</sup> Fakhra Naveed, *New World Information and Communication Order*, MASS COMMUNICATION TALK, (Nov.16,2020). <https://www.masscommunicationtalk.com/new-world-information-and-communication-order.html> (last visited Apr. 26, 2021).

<sup>58</sup> The notion of development has been itself criticized though as being the "trojan horse" in TWAIL. *Infra* note 64, Chimni at 18.

<sup>59</sup> *Supra* note 6, Frieden at footnotes 8 and 12.

<sup>60</sup> There has been a critique for the term "third world" as being anachronistic today. *Infra* note 64, Chimni at 4.

<sup>61</sup> Lung Chu Chen, 115 AN INTRODUCTION TO CONTEMPORARY INTERNATIONAL LAW: A POLICY ORIENTED PERSPECTIVE (2015).

World Economic Order (NWEO) shall be based on equity, sovereignty, independence and cooperation for the common interests of states<sup>62</sup> to eliminate the asymmetries between developed and developing countries. TWAIL criticize international law in its role of legitimizing and sustaining the unequal processes and structures between the developed and developing countries after the globalization process to achieve neo-liberal goals.<sup>63</sup> In that context, the goal of the TWAIL movement is the recreation of a world order based on social justice by understanding first and reforming then the current global governance system. TWAIL as “anti-hierarchical, counterhegemonic and suspicious of international creeds and truths”<sup>64</sup> put forward proposals to address the global inequalities. With respect to environmental issues, TWAIL emphasize the fair sharing of natural resources outside sovereign territories.<sup>65</sup>

Under the perception for a NWEO, the demand for a New World Information and Communication Order (NWICO) emerged<sup>66</sup> or a democratization of the international communication system. This would entail “normative restructuring schemes,”<sup>67</sup> the rebalance of informational flows worldwide, and “the strengthening of national media and the lessening of dependence on external news sources.”<sup>68</sup> The demands for a NWEO to sustain a NWICO is not a mere rhetoric, but the only way to build the bridges between the Global North and South. Having strong elements of revolutionary praxis,<sup>69</sup> TWAIL support the change in the international law-making process, which currently perceives third states are “recipients, not participants,”<sup>70</sup> as the persistence of unequal economic and power relations instituted by colonialism are still present in the contemporary international law and institutions.<sup>71</sup>

Turning now to the notion of equity, TWAIL argues that the third world deserves the same rights or benefits of first world states beyond formal equality<sup>72</sup> as the only reliable way to protect states from being in disadvantaged positions or to be discriminated against. Equity becomes particularly important in the discussion about the Global Commons, because developed and developing nations disagree as to the fairness of the existing international economic and natural resources system and the appropriate values underlying this structure; and equity as a polymorphous concept might mean “equality, need, historic entitlement, capacity, degree of contribution”.<sup>73</sup>

---

<sup>62</sup> Aditiya Swarup Singh, *Third World Approach to International Law*, 5 INTERNATIONAL JOURNAL OF LAW 1, 3 (2019).

<sup>63</sup> B.S Chimni, *Third World Approaches to International Law: A Manifesto*, 8 INTERNATIONAL COMMUNITY LAW REV. (2006)

<sup>64</sup> Makau W. Mutua, *What Is TWAIL?*, 94 PROCEEDINGS OF THE ASIL ANN. MEETING 31 (2000).

<sup>65</sup> Usha, Nararajan, *TWAIL and the Environment: The State of Nature, the Nature of the State, and the Arab Spring*, 14 OREGON REVIEW OF INTERNATIONAL LAW, 177, 182 (2012).

<sup>66</sup> UNESCO, Director General, Study of Communication Problems, Implementation of Resolutions 4/19 and 4/20 adopted by the General Conference at its Twenty-First Session (1980); G.A Res. A/RES/3201(S-VI), Declaration on the Establishment of a New International Economic Order (1974).

<sup>67</sup> *Supra* note 6, Frieden at 16, footnote 27.

<sup>68</sup> Francis Lyall and Paul B. Larsen, 262 SPACE LAW: A TREATISE (2009).

<sup>69</sup> Owen Taylor, 116 INTERNATIONAL LAW AND REVOLUTION (2019).

<sup>70</sup> *Supra* note 65, Makau at 35.

<sup>71</sup> Michael Riegner Gieben, *How universal are international law and development? Engaging with postcolonial and Third World scholarship from the perspective of its Other*, 45 VERFASSUNG UND RECHT IN ÜBERSEE 232, 233 (2012).

<sup>72</sup> Larissa Ramina, *Framing the Concept of TWAIL: Third World Approaches to International Law*, 32 REV. JUST. DIREITO 5 at 10 (2018).

<sup>73</sup> Richard B. Bilder, *International Law and Natural Resources Policies*, 20 NAT. RESOURCES J. 451, 466-467 (1980).

In this sense, for TWAIL areas called Global Commons<sup>74</sup> as “common property” or areas of “common concern”<sup>75</sup> should be used as a means of growth for the benefit of all states and for them to have equal opportunities. Contrary to this idea of equity, however, one of the roles of international law today is the direct regulation of property rights through their internationalization (specification, articulation and enforcement *via* international law).<sup>76</sup> An inevitable part of this process is the “metamorphosis” of the areas of “common heritage of mankind” in a system of corporate property rights.<sup>77</sup>

Global commons areas, thus, highlight the problem of collective action on the basis of global resources’ regulation.<sup>78</sup> The concept of “fairness” that TWAIL demands can be viewed *lato sensu* as classical political philosophers sensed it.<sup>79</sup> Examining the “first come, first served principle” as an ITU rule, three restrictions can be pointed out that question its moral neutrality and prove that it does affect the fairness or unfairness of the outcome.

First, under the view of John Lock, the first person (for the purposes of our analysis, state) that reaches *terra nullius*, has a claim on it, only when there is “enough, and as good, left in common for others”.<sup>80</sup> The radio frequencies and the orbital slots, however, although they cannot be depleted, can be congested and rendered useless for future use.<sup>81</sup>

Second, this priority claim should not worsen the situation of others by depriving them of something they would otherwise possess. This is an inherent characteristic of scarce resources as by applying this rule the first comers will not leave enough for the latecomers.<sup>82</sup>

Third and most importantly, linked to the observations made by TWAIL, states do not begin from the same starting position, so the central ethical consideration is the initial allocation of wealth.<sup>83</sup> Indeed, in terms of the global resources “developing countries had the most to lose from starting out late in the development process”.<sup>84</sup>

Today the price of an orbital slot at the international level is closely to zero, so the entry fee is free.<sup>85</sup> If the allocation of frequencies and orbits amounts to a “race to space”, then developed

---

<sup>74</sup> The High Seas, the Atmosphere, the Antarctic and Outer Space are all examples of the Global Commons. Global Commons refer to physical spaces (and their natural resources) over which no single nation has a generally recognized exclusive jurisdiction. See Wijkman, M., *Managing the Global Commons*, 36 INTERNATIONAL ORGANIZATIONS, 511–536 (1982).

<sup>75</sup> *Supra* note 40, Bodansky at 654.

<sup>76</sup> B.S. Chimni, *Capitalism, Imperialism, and International Law in the Twentieth-First Century*, 14 OREGON REVIEW OF INTERNATIONAL LAW 17, 29 (2012). See also *Supra* note 6, Frieden at 8-9 citing the proposal of Lawrence J. White that “treaties between governments would extend the property rights system described in this paper into the international realm”.

<sup>77</sup> *Supra* note 64, Chimni at 9.

<sup>78</sup> Surabhi Ranganathan, *Global Commons*, 27 THE EUROPEAN JOURNAL OF INTERNATIONAL LAW 693 (2016).

<sup>79</sup> Christiaan Boonen and Nicolas Brando, *Revisiting the Common Ownership of the Earth: A democratic Critique of Global Distributive Justice Theories*, 9 Global Justice: Theory, Practice, Rhetoric 134 (2016)

<sup>80</sup> John Locke, 18 SECOND TREATISE OF GOVERNMENT: AN ESSAY CONCERNING THE TRUE ORIGINAL, EXTENT AND END OF CIVIL GOVERNMENT (Richard H. Cox ed., 2014).

<sup>81</sup> Joseph W. Gangestad, 2 ORBITAL SLOTS FOR EVERYONE? (2017).

<sup>82</sup> Robert Nozick, 175-182 ANARCHY STATE AND UTOPIA (1974).

<sup>83</sup> *Infra* note 86, Scheraga at 899.

<sup>84</sup> *Infra* note 100, Schrijver at 1260.

<sup>85</sup> Joel D. Scheraga, *Establishing Property Rights in Outer Space*, 6 CATO JOURNAL 889, 893 (1987). [https://www.nyulawglobal.org/globalex/Paper\\_satellites\\_free\\_use\\_outer\\_space1.html#MeasuresTakenbytheITU](https://www.nyulawglobal.org/globalex/Paper_satellites_free_use_outer_space1.html#MeasuresTakenbytheITU)



and industrialized countries receive those resources first based on their economic and scientific superiority and thus leaving only limited access to space for the third world. Therefore, the equitable access of the space resources as seen in the ITU system is simply an obligation *ad negotiandum* in good faith for states to equitably share the available frequencies among them,<sup>86</sup> but lacks practical significance in reality.

Equity or fairness though are not one-dimensional concepts. In the greater sphere of international law, equity, has also its unique place on what is fair and right. Equitable principles have emerged in the rules of distribution<sup>87</sup> and international courts and tribunals have often utilized the principle of equity.<sup>88</sup> The International Court of Justice (which has also the power, if the parties agree, to decide a case under article 38 para. 2 of its Statute *ex aequo et bono*, applying ideas of equity), has observed that the “equitableness of a principle must be assessed in the light of its usefulness for the purpose of arriving at an equitable result”,<sup>89</sup> and affirmed that “equity as a legal concept is a direct emanation of the idea of justice (...) the legal concept of equity is a general principle applicable as law.”<sup>90</sup>

Another important aspect for equity with regards to the distribution of natural resources is its intertemporal dimension expressed through the notion of intergenerational equity (as a dynamic concept).<sup>91</sup> This essentially means to avoid the waste of resources and consider the interests of future generations that shall be respected when making use of the global commons, paving the way to sustainable development and promoting intergenerational wellbeing.

In a quest to understand equity, one could argue, with regards to states perceived as subjects of the global system and unitary agents, for the transferability of notions of egalitarianism; this is tricky and unsuccessful as states are large political units, dynamic groups that have their unique “personal” attributes: population, territory and government.<sup>92</sup> Based on these essential components, special circumstances should be taken into account in allocating the available resources implying thereby that equity to some extent endorses inequality. Inevitably, claiming that states should have equitable access as to an equal number of orbits or frequencies would be an oversimplification of equity principles. Would it be fair indeed for a state to have access when that state has no need for it? Or wouldn't it be contrary to the concept of justice and fairness to equate the needs of small countries with those of large sized nations of millions of

---

<sup>86</sup> *Supra* note 25, Zannoni.

<sup>87</sup> Lilian del Castillo-Laborde, *Equitable Utilization of Shared Resources* in MAX PLANCK ENCYCLOPEDIA OF PUBLIC INTERNATIONAL LAW para. 8 (Rüdiger Wolfrum ed., 2010).

<sup>88</sup> Territorial Jurisdiction of Int'l Comm'n of River Oder (U.K. v. Pol.), 1929 P.C.I.J. (ser. A) No. 23 (Sept. 10); Gabčíkovo-Nagymaros Project (Hung. v. Slov.), 1997 I.C.J. 3 (Order of Feb. 5); *Maritime Delimitation in the Black Sea (Romania v. Ukraine)*, Judgment, I.C.J. Reports 2009, p. 61, para. 118-121; Territorial and Maritime Dispute (Nicaragua v. Colombia), Judgment, I.C.J. Reports 2012 (II), p. 703, para. 215.

<sup>89</sup> Continental Shelf Case (Libya/Malta) 1985 I.C.J. 13 (June 3).

<sup>90</sup> Case Concerning the Continental Shelf (Tunisia/Libyan Arab Jamahiriya), Judgment, 1982 ICJ REP. 18, 71 (Feb. 24). See also Diversion of Water from the River Meuse (Netherlands v. Belgium), 1937 PCIJ, ser. A/B, No. 70, at 76 (Hudson, J., ind. op.).

<sup>91</sup> Principle 6 of the Stockholm Declaration on the Human Environment, in Report of the United Nations Conference on the Human Environment, UN Doc. A/CONF. 48/14, at 2 and Corr. 1 (1972): “for the benefit of present and *future* generations.”

<sup>92</sup> Convention on Rights and Duties of States adopted by the Seventh International Conference of American States, art.1 concluded in Dec. 26, 1933 165 LNTS 19; *Supra* note 32, Trachtman at 13.

people? If equitable access to space resources means an equal division of the resources for which states have no need whereas others do, then this plan would probably not be fair.

The ITU mechanism promotes an equitable distribution, rather than “equitable use with equal rights.” But under the demand for international justice, states should be given their due.<sup>93</sup> The mechanism which according to TWAIL is the fairest for sharing a global common resource as viewed by the developing countries’ perspective is that of the “common heritage of mankind.”<sup>94</sup> The common heritage of mankind (or humankind as developed more recently)<sup>95</sup> refers to areas that lie beyond national jurisdiction and signals the establishment of an international administration regime for the Global Commons, namely areas open for use by all states.<sup>96</sup> It has been further argued that it has received the status of international customary law as a standard of how to utilize areas beyond national jurisdiction.<sup>97</sup> As the common heritage of mankind has been used to describe the deep seabed,<sup>98</sup> the outer space and even Antarctica, in this context the principle could also reflect the legal regime of the geostationary orbit whose exploration and use as a space resource should be the common province of all mankind<sup>99</sup> despite counterclaims to this regard.<sup>100</sup> It is to ensure that the “private benefits of the resources are equitably shared”,<sup>101</sup> and “could generate international law focused on collective well-being”.<sup>102</sup>

Starting from the premise of the orbits being part of outer space, Article I of the Outer Space Treaty<sup>103</sup> obliges States to explore and use outer space “for the benefit and in the interests of all countries irrespective of their degree of economic or scientific development”. Said article

---

<sup>93</sup> Philip Pettit, *International Democracy in THE PHILOSOPHY OF INTERNATIONAL LAW* (Besson S. & Tasioulas J. eds., 2010) at 143.

<sup>94</sup> Rüdiger Wolfrum, *Common Heritage of Mankind* in MAX PLANCK ENCYCLOPEDIA OF INTERNATIONAL LAW (2009). For the first time, it appears in UN General Assembly (UNGA); First Committee Debate, UN Docs A/C.1/PV.1515-1516; 1 November 1967.

<sup>95</sup> *Id.*, Wolfrum at § 1.

<sup>96</sup> *Id.*, Wolfrum at § 1.

<sup>97</sup> *Id.*, Wolfrum at § 25.

<sup>98</sup> United Nations Convention on the Law of the Sea, part XI, Dec. 10, 1982, 1833 U.N.T.S. 397.

<sup>99</sup> The principle is reinstated in Articles 4 and 11 of the Moon Agreement: “The exploration and use of the Moon shall be the province of all mankind and shall be carried out for the benefit and in the interests of all countries, irrespective of their degree of economic or scientific development.” Agreement Governing the Activities of States on the Moon and Other Celestial Bodies, *entered into force* July 11, 1984, 1363 U.N.T.S. 3. However, the Moon Agreement has been ratified by a very small number of States and can be considered for that reason an unsuccessful treaty. Despite this fact, the Agreement “clearly delegitimises any unilateral action by interested states-which, once again, would be the wealthier and more developed countries” in Nico Schrijver, *Managing the global commons: common good or common sink?*, 37 THIRD WORLD QUARTERLY, 1252, 1257 (2016).

<sup>100</sup> See the Bogota Declaration, as a unilateral action signed by seven equatorial countries claiming ownership of the orbits over their countries as an extension of their national airspaces (raising the question of delimitation between national airspace and international space). Declaration of the first meeting of Equatorial Countries (adopted on December 3, 1976), see [https://www.jaxa.jp/library/space\\_law/chapter\\_2/2-2-1-2\\_e.html](https://www.jaxa.jp/library/space_law/chapter_2/2-2-1-2_e.html). Other views have also been explored. For instance, India proposed a licensing system, where each country would be accorded initially some orbital slots (so that minimum rights are respected) which could afterwards be freely sold. Joel D. Scheraga, *Establishing Property Rights in Outer Space*, 6 CATO JOURNAL 889, 897 (1987).

<sup>101</sup> *Supra* note 40, Bodansky at 654.

<sup>102</sup> For a critical history of this principle see *Supra* note 79, Ranganathan citing Mohammed Bedjaoui at 711.

<sup>103</sup> Treaty on Principles Governing the Activities of States in the Exploration and Use of Outer Space, including the Moon and other Celestial Bodies art. 4, Oct. 10, 1967, 18 U.S.T. 2410, 610 U.N.T.S. 205.

and the obligations contained therein raise interpretative differences between space faring nations and developing countries. At the same time article II of the Outer Space Treaty prohibits national appropriation by use, occupation or by any other means, a controversial and highly political issue in view of the privatization of space activities.<sup>104</sup> The characterization, however, of outer space as a common heritage of mankind, despite the prohibition for claiming sovereignty over the space resources is unclear whether it confers specific legal rights and obligations.<sup>105</sup> In any case, the regime applicable to outer space has already endorsed the notion of equitability and fairness by treating outer space with respect to its legal status as a “common heritage of mankind.”<sup>106</sup>

The ratio behind the equitable sharing of benefits is to exclude outer space resources from the rules that govern a *res communis omnium*<sup>107</sup> or *res nullius*<sup>108</sup>: “prior in tempore, potior in iure”, namely “first come, first-served”,<sup>109</sup> concepts that have different applications each and different requirements. For the developing countries, the appropriation of orbital slots (which is *de facto* even “virtually” occurring)<sup>110</sup> is an inequitable distribution of resources<sup>111</sup> as by this method of allocation the slots will be filled by the time they can use satellite technology.<sup>112</sup> Despite the explicit provision of Article II of the Outer Space Treaty, there is not an obligation imposed upon states to actively share the revenues or the benefits accrued from the space or the radio

---

<sup>104</sup> See for instance the discussion around the 2015 U.S. Commercial Space Launch Competitiveness Act, Pub. L. No. 114-90, 129 STAT. 704 (Nov. 25, 2015) in P.J. Blount & Christian J. Robinson, *One Small Step: the Impact of the U.S. Commercial Space Launch Competitiveness Act of 2015 on the Exploration of Resources in Outer Space*, 18 N.C. J.L. & TECH. 160 (2016). Interestingly, the United States does not consider outer space to be a global common. “Outer space is a legally and physically unique domain of human activity, and the United States does not view it as a global commons” in the Executive Order No. 13914, 85 Fed. Reg. 20, 381 (Apr. 10, 2020).

<sup>105</sup> Marcus Schladebach, *Fifty Years of Space Law: Basic Decisions and Future challenges*, 41 HASTINGS INT’L & COMP. L. REV. 245, 250 (2018).

<sup>106</sup> First point of reference was in the Antarctic Treaty of 1959 in its preamble that “it is in the interest of all mankind that Antarctica shall continue forever to be used exclusively for peaceful purposes and shall not become the scene of object of international discord”. In a GA Resolution of 1963, it was claimed that “The exploration and use of outer space shall be carried on for the benefit and in the interest of all mankind”. The distinction between the terms “province” and “heritage” could be significant: the province principle signifies that states are free to explore and use the space resources as long as they do not harm other states, whereas the common heritage principles could be seen as a legal basis for an obligation to share the benefits. The terms though are used rather interchangeably with no legal difference as to their consequences.

<sup>107</sup> The term “*res communis*” is used for areas insusceptible to national sovereignty claims and open to free use by all. See Antonio Cassese 82 INTERNATIONAL LAW (2<sup>nd</sup> ed.), 2005; *Id.*, “the *res communis* concept means that every State is authorized to use a certain good for its own purposes and its own interest. It is not a community-oriented concept; it is geared to self-interest.”

<sup>108</sup> Defined as a “thing that has no owner”, “an asset susceptible of acquisition but presently under the ownership or sovereignty of no one”. James Crawford, 191 BROWNIE’S PRINCIPLES OF PUBLIC INTERNATIONAL LAW (9<sup>th</sup> ed.) (2019).

<sup>109</sup> *Supra* note 25, Zannoni at 685.

<sup>110</sup> Christian A. Herter Jr., *The Electromagnetic Spectrum: A Critical Natural Resource*, 25 NATURAL RESOURCES JOURNAL 651, 655 (1985). “The first user of a radio frequency, provided he meets certain regulatory requirements, has a *de facto* lock on the frequency, and has virtually “appropriated” it.”

<sup>111</sup> The less developing countries maintain that the electromagnetic spectrum is a scarce natural resource, inequitably distributed in a manner favouring established use. See *Supra* note 6, Frieden at footnote 11.

<sup>112</sup> *Supra* note 86, Scheraga at 897.

frequencies, contrary to the specific frameworks established for the international seabed<sup>113</sup> and the Moon.<sup>114</sup> These systems if applied can achieve an important distributive effect both for the intangible benefit, mankind's knowledge on the international commons and the actual economic use of the resources. Although the common heritage of mankind principle as supported by the developing nations introduces the idea of the international public utility and imposes an obligation of conduct (not of result) to States, it remains a *lex imperfecta* leaving a wide range of discretion upon each state.

To conclude with regards to the TWAIL and the notion of equity, the demand of equitable access is partially guaranteed in the ITU by the establishment of frequency/orbital position plans according to which a certain amount of frequency spectrum and orbits are set aside for future use by all countries as a minimum basic right.<sup>115</sup> As demand and global competition increase though, the problem of allocation persists, and it must be internationally negotiated on a new basis how to allocate the available resources among states with special consideration to developing nations.

The author views the lack of infrastructure and reduced access to space as important forms of "unfreedoms". The constitutive element of development though is the removal of various types of unfreedoms that limit people to little choices and little opportunities.<sup>116</sup> The legal rules should be the first means to promote development,<sup>117</sup> and the right to communicate is an indispensable part of such process.<sup>118</sup> In the aftermath of colonialism "space was inaccessible (to the developing countries) because they lacked material resources, not scientific capacity".<sup>119</sup> Nowadays, however, orbits as limited common pool resources should be governed equitably and sustainably.<sup>120</sup>

---

<sup>113</sup> A comparison with the UNCLOS regime (Art. 136) and the International Seabed Authority is beneficial. UNCLOS promotes a distributive effect that assures equal participation of all states despite their technological or economic development, promotes the sharing of revenues, transfer of technology and accords preferential treatment to developing countries in an attempt for distributive justice. See *Supra* note 95, Wolfrum at para. 19.

<sup>114</sup> Moon Agreement, Articles 4, 5 and 11.

<sup>115</sup> This is traced back in the history of the ITU from the resolutions of 1971 declaring that "all countries have equal rights to both the use of the radio frequencies (...) and the geostationary satellite orbit (...)." Moreover, in the ITU documents it was stated that the registration of frequency assignment and their use "does not give priority of any individual country or groups of countries or create obstacles for the establishment of space systems by other countries" or that "equal rights of all countries, large and small" shall be taken into account" in Stephen Gorove, *Space telecommunications: focus on equitable access*, 181 RECUEIL DES COURS 390, 392 (1983).

<sup>116</sup> AMARTYA SEAN, xii DEVELOPMENT AS FREEDOM (1999).

<sup>117</sup> *Supra* note 72, Riegner at 233.

<sup>118</sup> B.S Brown, *Developing Countries in the New Global Information Order*, THE INTERNATIONAL LEGAL SYSTEM IN QUEST OF EQUITY AND UNIVERSALITY 424 (Laurence Boisossn de Chazournes et al. eds.,2001).

<sup>119</sup> Christian van Eijk, *Unstealing the Sky: Third World Equity in the Orbital Commons* at 10.

<sup>120</sup> *Id.*, Christian van Eijk at 16.

#### 4. The Dialogue between the two schools of thought as an Epilogue

The normative polycentrism of international law<sup>121</sup> borrows for its interpretation tools and derives meanings from neighbouring social sciences like economics or philosophy. In this dialectic relationship, a synthesis should arise.<sup>122</sup>

An international public policy can be evaluated on the basis of its intended outcome for it to be efficient, but also fair.<sup>123</sup> The concepts of equitable access and efficiency are located between the freezing of the allocation of orbital positions and the “depletion” of this natural resource.<sup>124</sup> The “first come, first served rule” is indeed efficient in the sense that a state in need of an orbital slot can register with the ITU and make immediate use of it. Is it fair though? If examining the rule itself then the decision mechanism of the ITU ensures procedural fairness as it is based on the rule of “one state, one vote”.<sup>125</sup> So, it seems indeed a fairly established rule. But this rule used as a method of allocation of the scarce resource is not ethically neutral but inherently unjust, because states in the aftermath of colonialism do not start from an equal initial position, with developing countries being years behind in technological capabilities. But, “developed nations acted on their earlier needs for spectrum and satellite orbital slots locking up much of the best resources”.<sup>126</sup> This is from the economic point of view the limitations of revealed preference theory, as the willingness to “pay” or in our case, the willingness to claim an orbital slot or frequencies is a function of the ability to do so and from a utilitarian perspective this does not increase the overall utility being rather misleading in cases with great wealth differentials. And what about the outcome? The allocation result is an unfair one. Even if the initial price is zero, it is a matter of political competition to determine the “owner” of the available slot. The result being that developed nations today have more orbital slots than their developing counterparts.

---

<sup>121</sup> Maurice Kampto, *International Law and Normative Polycentrism*, THE HAGUE ACADEMY OF INTERNATIONAL LAW 2021 ONLINE WINTER COURSES. (2021).

<sup>122</sup> There is a distributional critique to the Law and Economics’ emphasis on efficiency that excludes important questions of equity in distribution, in *Supra* note 32, Trachtman at page 44, footnote 150. Concerns also arise that efficiency is devoid of value judgments.

<sup>123</sup> For a graphic representation: “efficiency corresponds to ‘the size of the pie,’ while equity has to do with how it is sliced” in Lee Anne Fennell & Richard H. McAdams, 4 *Fairness in Law and Economics: Introduction*, COASE-SANDOR INSTITUTE FOR LAW & ECONOMICS WORKING PAPER No. 704 (2014).

<sup>124</sup> Camillo Guzman Gomez, *The equitable access to the GEO for Developing countries: a pending challenge*, 56 IISL COLLOQUIUM ON THE LAW OF OUTER SPACE at p. 1 mentioning two main problems that could negate the equitable access: *first*, the absence of time limitations to the authorizations given by the ITU that can be occupied indefinitely without a duty of return of the slot contravening the concept of equity and *second*, the phenomenon of paper satellites.

<sup>125</sup> One of the sanctions in international law is the non-participation. We read “since the law is based on the cooperation of interested parties, those who do not cooperate or do not wish to follow jointly established rules exclude themselves, or are excluded by decision of the others, from participation in the benefits of the joint endeavour. Such exclusion can be costly, especially where the organization concerned disposes of tangible resources which it allocates among participating states.” (emphasis added) in A. A. Fatouros, *On the Hegemonic Role of International Functional Organization*, 23 GERMAN Y.B. INT’L L. 9, 20 (1980). The question is whether developing countries have an alternative to participating in the ITU and playing by the rules of the game. This is the concept of fairness in international institutions introduced as a normative principle regarding the asymmetric bargaining power between states. States do not negotiate in equal terms given the exacerbated economic inequalities between them.

<sup>126</sup> *Supra* note 6, Frieden at 3.

On the other hand, one could argue that the problem of “paper satellites,” namely the reservation of orbital positions and frequencies “for possible future use, or for commercial resale to another user at a later day”<sup>127</sup> reveals the inefficiency of the current system. However, no state should deny developing nations from reserving their spot for use in outer space when their economic and technological capabilities allow for such a use. A solution could be for the slots to be released if no actual usage is proved in an approach called “use it or leave it”.<sup>128</sup> This is reflected (to some extent) in the current ITU regime of “administrative due diligence”, which requires for an advanced filing first, proof that satellite manufacturing or launch contracts are in place and second, a deposit of administrative costs.<sup>129</sup> Overall, an *a priori* planning approach that would give equal opportunity and participation to developing nations to utilize the spectrum and the orbits, could be, apart from a fair solution, an efficient one despite counter claims from the Western countries which supported the view that this could be achieved through regulatory changes, as the benefits of this use leading to improvements in various sectors (like education or healthcare system) are not concentrated on one state, but actually spread and shared among states as a result of globalization.

An economic result can be efficient, but still leading to enormous inequalities in the distribution of utilities. An efficient configuration does not imply an absolute equal distribution.<sup>130</sup> Although, fairness has for a long time been considered of no relevance to the economic analysis and Law and Economics<sup>131</sup> received criticism for not considering inconsumable social values including equity,<sup>132</sup> the relevance of fairness has been discussed in many other areas, such as aspects of justice.<sup>133</sup>

In the public policy dilemma presented in this paper the central point is not efficiency, as one of the proposed systems of allocation will eventually lead to an efficient result and efficiency reveals nothing about the normative merits of such outcome. As Keynes observed “practical men, who believe themselves to be quite exempt from any intellectual influences, are usually the slaves of some defunct economist.”<sup>134</sup> The “major source of contention is over the equity of the alternative allocation schemes”<sup>135</sup> which is aggravated by the unequal distribution of wealth and technology between states.

---

<sup>127</sup> *Supra* note 27, Jung Joon Sik at 214.

<sup>128</sup> ITU Radio Regulations 1042 and 1550: there is a time limit of seven years for a satellite to become operational. So, the coordination request expires if it is not brought into use and notified within seven years following receipt of the advanced public information filing.

<sup>129</sup> *Supra* note 21, Dunk at 483. This has been criticized though: see *Supra* note 6, Frieden at 19.

<sup>130</sup> J. Rawls, 67 A THEORY OF JUSTICE (2005).

<sup>131</sup> There are however the “ultimatum” games.

<sup>132</sup> There have been attempts to merge the Rawlsian concept of the veil of ignorance into Coase's theorem.

<sup>133</sup> Savage, David A. & Torgler, Benno, *Perceptions of fairness and allocation systems*, 40 ECONOMIC ANALYSIS AND POLICY, 229 (2010).

<sup>134</sup> John Maynard Keynes, THE GENERAL THEORY OF EMPLOYMENT, INTEREST, AND MONEY (1936).

<sup>135</sup> Other ideas include the imposition of a congestion tax or quotas. *Supra* note 86, Scheraga at 897.

Fairness, and particularly unfairness between the regions of the world,<sup>136</sup> can be the reason for questioning the conventional formulas for achieving prosperity<sup>137</sup> and the dominant business logic. The function entrusted upon the ITU by the international community serves as a paradigm for its flexibility to reconcile the trade-off between fairness and efficiency. International law must not fail, as then states would resort to unilateral acts without due regard to the interests of other states<sup>138</sup> with catastrophic repercussions for the international community *in toto*. States should reconsider their positions to work towards a level playing field and from the TWAIL, international law has become the terrain to struggle for social justice and transformation to reverse global patterns of subordination.<sup>139</sup>

Law should not reproduce the structural inequalities, but efficiency and equity should be the catalysts of change. As radiocommunications play a key role in achieving the United Nations 17 Sustainable Development Goals (SDGs),<sup>140</sup> the equitable share of the orbits/spectrum is a means to socioeconomic development, and countries should not be excluded from those resources. TWAIL in its reconstructive effort to break the cycle of underdevelopment shows that the available spectrum is to be apportioned between countries whether they are ready to exploit it or not. The *a priori* system was a major political victory for the developing world asking to equally participate in the orbit spectrum resource and the associated frequencies regardless of current needs and this should be guaranteed in the future. The “first come, first served rule” still maintains the privileged position of the advanced users that occupy the best orbital positions.

To connect the unconnected, the ITU should re-examine its regulatory framework and strengthen its dispute resolution mechanisms as an urgent demand to meet the current conditions of our age. The voices of developing nations in the ITU demanding equitable access to the spectrum and orbits are loud and clear and should continue to echo.

---

<sup>136</sup> See the concept of prosperity without growth in Tim Jackson, *PROSPERITY WITHOUT GROWTH: ECONOMICS FOR A FINITE PLANET* (2009) abandoning general declarations like “growing advanced economies tend to be more resource efficient as efficiency promotes growth by bringing the costs down” (at p. 76) and adopting instead a more sustainable and equitable share of the available resources criticizing the current world as “islands of prosperity” within “oceans of poverty” (at p. 4).

<sup>137</sup> *Id.* at 5.

<sup>138</sup> Subrata K. Serker, *Criteria of Equitable Access to Geostationary Orbit and Frequency Spectrum*, 26 *PROC. ON L. OUTER SPACE* 39, 41 (1983).

<sup>139</sup> Jeanne M. Woods, *Theoretical Insights from the Cutting Edge*, 104 *PROCEEDINGS OF THE ANNUAL MEETING (AMERICAN SOCIETY OF INTERNATIONAL LAW), INTERNATIONAL LAW IN A TIME OF CHANGE* 389 (2010).

<sup>140</sup> United Nations, *The 17 Goals*, see <https://sdgs.un.org/goals>.