

# Applicability of Rescue and Return Provisions under the Outer Space Treaty and the Return and Rescue Agreement to ‘Astronauts’ and ‘Personnel’ Stranded in Outer Space

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Academics may disagree regarding whether Article V of the Outer Space Treaty (OST) requires States Parties to render assistance in search and rescue efforts to retrieve astronauts stranded in outer space. In contrast, there seems to be a clear and consistent agreement amongst scholars and commentators that, due to the inclusion of the term ‘alighted’ in Article 3 of the Return and Rescue Agreement (RRA), a spacecraft must have landed, intentionally or otherwise, for the personnel on board to become the beneficiaries of the affirmative duty to “if necessary, extend assistance” conferred by Article 3 upon States Parties to the RRA. Employing this interpretation of the term ‘alighted’ would render the RRA inapplicable to scenarios requiring conduct of search and rescue operations in outer space, in orbit of the moon or other celestial bodies, or in earth orbit, even for a spacecraft hypothetically stranded next to the ISS, but incapable of docking with it. This would defeat the underlying humanitarian objective and purpose of the RRA to provide for search and rescue of spacecraft personnel, including private passengers, in danger or needing of assistance and/or rescue for any reason. However, this author posits that use of ‘alighted’ in Article 3 introduces ambiguity and confusion regarding the intended ‘ordinary meaning’ of the term at the time the RRA was concluded, the touchstone of treaty interpretation under the Vienna Convention on the Law of Treaties (VCLT). Although most analyses of Article 3 provided to date rely upon an interpretation of ‘alighted’ that requires the landing of a spacecraft, a clear reading of the grammar and linguistic construction employed in Article 3 shows that the term ‘alighted’ may also refer to an action required of the ‘personnel of a spacecraft’

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rather than of such spacecraft itself. Further, the analysis provided herein demonstrates confusion between the conventionally advanced definition requiring the landing of a spacecraft and a definition suggested by the linguistics, including the disembarkation of passengers. Furthermore, regardless of which definition is interpreted as the ordinary meaning for the term ‘alighted’, manifestly absurd consequences result. Moreover, recourse to the *travaux préparatoires* under the VCLT and a possible alternative, expanded definition for the term ‘alighted’ is explored. Finally, adoption by the space law community of an accepted definition for the term ‘alighted’ that is sufficiently broad to achieve a consistent unification of the language and intended consequences for Article 3 of the RRA is advanced.

## I. Introduction

In the review of the obligations by States to undertake search and rescue efforts in outer space under Article V of the Outer Space Treaty and Article 3 of the Return and Rescue Agreement, this paper will first address the applicable rules governing the interpretation of treaties under customary international law and the Vienna Convention on the Law of Treaties. Then, it will separately address relevant provisions of the Treaties applicable to outer space.

Section II of this paper provides a short review of the customary international laws regarding Treaty interpretation, as embodied in the Vienna Convention on the Law of Treaties and as Applicable to the Outer Space Treaty and the Return and Rescue Agreement. Section III covers the OST, its historical origins and applicability to accidents and distress experienced by ‘astronauts’ in outer space. Section IV addresses the RRA, its historical development and applicability to accidents and distress experienced by ‘personnel of a spacecraft’ in outer space, as well as the confusion and absurd consequences attendant to inclusion of the term ‘alighted’. And, conclusions are provided in Section V.

## II. Interpretation of Treaties

Interpreting the scope of terminology used in treaties, such as the Treaty on Principles Governing the Activities of States in the Exploration and Use of Outer Space, Including the Moon and Other Celestial Bodies<sup>1</sup> (hereinafter Outer Space Treaty or OST) and the Agreement on the Rescue of Astronauts, the Return of Astronauts, and the Return of Objects Launched Into Outer Space<sup>2</sup>

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1 Treaty on Principles Governing the Activities of States in the Exploration and Use of Outer Space, Including the Moon and Other Celestial Bodies, *entered into force* Oct. 10, 1967, art. 6, 18 U.S.T. 2410, 610 U.N.T.S. 205 [hereinafter OST].

2 Agreement on the Rescue of Astronauts, the Return of Astronauts, and the Return of Objects Launched Into Outer Space, *entered into force* Dec. 3, 1968, 19 U.S.T. 7570, 672 U.N.T.S. 119 [hereinafter RRA].

(hereinafter Return and Rescue Agreement or RRA), must be done in accordance with the Vienna Convention on the Law of Treaties<sup>3</sup> (hereinafter VCLT).<sup>4</sup> The International Court of Justice (ICJ) has acknowledged the VCLT rules on interpretation of treaties comprise “a codification of customary practice and are binding as an expression of customary international law.”<sup>5</sup> VCLT rules are applicable to interpretation of treaties concluded prior to the VCLT, such as the OST, insofar as the rules under the VCLT embody customary international law.<sup>6</sup> In accordance with the VCLT, the primary rule of treaty interpretation is to give to the terms of a treaty their “ordinary meaning... in their context and in the light of [the] object and purpose [of the treaty].”<sup>7</sup> This ‘ordinary meaning’ should comprise the meaning ascribed to the term interpreted at the time of treaty conclusion.<sup>8</sup>

3 Vienna Convention on the Law of Treaties, *entered into force* Jan. 27, 1980, Art. 31, 1155 U.N.T.S. 331, 8 I.L.M. 679 [hereinafter VCLT].

4 *Id.*, Art.31(1); Richard K. Gardiner, *International Law*, 67 (2003) [hereinafter Gardiner I]; David S. Jonas and Thomas N. Saunders, *The Object and Purpose of a Treaty: Three Interpretive Methods*, 43 *Vanderbilt J. Transnat'l L.* 565 (2010); Mark J. Sundahl, *The Duty to Rescue Space Tourists and Return Private Spacecraft*, 35 *J. Space L.* 163, 174 (2009).

5 *Legal Consequences of the Construction of a Wall in the Occupied Palestinian Territory (Advisory Opinion)*, 2004 I.C.J. 136, at 174, par. 94, (July 9), stating that VCLT Article 31 expresses the customary international law regarding treaty interpretation; *Armed Activities on the Territory of the Congo (Democratic Republic of the Congo v. Rwanda) (Judgement)*, 2006 I.C.J. 6, at 51-52, para. 125, (3 Feb.), stating that because the Congo and Rwanda had acceded to the VCLT following their respective accessions to the Genocide Convention, “in the present case the rules contained in the Vienna Convention are not applicable, save in so far as they are declaratory of customary international law”; Richard K. Gardiner, *Treaty Interpretation*, 14-16, 69 (2008) [hereinafter Gardiner II].

6 *Case Concerning Kasikili/Sedudu Island (Botswana/Namibia) (Judgement)*, 1999 I.C.J. 1045 (3 Dec.), at 1059, par. 18, stating that “The Court itself has already had occasion in the past to hold that customary international law found expression in Article 31 of the Vienna Convention (see *Territorial Dispute (Libyan Arab Jamahiriya/Chad)*, *Judgment*, I.C.J. Reports 1994, p. 21, para. 41; *Oil Platforms (Islamic Republic of Iran v. United States of America)*, *Preliminary Objections, Judgment*, I.C.J. Reports 1996 (II), p. 812, para. 23). Article 4 of the Convention, which provides that it “applies only to treaties which are concluded by States after the entry into force of the [...] Convention with regard to such States” does not, therefore, prevent the Court from interpreting the 1890 Treaty in accordance with the rules reflected in Article 31 of the Convention”; Anthony Aust, *Handbook of International Law*, 50 (2010); Gardiner I, *supra* note 4, at 68; Gardiner II, *supra* note 5, at 14; Mark E. Villiger, *Commentary on the 1969 Vienna Convention on the Law of Treaties*, 110-112 (2009).

7 VCLT, *supra* note 3, at Art. 31(1).

8 Anthony D’Amato, *International Law, Intertemporal Problems*, in *Encyclopedia of Public International Law*, 1234-1236 (1992); *see also* VCLT, *supra* note 3, at Art. 31(1); Gardiner I, *supra* note 4, at 82-86.

### III. The Outer Space Treaty

In 1958 and 1959, respectively, the U.N. Ad Hoc Committee on the Peaceful Uses of Outer Space (Ad Hoc COPUOS) and its Legal Subcommittee were created to, *inter alia*, analyze and report on “legal problems which may arise in the carrying out of programmes to explore outer space” to the U.N. General Assembly (UNGA).<sup>9</sup> Following submission by the Ad Hoc COPUOS of its report, in 1959 the UNGA created the permanent Committee on the Peaceful Uses of Outer Space (COPUOS), dedicated to further investigate the topics initially explored by the Ad Hoc COPUOS.<sup>10</sup>

The UN COPUOS Legal Subcommittee met first in June 1962, and thereafter typically with one session of about a month each year, covering topics including rescue and return of astronauts, liability, registration and general principles.<sup>11</sup> In 1963, during the second meeting of the Legal Subcommittee, the Soviet Union, the United States, and the United Arab Republic all submitted drafts for consideration as a general statement of fundamental principles applicable to conduct and behavior in outer space.<sup>12</sup>

With a consensus on behalf of the various delegations of the Legal Subcommittee regarding many basic principles they felt ought to apply in space, the UNGA unanimously adopted Resolution 1962 (XVIII) *Declaration of Legal Principles Governing the Activities of States in the Exploration and Use of Outer Space* (hereinafter *Principles*).<sup>13</sup> The *Principles* included provisions on the rescue of astronauts, the return of astronauts, and the return of space objects.<sup>14</sup>

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9 Question of the Peaceful uses of Outer Space, G.A. Res. 1348 (XIII), U.N. GAOR, 13<sup>th</sup> Sess., U.N. Doc. A/RES/1348 (1958); Paul G. Dembling and Daniel M. Arons, *The Treaty on Rescue and Return of Astronauts and Space Objects*, 9 Wm. & Mary L.Rev. 630, 632 (1968).

10 International Co-operation in the Peaceful Uses of Outer Space, G.A. Res. 1472 (XIV), U.N. GAOR, 14<sup>th</sup> Sess., U.N. Doc. A/RES/1472, (1959); Dembling, *supra* note 9, at 633.

11 Report of the Committee on the Peaceful Uses of Outer Space, U.N. GAOR, 17<sup>th</sup> Sess., at 5, U.N. Doc. A/5181 (1962); Dembling, *supra* note 9, at 633-634.

12 Report of the Legal Subcommittee to the Committee on the Peaceful Uses of Outer Space, U.N. GAOR, 2<sup>nd</sup> Sess., Annex I G and Annex I E, U.N. Doc. No. A/AC.105/12 (1963); Dembling, *supra* note 9 at 635.

13 Declaration of Legal Principles Governing the Activities of States in the Exploration and Use of Outer Space, G.A. Res. 1962 (XVIII), U.N. GAOR, 18<sup>th</sup> Sess., U.N. Doc. A/RES/1962 (1963) [hereinafter G.A. Res. 1962]. Principle 9 states that “States shall regard astronauts as envoys of mankind in outer space, and shall render to them all possible assistance in the event of accident, distress, or emergency”; *see also* International Co-operation in the Peaceful Uses of Outer Space, G.A. Res. 1721 (XVI), U.N. GAOR, 16<sup>th</sup> Sess., at 6, U.N. Doc. A/RES/1721 (1961); Dembling, *supra* note 9 at 635.

14 *Id.*

Following the adoption of the *Principles*, beginning in the third session of 1964 the Legal Subcommittee concentrated on proposed international agreements on assistance in rescue and return and also liability.<sup>15</sup> In 1966 the Legal Subcommittee conducted two sessions, due to the urgency of the United States, the Soviet Union, and many other nations, redirecting its focus to establish a treaty to implement a code of general legal duties and norms governing States' exploration and use of outer space.<sup>16</sup>

This effort culminated in the unanimous approval by the UNGA and entry into force in 1967 of the foundational *Treaty on Principles Governing the Activities of States in the Exploration and Use of Outer Space, Including the Moon, and Other Celestial Bodies*,<sup>17</sup> based largely on the *Principles*.

### 1. Who Qualifies as an Astronaut under OST Article V?

OST Article V stipulates that "States Parties to the Treaty shall regard astronauts as envoys of mankind in outer space and shall render to them all possible assistance in the event of accident, distress, or emergency landing on the territory of another State Party or on the high seas." Given the placement of the commas in this phrase, the elements of the list comprise separate distinct elements.

So, under the OST, 'astronauts' might be entitled to "all possible assistance" in outer space only in the event of 'accident' or 'distress'. And, the duty to assist in case of 'emergency landing' clearly applies only to "landing[s] on the territory of a State or on the high seas."

The "ordinary meaning" ascribed to the term 'astronaut', as used in the OST, should be its meaning at the time the treaty was concluded, *i.e.* 1967.<sup>18</sup> And, the term 'astronaut' as used in the OST has been consistently defined with sufficient breadth to include both spacecraft crew and private passengers, prior to and throughout the existence of the OST.<sup>19</sup>

At the time the OST was concluded, 'astronaut' was defined by NASA as "*a person who rides in a space vehicle*," or "one of the *test pilots* selected to participate in Project Mercury, Project Gemini, Project Apollo, or any other program

15 Report of the Legal Subcommittee to the Committee on the Peaceful Uses of Outer Space, U.N. GAOR, 3<sup>rd</sup> Sess., 9, U.N. Doc. A/5785 (1964); Dembling, *supra* note 9 at 633, 635-636.

16 Report of the Legal Subcommittee to the Committee on the Peaceful Uses of Outer Space, U.N. GAOR, 5<sup>th</sup> Sess., 13, U.N. Doc. A/6431 (1966); Dembling, *supra* note 9 at 633, 636-637.

17 OST, *supra* note 1.

18 VCLT, *supra* note 3, Art. 31(1); D'Amato, *supra* note 8; Gardiner I, *supra* note 4, at 82-86.

19 Bin Cheng, *Studies in International Space Law*, 507 (1997); Sundahl, *supra* note 4, at 183; W.D. Reed, R.W. Norris, *Military Use of the Space Shuttle*, 13 Akron L. Rev. 665, 686-87 (1980).

for manned space flight.”<sup>20</sup> The second definition is obviously more restrictive than the ordinary meaning in accordance with VCLT Article 31 because it is too limited in scope, specifically covering solely test pilots of particular early NASA manned spaceflight missions.

Further support for interpretation of the term ‘astronaut’ as inclusive of all persons on board a spacecraft, at the time the OST was concluded, is available in the 1967 *Webster’s Third New International Dictionary*, defining ‘astronaut’ as “a traveler in interplanetary space.”<sup>21</sup> Also, five years following entry into force of the OST, the 1972 *Oxford English Dictionary* defined ‘astronaut’ as “one who travels in space, *i.e.* beyond the earth’s atmosphere.”<sup>22</sup>

The definitions of the term ‘astronaut’ surveyed herein show a consistency in the broad definition of the term within at least a seven year timeframe surrounding the OST.<sup>23</sup>

However, if ‘astronaut’ is interpreted otherwise to refer exclusively to technical spaceflight actors, such as pilots, scientists, systems and operations specialists, etc., search and rescue obligations under OST Article V would not apply to private passengers aboard spacecraft or space stations, *e.g.* a space tourist spending a short vacation in an on orbit space hotel.

As will be shown below, this would result in manifestly absurd consequences, allowing a determinative reinterpretation in challenge to the conventional interpretation of the term ‘astronaut’ under Article V.

## 2. Applicability of OST Article V to Accident or Distress in Outer Space

Article V of the OST may confer an obligation upon States Parties to render ‘all possible assistance’ to ‘astronauts’ in the event of ‘accident’ or ‘distress’ in outer space, regardless of whether such astronauts’ State(s) of origin is/are also an OST State Party.<sup>24</sup> Doctrine interprets the wording of Article V as sufficiently

20 Dictionary of Technical Terms for Aerospace Use, 21 (W.H. Allen ed., 1965), this dictionary was used by NASA when the OST was concluded; Dictionary of Technical Terms for Aerospace Use, (Web Edition, D.R. Glover, Jr. ed., 2001), available at <<http://er.jsc.nasa.gov/seh/a.html>>, last accessed on 26/5/2013.

21 Webster’s Third New International Dictionary of the English Language, (Philip Babcock Gove ed. 1967).

22 A Supplement to the Oxford English Dictionary, (R.W. Burchfield ed., 1972).

23 Because the definition of ‘astronaut’ clearly includes private passengers, “supplementary means of interpretation can only be applied to confirm the inclusion of passengers - but not challenge it.” *see* Sundahl, *supra* note 4, at 183; *See also* Cheng, *supra* note 19, at 507; Reed, *supra* note 19.

24 OST, *supra* note 1, Art. V, par. 1: “States Parties shall regard astronauts as envoys of mankind in outer space and shall render to [astronauts] all possible assistance in the event of accident, distress, or emergency landing on the territory of another State Party or on the high seas,” and par. 2: “In carrying on activities in outer space and on celestial bodies, the astronauts of one State Party shall render all possible assistance to the astronauts of other States Parties.”

expansive to include ‘all possible’ assistance in earth-to-space search and rescue efforts for astronauts stranded in space, on the Moon, or in Earth orbit.<sup>25</sup> Accordingly, where earth-to-space rescue efforts would be necessary to save an astronaut crew, a request by their state of origin for help in the rescue and return of those astronauts to an OST State Party capable of providing such ‘all possible’ assistance would be justified.<sup>26</sup>

### 3. What Assistance Is Required under OST Article V?

OST Article V is customary international law<sup>27</sup> to which all States are bound.<sup>28</sup> Therefore, a clear duty exists on behalf of all space faring nations to render ‘*all possible*’ assistance to ‘astronauts’ in the event of ‘accident’ or ‘distress’, irrespective of their State of national origin and presence in outer space.

Considering the humanitarian nature underpinning OST Article V and the many aircraft precedents, one or both of the terms ‘accident’ and ‘distress’ should easily cover events including spacecraft malfunction, breakdown or other disablement, collision with another spacecraft or space object, or unintentional landing on a celestial body. Arguably, these terms may even cover a health emergency suffered by a member of spacecraft ‘personnel’.<sup>29</sup>

Although doctrine interprets the wording of Article V as sufficiently broad to encompass earth-to-space search and rescue efforts necessary to save the crew, and a request for such ‘all possible’ assistance to an OST State Party capable of providing it might be justified, precisely what assistance is in fact ‘possible’ remains very much at the discretion of the State from which it is requested.<sup>30</sup>

25 Dembling, *supra* note 9, at 649-650; R. Cargill Hall, *Rescue and Return of Astronauts on Earth and in Outer Space*, 63 Am. J. Int’l L. 197, 205 (1969); Francis Lyall & Paul B. Larsen, *Space Law: A Treatise*, 140 (2009).

26 Hall, *supra* note 25, at 205.

27 G.A. Res. 1962, *supra* note 13; Bin Cheng, *United Nations Resolutions on Outer Space: “Instant” International Customary Law?* 5 Indian J. Int’l L. 36 (1965); Vladlen Vereshchetin and Gennady Danilenko, *Custom as A Source of International Law of Outer Space*, 13 J. Space L. 22 (1985); Ricky J. Lee, *Reconciling International Space Law with the Commercial Realities of the Twenty-first Century*, Singapore J. Int’l & Comp. L., 194, 203, (2000); Malcolm Shaw, *International Law*, 123 (2009).

28 The rescue principle may have attained *erga omnes* character, *See Case concerning the Barcelona Traction, Light and Power Company, Ltd. (Belg. v. Spain) (Judgment)*, 1970 I.C.J. 32, par. 33 (Feb. 5), [hereinafter *Barcelona Traction*]; Cestmir Cepelka, Jamie H.C. Gilmour, *The application of general international law in outer space*, 36 J. Air L. & Com. 30, 48 (1970); Imre A. Csabafi, *The Concept of State Jurisdiction in International Space Law*, 47 (1971); Ram Jakhu, *Legal Issues Relating to the Global Public Interest in Outer Space*, 32 J. Space L. 31, 38-39 (2006); Manfred Lachs, *The International Law of Outer Space*, 7-115 (1972).

29 Dembling, *supra* note 9, at 646.

30 OST, *supra* note 1, Art. V; Dembling, *supra* note 9, at 649-650; Hall, *supra* note 25, at 205; Lyall, *supra* note 25, at 140.

#### IV. The Rescue and Return Agreement

In December 1962, the UNGA requested COPUOS “to continue urgently its work on [...] assistance to and return of astronauts and space vehicles.”<sup>31</sup> After completing the Principles in 1963, during the second part of its 1964 session the Legal Subcommittee provisionally agreed to the draft text of a preamble and three articles for a proposed treaty. These first three articles provided for “notification of the launching state and the U.N. Secretary-General in case of an accident or distress involving space personnel, rescue of space personnel, and the return of space objects.”<sup>32</sup>

During its Fourth Session, in 1965, the Legal Subcommittee addressed issues which had arisen in previous sessions and although progress was made, the members were not able to reach final agreement, mainly on semantic differences.<sup>33</sup> However, the members were able to agree on certain basics relating to the specific rights, obligations and general subject matter to be included in the treaty.<sup>34</sup>

The urgent need to put in place an agreement on astronaut rescue was made clear by the deaths of U.S. and Soviet astronauts in space vehicle accidents in 1967, respectively in January and March of that year.<sup>35</sup> In November 1967, the UNGA again urged COPUOS “to continue with a sense of urgency its work on the elaboration of... an agreement on assistance to and return of astronauts and space vehicles.”<sup>36</sup> The RRA was adopted unanimously by the UNGA in resolution 2345 (XXII), and finally entered into force in December 1968.<sup>37</sup>

31 International Co-operation in the Peaceful Uses of Outer Space, G.A. Res. 1802 (XVII), U.N. GAOR, 17<sup>th</sup> Sess., U.N. Doc. A/RES/1802 (1962); Dembling, *supra* note 9, at 635.

32 W.G. 1/23, included in Report of the Legal Subcommittee to the Committee on the Peaceful Uses of Outer Space, U.N. GAOR, 3<sup>rd</sup> Sess., Annex III, U.N. Doc. No. A/AC.105/21/III, (1964); Dembling, *supra* note 9, at 636.

33 Report of the Committee on the Peaceful Uses of Outer Space, U.N. GAOR, 20<sup>th</sup> Sess., U.N. Doc. A/6042 (1965); Dembling, *supra* note 9, at 636.

34 *Id.*

35 Remy Melina, *The Fallen Heroes of Human Spaceflight*, Space.com, (2011), available at <[www.space.com/11353-human-spaceflight-deaths-50-years-space-missions.html](http://www.space.com/11353-human-spaceflight-deaths-50-years-space-missions.html)>, last accessed on 26/5/2013; Dembling, *supra* note 9, at 638.

36 Report of the committee on the Peaceful Uses of Outer Space, G.A. Res. 2260 (XXII), U.N. GAOR, 22<sup>nd</sup> Sess., U.N. Doc. A/RES/2260, par. 9 (1967); Dembling, *supra* note 9, at 640.

37 Agreement on the Rescue of Astronauts, the Return of Astronauts and the Return of Objects Launched into Outer Space, G.A. Res. 2345 (XXII), U.N. GAOR, 22<sup>nd</sup> Sess., U.N. Doc. A/RES/2345, (1967); *United Nations Treaties and Principles on Outer Space: Travaux Préparatoires*, United Nations Office for Outer Space Affairs, available at <[www.oosa.unvienna.org/oosa/en/SpaceLaw/treatyprep/rescue/index.html](http://www.oosa.unvienna.org/oosa/en/SpaceLaw/treatyprep/rescue/index.html)>, last accessed on 26/5/2013.



The historical development of the RRA, as briefly reviewed above, demonstrates the important humanitarian foundations of the RRA and the rationale underpinning its universal applicability.<sup>38</sup> The RRA was “prompted by sentiments of humanity,”<sup>39</sup> and its “main principle and purpose [...] was the humanitarian desire to protect the life of those aboard a spacecraft.”<sup>40</sup>

Further, the fact that the RRA was implemented so quickly following the OST indicates the great importance attributed to the content of this agreement by the signatory countries and how adherence to these principles was considered to be essential to make the exploration of outer space as safe as possible.<sup>41</sup> This course of development and the many States which have ratified the RRA show that COPUOS, the Legal Subcommittee, the UNGA, ascribed a great importance to these concerns.<sup>42</sup>

Furthermore, the humanitarian nature of the RRA is further evidenced in the fact that it does not condition any of the international obligations to act in accordance with the affirmative duties included therein upon the State of national origin of the ‘personnel of a spacecraft’ being a member to the RRA.<sup>43</sup>

This means that the extension of assistance to ‘personnel of a spacecraft’ in distress or suffering accident or emergency is required regardless of whether or not such personnel and spacecraft come from a State Party to the RRA. Therefore, the undertaking on behalf of the States Party to the RRA is universal in nature and intended to ensure the safety and safe return of all spacecraft personnel, regardless of national origin.

In addition, according to Rule 140, the Principle of Reciprocity, of the updated version of the *Study on Customary International Humanitarian Law* conducted by the International Committee of the Red Cross (ICRC), “the obligation to respect and ensure respect for international humanitarian law does not depend on reciprocity.”<sup>44</sup>

And, although the exploration of space, including the extension of assistance to ‘personnel of a spacecraft’ in distress or suffering accident or emergency, is not conducted under threat of armed conflict, it is performed within the extreme, ultra-hazardous environment of space.<sup>45</sup>

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38 Robert C. Beckman, *1968 Rescue Agreement - An Overview*, in United Nations Treaties on Outer Space: Actions at the National Level, 370, 370-373 (2004).

39 RRA, *supra* note 2, preamble 4<sup>th</sup> recital.

40 Sundahl, *supra* note 4, at 187.

41 Beckman, *supra* note 38, at 370-373; Dembling, *supra* note 9; Sundahl, *supra* note 4, at 167.

42 Dembling, *supra* note 9.

43 RRA, *supra* note 2.

44 Jean-Marie Henckaerts and Louise Doswald-Beck, *Customary International Humanitarian Law, Volume I: Rules*, International Committee of the Red Cross, 498-499 (2005).

45 *Outer Space in Society, Politics and Law*, European Space Policy Institute, 342 (Christian Brünner, Alexander Soucek, eds. 2011); Viviana Lavicoli, *Missing an Important Opportunity to Improve the Safety for Humans in Space and Protect the*

Moreover, the VCLT acknowledges that adherence to treaties of a ‘humanitarian character’ by States Parties cannot depend on respect by other States Parties.<sup>46</sup>

### 1. Who Qualifies as Personnel of a Spacecraft under RRA Article 3?

One of the primary distinctions between the OST and the RRA regards the use of the term ‘personnel of a spacecraft’ rather than ‘astronaut’ in the RRA.<sup>47</sup> ‘Astronaut’ may be interpreted as inclusive of private passengers, but under the RRA the use of a distinct term results in the requirement to interpret ‘personnel’, starting with the ordinary meaning of the term at the time of treaty conclusion.<sup>48</sup>

The 1968 edition of *Webster’s New World Dictionary* defines ‘personnel’ as “persons employed in any work, enterprise, service, etc.”<sup>49</sup> Clearly, this definition is adequately expansive that it may, but does not necessarily, require governmental involvement.<sup>50</sup>

Although use of ‘personnel’ clearly includes spacecraft crew in the duty to rescue, it could potentially be seen as more narrow than ‘astronaut’ in that it may exclude private passengers, covering only the pilot, crew, and other on-board service providers.<sup>51</sup>

Consider the hypothetical case of a commercial spaceplane unintentionally landing within close proximity of the territorial waters of a foreign country. Defining the term ‘personnel’ narrowly would require such foreign state to only rescue the pilot and other crewmembers, permitting passengers to be abandoned on the high seas.<sup>52</sup>

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*Space Environment*, slide 6 (1992) available at <[www.congrex.nl/08a11/presentations/day2\\_S25/S25\\_02\\_Iavicoli.pdf](http://www.congrex.nl/08a11/presentations/day2_S25/S25_02_Iavicoli.pdf)>, last accessed on 26/5/2013; Lesley Jane Smith, *Liability for Space Law Revisited*, slide 3 (2012), available at <[www.iislweb.org/docs/2012\\_Smith.pdf](http://www.iislweb.org/docs/2012_Smith.pdf)>, last accessed on 26/5/2013.

46 *Id.*; VCLT, *supra* note 3, Art. 60(5).

47 OST, *supra* note 1, Art. V; RRA, *supra* note 2, Art. 3; Beckman, *supra* note 38, at 373; Dembling, *supra* note 9, at 643; Sundahl, *supra* note 4, at 178.

48 VCLT, *supra* note 3, Art. 31(1); Sundahl, *supra* note 4, at 174-175.

49 Webster’s New World Dictionary of the American Language, (David B. Guralink ed., 1968).

50 Sundahl, *supra* note 4, at 185.

51 Bin Cheng, “*Space Objects*”, “*Astronauts*” and Related Expressions, in Proceedings of the Thirty-Fourth Colloquium on the Law of the Outer Space, 17, 26, 165 (American Institute of Aeronautics and Astronautics, 1992); Stephen Gorove, *Interpreting Salient Provisions of the Agreement on the Rescue of Astronauts, The Return of Astronauts, and the Return of Objects Launched into Outer Space*, in Proceedings of the Eleventh Colloquium on the Law of the Outer Space, 93 (Mortimer D. Schwartz ed., 1969); Sundahl, *supra* note 4, at 185.

52 Sundahl, *supra* note 4, at 189.

Given the humanitarian objective and purpose of the RRA, such a manifestly absurd result could not have been intended. No logical rationale exists to restrict the duty to rescue to only some of the people in danger, but not to all.<sup>53</sup> The strongest argument in support of a broad interpretation of ‘personnel’ under the RRA, including private passengers within its ordinary meaning, is the fact that it would be ludicrous and absurd to require rescue and return only of the spacecraft crew and not with respect to its passengers.<sup>54</sup>

Establishing the fact that manifestly absurd consequences result from interpreting the term ‘personnel’ as restricted solely to crew and staff of the spacecraft allows recourse to other sources as “supplementary means of interpretation” in support for an ordinary meaning inclusive of private passengers.<sup>55</sup>

Use of the term ‘personnel’ in Article VIII of the OST provides great support for the contention that the ordinary meaning of ‘personnel’ was inclusive of private passengers at the time the RRA was concluded.<sup>56</sup> Article VIII stipulates that States of registration “shall retain jurisdiction and control over [their space] object, and over any *personnel* thereof [...]”<sup>57</sup>

Many scholars have argued that interpreting the ordinary meaning of ‘personnel’ in this context requires the inclusion of “any and all people on board a spacecraft”<sup>58</sup> as clearly intended by the drafters.<sup>59</sup> And, given that the term ‘personnel’ was used in the OST to refer to all persons aboard a spacecraft, it is logical to conclude that this was the same meaning intended by use of ‘personnel’ in the RRA.<sup>60</sup>

Further, the preamble of the RRA itself states that it is meant to provide further concrete expression to the obligation to ensure the “rendering of all possible assistance to astronauts [...] and] the prompt and safe return of astronauts”.<sup>61</sup> This also supports adoption of a broader definition for the term ‘personnel’.

Furthermore, examination of the history and development of the RRA, including its humanitarian purpose as required under Article 31 of the VCLT, also supports a more inclusive interpretation.<sup>62</sup> Interpreting the meaning of ‘person-

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53 *Id.*; VCLT, *supra* note 3, Art. 31; Beckman, *supra* note 38, at 373; Steven Freeland, *Up, Up and... Back: The Emergence of Space Tourism and its Impact on the International Law of Outer Space*, 6 Chi. J. Int'l L. 1, 10 (2005).

54 Sundahl, *supra* note 4, at 175, 180, 189.

55 VCLT, *supra* note 3, Art. 32(b).

56 OST, *supra* note 1, Art. VIII; Sundahl, *supra* note 4, at 186-187.

57 OST, *supra* note 1, Art. VIII (emphasis added).

58 Sundahl, *supra* note 4, at 186-187.

59 Manned Space Flight: Legal Aspects in the Light of Scientific and Technical Developments, 168, 194 (Karl-Heinz Bockstiegel ed., 1993); Stephan Hobe, *Legal Aspects of Space Tourism*, 86 Neb. L. Rev. 439, 455 (2007).

60 Sundahl, *supra* note 4, at 186-187.

61 RRA, *supra* note 2, preamble 1<sup>st</sup> and 2<sup>nd</sup> recitals.

62 VCLT, *supra* note 3, Art. 31; Beckman, *supra* note 38, at 370-373.

nel' therefore requires inclusion of all people on board a spacecraft – to achieve the correct outcome as clearly intended by the drafters of OST and RRA.<sup>63</sup>

## 2. Applicability of RRA Article 3 to Accident or Distress in Outer Space

The Astronaut Rescue and Return Agreement Article 3 requires that “if information is received or it is discovered that the personnel of a spacecraft have alighted on the high seas *or in any other place not under the jurisdiction of any State*, those Contracting Parties which are in a position to do so shall, if necessary, extend assistance in search and rescue operations for such personnel to assure their speedy rescue.”<sup>64</sup>

Although the phrase “in any other place not under the jurisdiction of any State” includes the territory of outer space,<sup>65</sup> in order to determine the applicability of RRA Article 3 to search and rescue in outer space it is necessary to first resolve the precise meaning of the phrase “the personnel of a spacecraft have alighted,” as most commentators interpret it to preclude the obligation to render assistance while traversing outer space.<sup>66</sup>

This position breaks down into those who seem to apply “have alighted” to the ‘personnel’,<sup>67</sup> those who appear to apply “have alighted” to ‘the spacecraft’,<sup>68</sup> those who appear not to distinguish between the alighting of the personnel and the landing of the spacecraft,<sup>69</sup> and those who see Article 3 as restricted to search and rescue efforts on Earth.<sup>70</sup>

Regardless, all of these commentators agree that, even if Article 3 does not apply to search and rescue of astronauts in outer space, OST Article V second paragraph would provide assistance to astronauts having suffered accident, distress, or emergency in outer space.<sup>71</sup>

### 2.1 Confusion under VCLT – Interpreting ‘Alighted’ under RRA Article 3

By introducing the term ‘alighted’, the RRA created confusion rather than establishing a clarity capable of resolving the previously existing gaps in the af-

63 Sundahl, *supra* note 4, at 186-189.

64 RRA, *supra* note 2, Art. 3, (emphasis added).

65 Beckman, *supra* note 38, at 372-373; Dembling, *supra* note 9, at 649; Hall, *supra* note 25, at 205-206; Ogunbanwo, *International Law and Outer Space Activities*, 133 (1975); Sundahl, *supra* note 4, at 169.

66 Beckman, *supra* note 38, at 372-373; Dembling, *supra* note 9, at 649; Hall, *supra* note 25, 205-206; Lyall, *supra* note 25, at 140; Ogunbanwo, *supra* note 65, at 133; Sundahl, *supra* note 4, at 169, 194.

67 Ogunbanwo, *supra* note 65, at 133.

68 Sundahl, *supra* note 4, at 169.

69 Dembling, *supra* note 9, at 649; Hall, *supra* note 25, at 205-206; Lyall, *supra* note 25, at 140.

70 Beckman, *supra* note 38, at 372-373.

71 *Id.*; Dembling, *supra* note 9, at 649; Hall, *supra* note 25, at 205-206; Lyall, *supra* note 25, at 140; Ogunbanwo, *supra* note 65, at 133.

firmative duties established under the OST.<sup>72</sup> Starting with an analysis of the ordinary meaning, ‘alight’ is defined as an intransitive verb meaning “1. To [spring down,] get down[,] or descend, as from on horseback or from a carriage[; to dismount]. 2. To descend and settle[, lodge, rest, or stop]; as, a flying bird alights on a tree; snow alights on a roof.”<sup>73</sup>

The term ‘alight’ can refer to the alighting of a vehicle itself, such as an aircraft or spacecraft, in the same way that it would refer to the alighting of a bird that lands or perches.<sup>74</sup> In accordance with this definition, most commentators seem to interpret the term ‘alighted’, as used in the Article 3 phrase “the personnel of a spacecraft have alighted on the high seas or in any other place [...]” as requiring a landing of the spacecraft.<sup>75</sup>

Making the spacecraft landing prerequisite to triggering the duty to render assistance on behalf of States Parties to the RRA fails to provide for any duty to rescue ‘personnel of a spacecraft’ while traversing or stranded in outer space, orbit, or anywhere else where such a landing has not occurred.<sup>76</sup>

However, ‘alight’ can also refer to the persons on board, e.g. pilot, crew and passengers, a vehicle, including an aircraft or spacecraft, as they dismount, disembark, or deplane from such vehicle.<sup>77</sup> At least one commentator clearly states that “[f]or Article 3 to apply, the personnel of a spacecraft must have

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72 Sundahl, *supra* note 4, at 169, 194.

73 These quoted definitions for ‘alight’ are from the 1913 Webster’s Dictionary, showing additions with respect to the text of the 1828 edition, for the second definition the text in brackets was imported from the third definition in the 1828 edition. See American Dictionary of the English Language, (Noah Webster ed., 1828), and Webster’s Revised Unabridged Dictionary, (Noah Porter ed., 1913) [hereinafter Webster and Porter, respectively], both available online at The American and French Research on the Treasury of the French Language Project: <<http://machaut.uchicago.edu/websters>>, last accessed on 26/5/2013.

74 Webster and Porter, *supra* note 73, 2<sup>nd</sup> definition. ‘Alight’ was first used in reference to aircraft, including the first hot-air balloons, from 1786 onward. See Online Etymology Dictionary, (Douglas Harper ed., 2001), available at <[www.etymonline.com/index.php?search=alight](http://www.etymonline.com/index.php?search=alight)>, last accessed on 26/5/2013.

75 Dembling, *supra* note 9, at 649; Hall, *supra* note 25, at 205-206; Lyall, *supra* note 25, at 140; Sundahl, *supra* note 4, at 169.

76 Carl Q. Christol, The Modern International Law of Outer Space, 171-172 (1982); Dembling, *supra* note 9, at 649; Hall *supra* note 25, at 206; Sundahl, *supra* note 4, at 169.

77 Webster and Porter, *supra* note 73, 1<sup>st</sup> definition. The term ‘alight’ means to descend or dismount, coming from the Old English ‘alihtan’, which originally meant “to lighten, take off, take away”, a combination of the word ‘a’ – meaning “down, aside”, with the word ‘lihtan’ – meaning “get off, make light”. Hence, the connotation is to get down off a horse or vehicle, thereby lightening its load. See Online Etymology Dictionary, *supra* note 74.

‘alighted’ [...] No duty to extend assistance arises until the contracting party receives information or discovers that the personnel have alighted.”<sup>78</sup>

Further, an analysis of the linguistics of Article 3 shows that a correct interpretation of the term ‘alighted’, as used in the Article 3 phrase “the personnel of a spacecraft have alighted on the high seas or in any other place [...]”, is that the personnel have alighted, suggesting that they may be required to deplane or disembark their spacecraft to be entitled to assistance.

The rules of grammar dictate the *plural past-tense verb* “have alighted” must agree with a *plural subject noun*.<sup>79</sup> And, according to the rules of grammar, it is impossible for ‘a spacecraft’, which comprises a singular subject noun, to agree with a plural past-tense verb, *i.e.* “have alighted”.<sup>80</sup>

Rather, were the spacecraft the intended subject of the verb, *i.e.* the thing or noun doing the alighting, versions of the phrase that would correctly establish agreement between spacecraft as the subject and the verb ‘alighted’ would include “the personnel of a spacecraft which has alighted [...]” and “the personnel of a spacecraft having alighted [...]” Therefore “have alighted” must refer to ‘personnel’, the only available plural subject noun in agreement.

And, since the verb alight is employed under Article 3 in the plural past-tense form, it is clearly the ‘personnel’ who “have alighted”.<sup>81</sup> However, it is unclear whether a State Party could justifiably attempt to rely on the second definition of ‘alight’, *i.e.* that personnel must have debarked the spacecraft, in an attempt to circumvent RRA Article 3 obligations.<sup>82</sup>

With arguments and examples supporting interpretation of “have alighted” as referring to both ‘a spacecraft’ and ‘the personnel’, this author submits that ambiguity and confusion exist regarding the proper definition of the term “have alighted”. Confusion resulting from ambiguous or obscure meaning permits recourse to the *travaux préparatoires* and other sources in interpretation.<sup>83</sup>

Since all five official language versions of the RRA are given equal weight,<sup>84</sup> consulting the other versions is an appropriate starting point to elucidate the intended meaning underlying use of the term ‘have alighted’. Having consulted

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78 Ogunbanwo, *supra* note 65, at 138.

79 Margaret L. Benner, Self Teaching Unit: Subject – Verb Agreement, Online Writing Support, Towson University, (2000), available at <[www.towson.edu/ows/module5-VAGR.htm](http://www.towson.edu/ows/module5-VAGR.htm)>, last accessed on 26/5/2013.

80 Benner, *supra* note 79.

81 Benner, *supra* note 79.

82 Dembling, *supra* note 9, at 649; Hall, *supra* note 25, at 205-206; Lyall, *supra* note 25, at 140.

83 VCLT, *supra* note 3, Art. 32(a).

84 RRA, *supra* note 2, Art. 10; VCLT, *supra* note 3, Art. 33.

native language speakers regarding the Chinese,<sup>85</sup> Spanish,<sup>86</sup> and French<sup>87</sup> versions, as well as dictionary sources, it is clear that these official language versions of the RRA all use phraseology implicating a spacecraft “landing”.<sup>88</sup>

## 2.2. Interpreting ‘Alighted’ Considering Absurd Results under the VCLT and Recourse to the *Travaux Préparatoires*

Preconditioning the duty to render assistance on the spacecraft having landed results in a manifest absurdity, as discussed in greater detail below, and is contrary to the recorded intentions and humanitarian purpose of the RRA. This is especially true where a State Party is well positioned to extend assistance to the spacecraft personnel having suffered accident, distress, or other emergency while traveling in orbit or open space.

This author also submits that accepting either the conventional definition or the alternative definition requiring passenger disembarkation for the ordinary meaning interpretation of the term ‘alighted’ results in manifestly absurd consequences. To require either ‘a spacecraft’ or ‘personnel’ thereof to “have alighted” prior to triggering the duty to extend assistance embodied in RRA Article 3 leads to ludicrous and unreasonable results.

Consider, for instance, a spacecraft that *cannot land* due to malfunction, accident, or damage due to some other cause (e.g. NASA’s Space Shuttle Columbia). Should the personnel of such a spacecraft be forced to undergo the mortally uncertain event of an intentional crash landing in order to trigger the duty of States Parties to extend assistance?

Further, consider a scenario including a large international space station where spacecraft regularly ‘alight’, meaning to land or dock on this space station. Given the example of a damaged spacecraft incapable of safely alighting on the space station but which is able to safely maneuver itself to within close proximity of such space station, should the States Parties operating such space station and the astronaut occupants thereof have no duty to extend assistance?

Contemplating these exemplary scenarios, it is clear that reliance on the conventional definition of ‘alight’ advanced by various commentators has unintended and undesirable consequences. It may be true that for the ‘personnel’ of the spacecraft to “have alighted”<sup>89</sup> the spacecraft itself must necessarily also “have alighted”,<sup>90</sup> by landing on a celestial body, docking at a space station or otherwise.

85 Feng Geng and Danni Liu, fellow August 2013 graduates of Leiden University Advanced LL.M. in Air and Space Law.

86 Reuben Garcia Balderas and Bianca Medaglia, fellow August 2013 graduates of Leiden University Advanced LL.M. in Air and Space Law.

87 Philippe Carous, fellow August 2013 graduate of Leiden University Advanced LL.M. in Air and Space Law.

88 OST, *supra* note 1.

89 Webster and Porter, *supra* note 73, 1<sup>st</sup> definition.

90 Webster and Porter, *supra* note 73, 2<sup>nd</sup> definition.

However, although such alighting of ‘personnel’ may necessarily implicate an included landing of the spacecraft, this in no way affects the linguistic implications of the fact that ‘personnel’ is the plural subject noun in agreement with the plural past-tense verb ‘have alighted’, as used in RRA Article 3. The linguistic implications of this construction entail that by the explicit words and linguistics of Article 3, a State Party might only be required to extend assistance in the circumstances where the personnel had already ‘alighted’, *i.e.* deplaned or disembarked, from the spacecraft. This scenario presents a manifest absurdity and clearly was not the intention of underpinning the premises on which the RRA is founded.

Consider the hypothetical example where the personnel are not able to evacuate or alight from the spacecraft for some reason. For instance, the spacecraft may have crash landed thereby rendering any means of escape from the spacecraft impossible or unsafe. The personnel may not have or no longer have appropriate equipment to allow them to leave the spacecraft and exit into whatever hostile environment their spacecraft has entered, *e.g.* the high seas.

Is it to be understood that upon the emergency landing of a spacecraft, or other landing due to accident or distress, where the personnel of the spacecraft had not yet exited the spacecraft, even if it were not possible for them to do so, for some reason such as malfunction, damage, or otherwise that a State Party and its astronauts or personnel might not be required to extend assistance under the RRA?

Contemplating these exemplary scenarios, it is clear that reliance on the definition of ‘alight’ implicated by the linguistic analysis of Article 3 also yields manifestly absurd results. Hence, recourse may be taken in the *travaux préparatoires* and other sources for support of a re-interpretation of the ‘ordinary meaning’ of the term in question.<sup>91</sup>

According to the statement before the UNGA of the French delegate, Mr. Berard, the RRA contains certain clauses that are less than satisfactory because the RRA is meant to apply “*to search and rescue* undertaken not only on the earth and in its atmosphere, but also *in outer space and on celestial bodies*.”<sup>92</sup>

It is clear from this statement before the UNGA, a recapitulation on behalf of Mr. Berard of previous statements made by the French Delegation before the Legal Sub-Committee and the Committee on the Peaceful Uses of Outer Space, that neither the results of the conventional interpretation advanced by the commentators nor the alternative interpretation, requiring passenger debarkation, could have been intended by use of the term ‘alighted’ in Article 3.<sup>93</sup>

This conclusion is supported by the illogical, unreasonable and absurd results attendant to use of either of the previously considered definitions for the term ‘alighted’, including the requirement for a spacecraft to have landed or for the

91 VCLT, *supra* note 3, Art. 32(b).

92 Provisional Verbatim Record of the Sixteen Hundred and Fortieth Plenary Meeting, U.N. GAOR, 22d Sess., U.N. Doc. A/PV.1640, 36, 41, 47 (1967) [hereinafter Provisional Verbatim Record]; Sundahl, *supra* note 4, at 169.

93 Provisional Verbatim Record, *supra* note 92; Sundahl, *supra* note 4, at 169.



personnel to have disembarked such spacecraft, prior to the triggering of the duty to extend assistance on behalf of States Parties to the RRA.

Under the VCLT, when language in a treaty is deemed to have absurd results, the *travaux préparatoires* can be used to *challenge* the conventionally accepted ‘ordinary meaning’ of the treaty language.<sup>94</sup> Consequently, it is clear that a further definition of the term ‘alighted’ having greater breadth and applicability needs to be investigated.

The 1913 version of *Webster’s Revised Unabridged Dictionary* and other sources provide an alternate definition for the term ‘alight’, meaning to come, to fall, or to happen upon by chance or accident.<sup>95</sup> Thereby, much needed reprieve can be obtained from the circumstances of absurd results encountered in relying upon the first two definitions of ‘alight’ addressed above.

### 3. What Assistance Is Required under RRA Article 3?

Return and Rescue Agreement Article 3 comprises customary international law to which all States are bound.<sup>96</sup> If “the personnel of a spacecraft have alighted on the high seas or in any other place not under the jurisdiction of any State,” irrespective of their State of origin, “those Contracting Parties which are in a position to do so shall, if necessary, extend assistance in search and rescue operations for such personnel, to assure their speedy rescue.”<sup>97</sup>

Ogunbanwo states that “Not under the jurisdiction of any State” shows that the assistance extends to outer space, the Moon and celestial bodies.”<sup>98</sup> Many other commentators agree with this statement.<sup>99</sup>

Although requiring the landing of a spacecraft or the disembarkation of spacecraft personnel, as a prerequisite to the duty to extend assistance, results in absurd consequences as shown above, use of the term ‘alight’ in the English language version of the Treaty may actually provide an opportunity to resolve such irrational scenarios.

94 VCLT, *supra* note 3, Art. 32. See “recourse may be had to supplementary means of interpretation, including the preparatory work the treaty and the circumstances of its conclusion... to determine the meaning when the interpretation according to article 31: (a) leaves the meaning ambiguous or obscure; or (b) leads to a result which is manifestly absurd or unreasonable”; Sundahl, *supra* note 4, at 175, 180, 188.

95 Porter, *supra* note 73, 3<sup>rd</sup> definition, “to come or chance (*upon*)”. See also, Century Dictionary and Cyclopaedia, (1891), “to fall (*upon*); come (*upon*) accidentally, or without design; light: as, to *alight* on a particular passage in a book, or on a particular fact; to **alight** on a rare plant,” available at <[www.global-language.com/CENTURY/](http://www.global-language.com/CENTURY/)>, last accessed on 26/5/2013. (All emphasis in original references).

96 See notes 27 and 28, *supra*.

97 RRA, *supra* note 2, Art. 3.

98 Ogunbanwo, *supra* note 65, at 133.

99 Beckman, *supra* note 38, at 372-373; Dembling, *supra* note 9, at 649; Hall, *supra* note 25, at 205-206; Lyall, *supra* note 25, at 140; Sundahl, *supra* note 4, at 169, 194.

By adopting the alternate, broader definition of the term ‘alight’, including “to come upon”, or “to fall upon” the duty to render assistance to personnel of a spacecraft suffering accident or distress would appropriately be expanded to personnel in orbit, traversing outer space and also to passengers who have not yet landed or disembarked the space vehicle. And, assistance would be required to be extended, at least by States Parties to the RRA, where the personnel of a spacecraft have alighted on, *i.e.* have come upon, fallen upon or happened upon, “any other place not under the jurisdiction of any State”, *i.e.* a location in outer space, and are in need of assistance to assure their speedy rescue.

## V. Conclusions

So, it seems that only through employment of broadly interpreted definitions for the terms ‘astronaut’, ‘personnel’ and ‘alighted’ can the RRA and OST be expanded sufficiently in scope to cover the full potential range of applicability to accident, distress, and emergency in outer space initially intended to be covered.

From the foregoing analysis, it can be concluded that OST Article V language is broad enough to cover earth-to-space assistance required to save astronauts in space, on the Moon, or in orbit. Article V applies to accident, distress and emergency suffered by astronauts in outer space, at least through the second paragraph. ‘Astronaut’ can be interpreted to include all persons on board a spacecraft, including private passengers.

More restrictive definitions of ‘astronaut’ typically require some type of training, but these do not yield satisfactory results. However, exactly what assistance is ‘possible’ remains at the discretion of the State whose assistance is requested. RRA Article 3 can be interpreted to apply to accident or distress in outer space by adopting an alternate, broader definition intended to resolve the absurd results consequent to interpretations of ‘have alighted’ as requiring the landing of a spacecraft or the disembarkation of the spacecraft personnel.

Like ‘astronaut’, ‘personnel’ of a spacecraft can be interpreted as including all persons on board. More restrictive definitions of ‘personnel’ typically require such persons to be employed or acting as service providers, but it has been demonstrated herein that a more expansive definition inclusive of private passengers should be adopted.

Therefore, in accordance with the VCLT Article 32(b) this author suggests adoption of the alternative definition for the term ‘alight’ discussed herein, namely, “to come upon”, “to fall upon”, etc.

This author suggests adoption under VCLT Art. 32(b) of the more expansive definition of the term ‘alight’ discussed herein, “to come or chance upon, accidentally or without design.” This would broaden the scope of the duty to assist under Article 3 as compared to the conventional interpretation of ‘alighted’, and in line with the intent of the drafters as evidenced by the statement of the French Delegate, Mr. Berard, in the *travaux préparatoires*.

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In accordance therewith, the assistance necessary to save personnel of a spacecraft suffering accident or distress while traversing space, on the Moon and other celestial bodies, or in orbit would be ensured.

Use of the broader, more expansive interpretation of the term 'alighted' would trigger the duty to "if necessary, extend assistance" in search and rescue efforts when the personnel of a spacecraft would 'alight', or "come upon" or "fall upon" any place or territory "not under the jurisdiction of any State", *e.g.* outer space, due to accident, distress or emergency.

This would appropriately align with the humanitarian principles of the OST and RRA by applying their provisions regarding search, rescue and return to astronauts, personnel and spacecraft suffering accident, distress or emergency in outer space. And thereby, achieving the ultimate goals and objectives of these instruments, to provide for the safety of astronauts and space personnel during the full course of their outer space excursions, would be enabled.