

# STRONG SIGNALS FROM SPACE: WHAT DOES IT MEAN FOR INTERNATIONAL LAW?

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Astronomers across the globe marveled at news that a Russian radio telescope detected a uniquely strong signal of unknown origin, coming from the direction of a solar system akin to our own.<sup>1</sup> The signal's strength, much greater than noise power generally detected by the Russian satellite, was consistent with something extraterrestrial.<sup>2</sup> As researchers analyze and debate the signal's source, questions as to how the world would react to extraterrestrial contact have naturally arisen.

Radio telescopes, such as the one used here, allow astronomers to study space and the atmosphere.<sup>3</sup> Astronomical objects with changing magnetic fields, such as planets, produce radio waves.<sup>4</sup> Large radio telescopes detect the waves coming from space and analyze the waves' shape, strength, and path traveled to map the universe and study astronomical phenomenon.<sup>5</sup>

Although originally detected in May 2015, researchers first reported this signal at the end of this August.<sup>6</sup> Russia's telescope observed radio waves from the direction of the star HD164595, and witnessed a significant spike in signal intensity.<sup>7</sup> Located roughly ninety-four light years away from Earth, this solar

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<sup>1</sup> Sam Thielman, *Alien Life, or noise? Russian telescope detects 'strong signal' from sun-like star*, THE GUARDIAN (Aug. 29, 2016), <https://www.theguardian.com/science/2016/aug/29/russian-radio-telescope-strong-signal-hd164595-seti>.

<sup>2</sup> *Mystery Alien Signal from Hercules Constellation – “Was from a Russian Military Satellite”*—Russian News Agency TASS, DAILY GALAXY (Sept. 5, 2016), [http://www.dailygalaxy.com/my\\_weblog/2016/09/mystery-alien-signal-from-hercules-constellation-was-from-a-russian-military-satellite-russian-news-.html](http://www.dailygalaxy.com/my_weblog/2016/09/mystery-alien-signal-from-hercules-constellation-was-from-a-russian-military-satellite-russian-news-.html).

<sup>3</sup> National Aeronautics and Space Administration, *Radio Waves*, MISSION: SCIENCE (Sept. 23, 2016), [http://missionscience.nasa.gov/ems/05\\_radiowaves.html](http://missionscience.nasa.gov/ems/05_radiowaves.html).

<sup>4</sup> *Id.*

<sup>5</sup> Diane Fisher Miller, *Basics of Radio Astronomy for the Goldstone-Apple Valley Radio Telescope*, JET PROPULSION LABORATORY – NASA (Apr. 1998), [http://www2.jpl.nasa.gov/radioastronomy/radioastronomy\\_all.pdf](http://www2.jpl.nasa.gov/radioastronomy/radioastronomy_all.pdf).

<sup>6</sup> *Mystery Alien Signal*, *supra* note 2.

<sup>7</sup> *Id.*

system is particularly interesting because it is centered around a star of similar brightness, age, temperature, and size to our sun.<sup>8</sup> We know of only one planet in this system, which is similar in size to Neptune.<sup>9</sup> This planet, however, orbits too close to the star to support life.<sup>10</sup> It is likely, however, that only a highly civilized society, perhaps more sophisticated than here on Earth, could generate such a signal from HD164595.<sup>11</sup> That signal strength would have required one hundred billion watts of energy to blast in all directions, and fifty trillion watts to blast just in the direction of Earth.<sup>12</sup> This is more energy than all the people on Earth combined use at the moment.<sup>13</sup>

Many researchers were hesitant to put any weight on the discovery. As with any research, replication is key. Out of thirty-nine scans that passed over this star, only one produced this strong signal.<sup>14</sup> Experts were also quick to point to alternative sources of the bizarre signal. Because the telescope scanned a large spectrum of space, verifying the particular direction the signal came from can be difficult.<sup>15</sup> Natural celestial events and objects, such as quasars, could have caused a similar signal strength.<sup>16</sup> Further, the signal's frequency was the same band as that allocated to Russian military use.<sup>17</sup> Russia also later announced that the signal originated instead from a Soviet Military satellite that had not been entered into the catalog of celestial bodies.<sup>18</sup>

The question remains how Earth would respond to an authenticated alien signal. The United Nations would likely be the primary authority for

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<sup>8</sup> Thielman, *supra* note 1.

<sup>9</sup> *Id.*

<sup>10</sup> *Mystery Alien Signal*, *supra* note 2.

<sup>11</sup> Loren Grush, *Astronomers have picked up a strong radio signal from space – but it doesn't mean aliens*, THE VERGE (Aug. 29, 2016), <http://www.theverge.com/2016/8/29/12695352/seti-russia-radio-observatory-signal-detected-alien-unlikely; Alien Hunters detect 'strong signal' from star 95 light years away>, THE TELEGRAPH (Aug. 30, 2016), <http://www.telegraph.co.uk/science/2016/08/30/alien-hunters-detect-strong-signal-from-star-95-light-years-away/>.

<sup>12</sup> Dave Mosher, *Astronomers have detected an 'interesting' and possibly alien radio signal coming from a sun-like star*, BUS. INSIDER (Aug. 29, 2016), <http://www.businessinsider.com/alien-signal-seti-hd164595-2016-8>.

<sup>13</sup> *Id.*

<sup>14</sup> *Mystery Alien Signal*, *supra* note 2.

<sup>15</sup> Mosher, *supra* note 12.

<sup>16</sup> Grush, *supra* note 11.

<sup>17</sup> Mike Wall, *'Alien' Signal Had Earthly Cause, Russian Scientists Say*, SPACE (Aug. 31, 2016), <http://www.space.com/33922-mysterious-seti-signal-earthly-cause.html>.

<sup>18</sup> *Mystery Alien Signal*, *supra* note 4.

dictating action, with resources already dedicated to “space law.”<sup>19</sup> The United Nations Office of Outer Space Affairs (UNOOSA) is tasked with promoting the peaceful uses of outer space.<sup>20</sup> With laws aimed at ensuring international cooperation in the preservation of space and Earth’s environments, sharing of potential discoveries, and regulation of space-related technologies, these laws do not speak directly to procedures in an instance of extraterrestrial contact.<sup>21</sup> However, the existing treaties and principles provide a relevant framework to start shaping this area of the law.

The most significant of the five international treaties that govern the use of space is the “Outer Space Treaty.”<sup>22</sup> The treaty requires exploration and use of outer space to be carried out “for the benefit and interest of all countries.”<sup>23</sup> To ensure that space is used peacefully, the treaty specifically prohibits nations’ appropriation of celestial bodies through claims of sovereignty, and the use of nuclear weapons in space.<sup>24</sup> Article XI of the treaty requires parties to inform the Secretary-General of the United Nations, the public, and the scientific community of the “nature, conduct, and results” of exploration activities.<sup>25</sup> This provision ensures that the UN would be informed of extraterrestrial contact, and would therefore be able to respond accordingly. Further, the existing provisions ensuring peaceable relations between countries on Earth would prevent violent relations with extraterrestrials. The United States has adopted similar domestic laws, often to ensure compliance with international treaties.<sup>26</sup>

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<sup>19</sup> *Space Law*, UNITED NATIONS OFFICE OF OUTER SPACE AFFAIRS, <http://www.unoosa.org/oosa/en/ourwork/spacelaw/index.html> (last visited Sept. 23, 2016).

<sup>20</sup> *About Us*, UNITED NATIONS OFFICE OF OUTER SPACE AFFAIRS, <http://www.unoosa.org/oosa/en/aboutus/index.html> (last visited Sept. 23, 2016).

<sup>21</sup> *Space Law Treaties and Principles*, UNITED NATIONS OFFICE OF OUTER SPACE AFFAIRS (last visited Sept. 23, 2016), <http://www.unoosa.org/oosa/en/ourwork/spacelaw/treaties.html>.

<sup>22</sup> *See Treaty on Principles Governing the Activities of States in the Exploration and Use of Outer Space, including the Moon and Other Celestial Bodies*, UNITED NATIONS OFFICE OF OUTER SPACE AFFAIRS, <http://www.unoosa.org/oosa/en/ourwork/spacelaw/treaties/introouterspacetreaty.html> (last visited Sept. 23, 2016).

<sup>23</sup> *Id.*

<sup>24</sup> *Id.*

<sup>25</sup> *Treaty on Principles Governing the Activities of States in the Exploration and Use of Outer Space, including the Moon and Other Celestial Bodies (Outer Space Treaty)*, art. XI, Jan. 27, 1967, 18 U.S.T. 2410, 610 U.N.T.S. 205.

<sup>26</sup> *Human Activities in Spaces: Issues and Framework of the United States Law Concerning Outer Space*, GLOBAL RESEARCH, <http://www.globalresearch.ca/issues-and-framework-of-the-united-states-law-concerning-outer-space/5484590> (last visited October 13, 2016).

The UN General Assembly adopts a yearly resolution entitled “International cooperation in the Peaceful Uses of Outer Space.”<sup>27</sup> The Committee on the Peaceful Uses of Outer Space and its legal subcommittee review space research and legal problems that arise, and can thus adapt to rapid advances in space technology that could lead to these legal questions.<sup>28</sup> While these protocols wouldn’t be legally binding, they would at least provide helpful guidance.<sup>29</sup>

One last useful guide for conduct in the event of extraterrestrial contact is the SETI Institute’s “Protocols for an ETI Signal Detection.” The SETI institute is a nonprofit organization dedicated to scientific research on the “origin and nature of life.”<sup>30</sup> As part of its mission, SETI explores life in the universe.<sup>31</sup> The protocol is perhaps one of the only authorities concerning activities after the detection of extraterrestrial intelligence.<sup>32</sup> The protocol calls for verification of the signal, informing various parties including the UN, other researchers, and public media, and constant monitoring of the source.<sup>33</sup> While its protocol is not law and is targeted toward researchers, it could provide further groundwork for developing legal protocols.

While Russia’s discovery seems to be of terrestrial origin, researchers like the SETI institute and astronomers across the globe continue to scan the skies for signs of life. Should these signals become verified in the future, it seems “space law” should expand to include “interstellar law.” As our technology advances, our law should be prepared to respond to the new scientific findings.

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<sup>27</sup> *Space Law: Resolutions*, UNITED NATIONS OFFICE OF OUTER SPACE AFFAIRS, <http://www.unoosa.org/oosa/en/ourwork/spacelaw/resolutions.html> (last visited Sept. 23, 2016).

<sup>28</sup> *Committee on the Peaceful Uses of Outer Space*, UNITED NATIONS OFFICE OF OUTER SPACE AFFAIRS, <http://www.unoosa.org/oosa/en/ourwork/copuos/index.html> (last visited Sept. 23, 2016).

<sup>29</sup> *Space Law: Resolutions*, *supra* note 26.

<sup>30</sup> *Our Mission*, SETI INSTITUTE, <http://www.seti.org/about-us> (last visited Sept. 23, 2016).

<sup>31</sup> *The Center for SETI Research*, SETI INSTITUTE, <http://www.seti.org/node/61> (last visited Sept. 23, 2016).

<sup>32</sup> *Protocols for an ETI Signal Detection*, SETI INSTITUTE, <http://www.seti.org/post-detection.html> (last visited Sept. 23, 2016).

<sup>33</sup> *Id.*