

Astrobiology News December 2016: On Star Wars, Hope, and Imagining Earth's Future

I suspect at least some of you saw the latest movie in the ongoing *Star Wars* saga on opening day, as I did. *Rogue One* is the prequel to the movie now appropriately known as *A New Hope*, which I first saw as an undergraduate at Cornell University when the original *Star Wars* classic was released in 1977. If you're a *Star Wars* fan, I encourage you to read my son's review of *Rogue One* on tumblr¹. There are no "spoilers"! Jason is a politics student at NYU, but he has a particular passion for screenwriting and this is his first attempt to write a film review. As we close out 2016, I wanted to share a few of NASA's reflections on imaginative worlds conceived for the "far, far away" galaxy of the *Star Wars* universe and diverse worlds in our own Galaxy².

There are currently more than 3,400 confirmed exoplanets in NASA's database of alien worlds³. Some of these worlds are evocative of the icy, watery, and desert worlds depicted in *Star Wars*. For example, there's Kepler-16b, a Saturn-sized exoplanet orbiting two suns that has been affectionately dubbed "Tatooine", after Luke Skywalker's home planet, and OGLW 2005-BLG-390L, an icy "super-Earth" that's been unofficially nicknamed "Hoth", after the frigid planet depicted in *The Empire Strikes Back*. Some exoplanets may be ocean worlds, reminiscent of the planet Kamino, envisioned in *Attack of the Clones*, or Scarif, in *Rogue One*.

The most intriguing exoplanet discovered in 2016 has to be Proxima Centauri b, a world orbiting in the habitable zone of a dim red star that happens to be our Sun's nearest stellar neighbor. Although the forest worlds of *Star Wars* (like Endor in *Return of the Jedi*, or Takodana in *The Force Awakens*) are green like our Earth, astrobiologists speculate that plant life on habitable worlds orbiting stars that emit mostly infrared light (like Proxima Centauri b) might be red, black, or even rainbow-colored. Such worlds should be "tidally locked", with the same side of a planet always facing its star. Just as seaweed changes color from green to dark brown at greater depths in the ocean, the color of any photosynthetic life on such a planet would depend upon its location.

Of course, at the present time, Earth is the only world we know for sure harbors life, and one species in particular holds a great deal of power to shape the future of that life, so I'd like to draw your attention to a new book by a friend and colleague I've known since graduate school. Astrobiologist David Grinspoon's latest is titled, *Earth in Human Hands: Shaping Our Planet's Future*. It's a very recent release and I haven't had time to read it yet, but I can affirm that David is both an excellent scientist and writer. I think you will find that he retains a hopeful outlook for our species and our world, without sugarcoating the challenges. The book has received outstanding reviews and has been named a "Best Science Book of 2016" by NPR's Science Friday⁴. It is certainly on my own holiday reading list!

Peace and blessings to you all as you celebrate the holidays in your various traditions. In case it's still up when you read this, you might check out the Zooniverse Advent Calendar⁵. As of today, 20 December 2016, the Zoo team reminds us that there are now 1,544,341 registered Zooniverse citizen scientists around the world, and if we all held hands in a line, we could reach from Paris to Istanbul! Doesn't that evoke a hopeful image?

May 2017 bring us all new hope,

Grace

¹ <http://suisunnage.tumblr.com/post/154570695563/rogue-one-review>

² <http://www.jpl.nasa.gov/news/news.php?feature=6704>

³ <https://exoplanets.nasa.gov/>

⁴ <http://funkyscience.net/book/earth-in-human-hands/>

⁵ <http://advent.zooniverse.org/>