

Asteroids, Mining, and Policy: Practical Consideration of Space Resource Rights

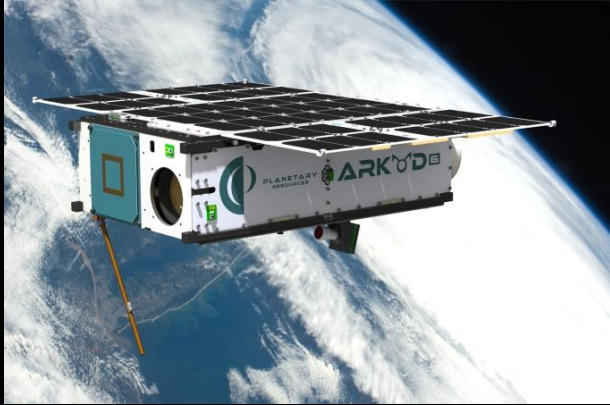


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Asteroid mining may be cool, but is it legal?



The "Giggle Factor" is Gone



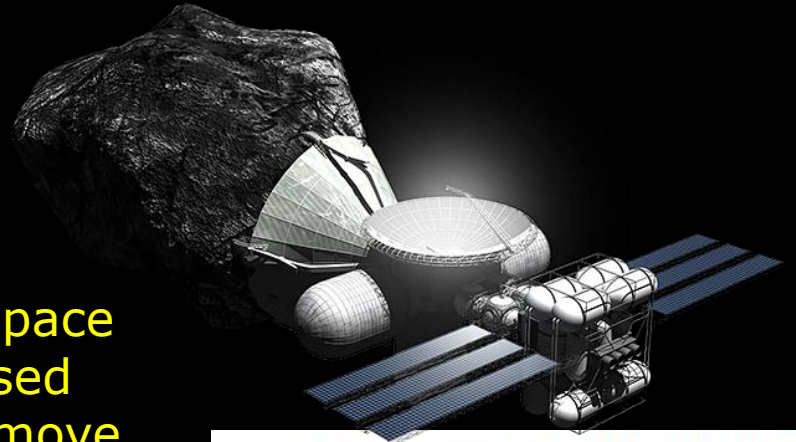
Planetary Resources
deployed its first satellite in
July, 2015



The first of its operational
Arkyd prospectors should
get launched this year



Both PRI and Deep Space
Industries have raised
significant capital to move
forward.



We now have domestic legislation recognizing rights in extracted resources.

- U.S. Commercial Space Launch Competitiveness Act (H.R. 2262) (CSLCA) passed by Congress in November, 2015 and signed into law by President Obama.
- Section 402 amends the U.S. space law code to include a new Section 51303:
 - “A United States citizen engaged in commercial recovery of an asteroid resource or a space resource under this chapter shall be entitled to any asteroid resource or space resource obtained, including to possess, own, transport, use, and sell the asteroid resource or space resource obtained in accordance with applicable law, including the international obligations of the United States.”



Other countries are showing an interest in asteroid mining

- In February, 2016, the government of Luxembourg announced an initiative to establish domestic laws and regulations to facilitate asteroid mining. <http://www.gouvernement.lu/5653386>.
- The announcement further signaled that Luxembourg was willing to directly invest in one or more asteroid mining companies.
- Luxembourg hopes to attract asteroid mining companies to establish a presence in this small European country. Luxembourg already hosts one of the world's largest space satellite operators, SES, S.A., due in part, to its relatively benign corporate tax system.



But is asteroid mining legal under international law?

- Some say the starting point is Article II of the 1967 Outer Space Treaty:
 - “Outer space, including the moon and other celestial bodies, is not subject to national appropriation by claim of sovereignty, by means of use or occupation, or by any other means.”
- There is no Article II “loophole” that allows individuals to lay claim to celestial bodies because of the requirement in Article VI that nations “authorize” and “supervise” the activities of their nationals and require that they abide by the other provisions of the OST, including the Article II ban on appropriation.
- But we really need to start with Article I of the OST which makes clear that both the “exploration *and use*” of outer space shall be free from restraint and discrimination.



Customary International Law Supports the Right to Extract Resources

- The six Apollo Moon landings brought back 842 pounds of lunar material. NASA strictly controls the samples -- less than ten percent of the total samples have been subjected to any experimentation.
- NASA itself claims that the lunar samples are “a limited ***national resource***, a future heritage and NASA policies require that samples be released only for approved applications in research, education, and public display.”
- NASA exchanged samples with the Soviet Union.
- The United States government has vigorously prosecuted any individual thought to have obtained any lunar samples.



So we're good to go to start mining asteroid, right?

- Actually, no. The Act failed to establish a regulatory regime to allow for the "authorization" and "supervision" of asteroid mining consistent with Article VI.
- Who do I go to for authorization?
- I'll need a launch and re-entry license from FAA/AST.
- But FAA/AST has no statutory jurisdiction beyond launch and reentry, and the authority it does have is limited to ensuring the safety of the uninvolved public.
- I'll need an FCC license to communicate with my payload
- This falls short of the requirements under Article VI.



Unfinished Business of Asteroid Mining

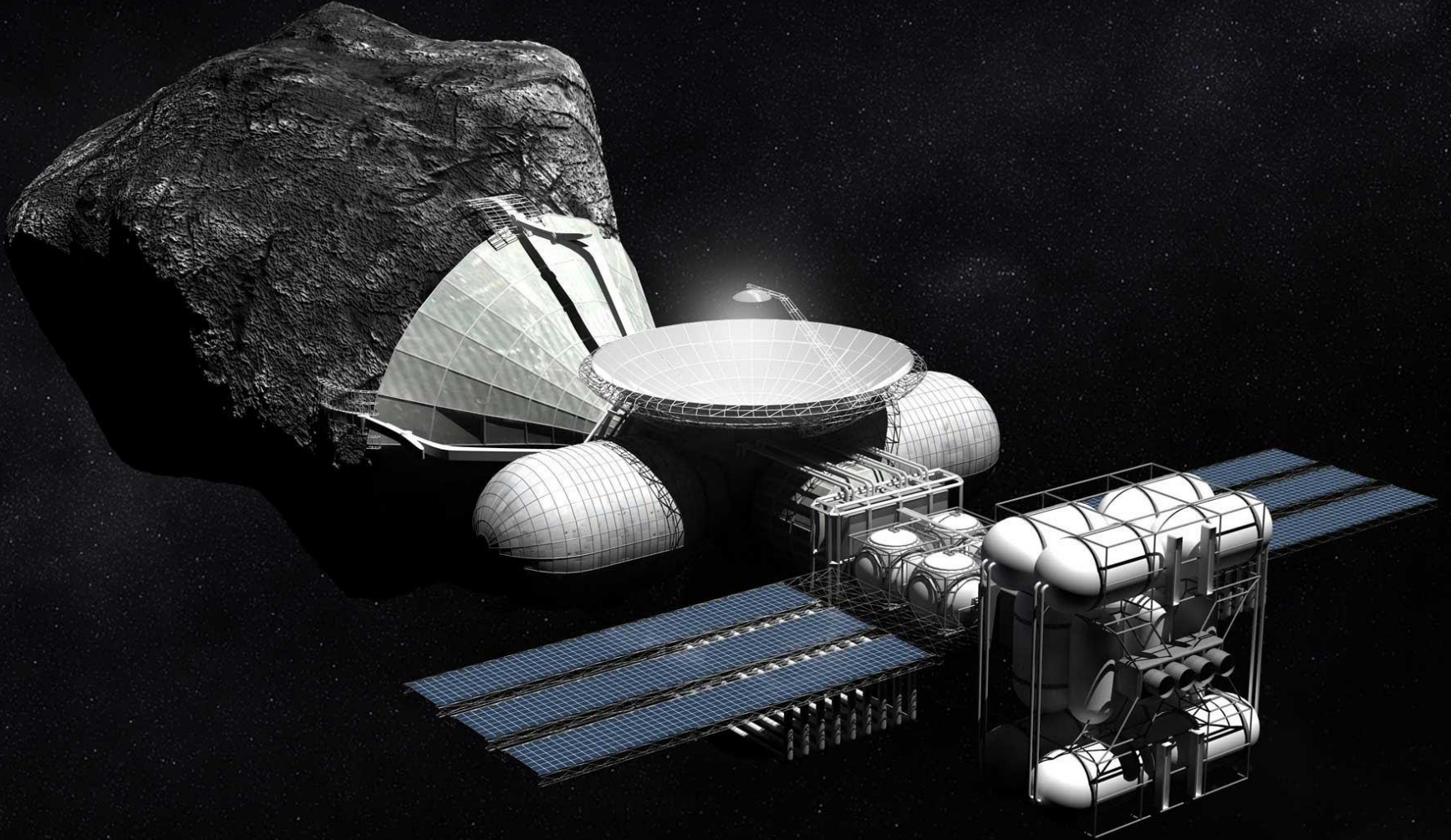
- The Act fails to deal with issues related to multiple entities wishing to mine the same asteroid.
- Article IX talks in terms of uses of space free from “harmful interference”
- The Act fails to create any mechanism for determining the rights of two U.S. domestic entities seeking to mine the same asteroid, let alone a conflict between a U.S. entity and a foreign entity.
- It is unclear under the Act what U.S. agency is charged with establishing rules.
- The Act deals only with asteroid mining. It says nothing about the Moon, or comets or Celestial bodies.



Two Problematic Scenarios Show the Shortfall of CSCLA



What if I want to mine a small asteroid and in the process recover all of its mass?

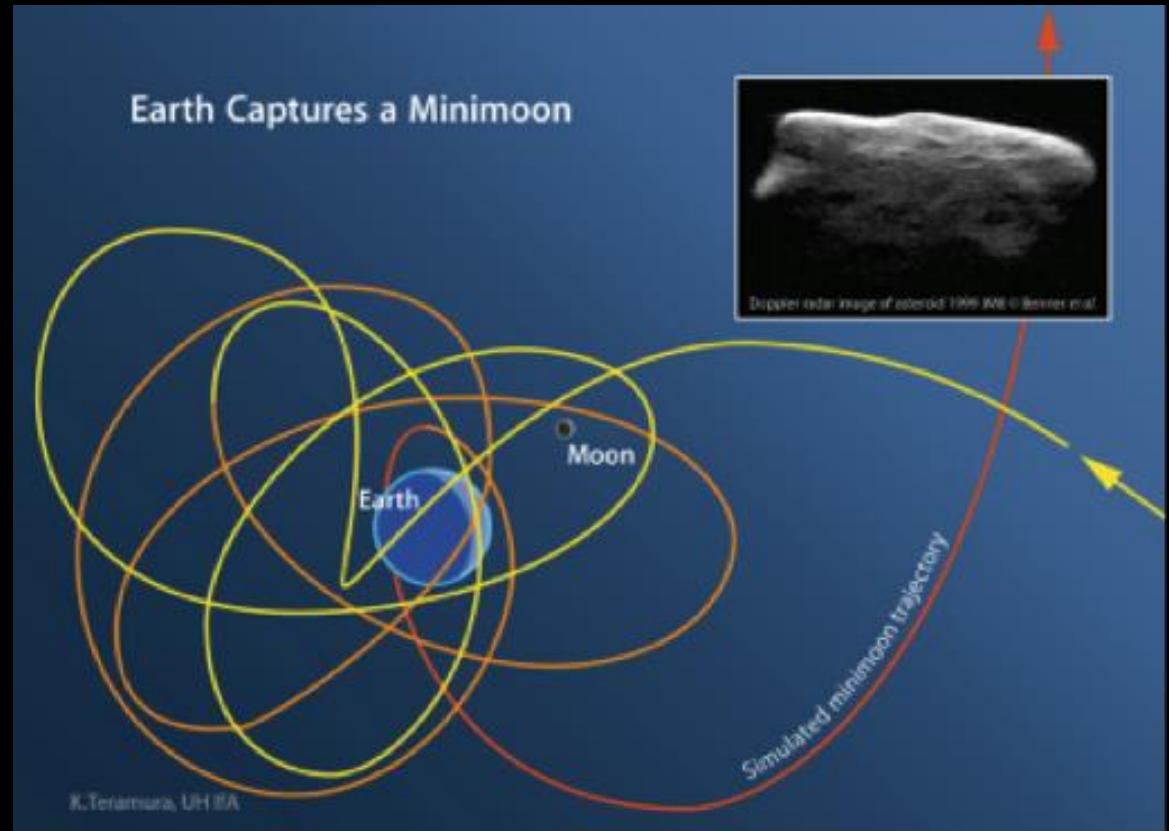


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What if I announce I'm going to mine an asteroid, but someone else beats me to it?

The Asteroid 2006RH120 could be captured in 2028 with a Delta-V of only 58 m/sec.

But a higher energy trajectory could get you there much sooner.



2006RH120 is only
2.3 x 7.4 meters

What Are Next Steps to Square the CSCLA With International Law?

- Congress needs to:
 - Establish a regulatory regime that meets Article VI requirements of authorization and continual supervision, but with a “light touch”.
 - What agency should be delegated this task?
 - The process MUST be transparent (no ITAR-like Black Holes)
 - Section 51303 needs to be expanded to include more than asteroids.
 - Article IX principals of non-interference need to be codified and defined.
 - Allow for reciprocal recognition of consistent foreign legal regimes for asteroid mining (can model after the Deep Seabed Hard Mineral Resources Act).



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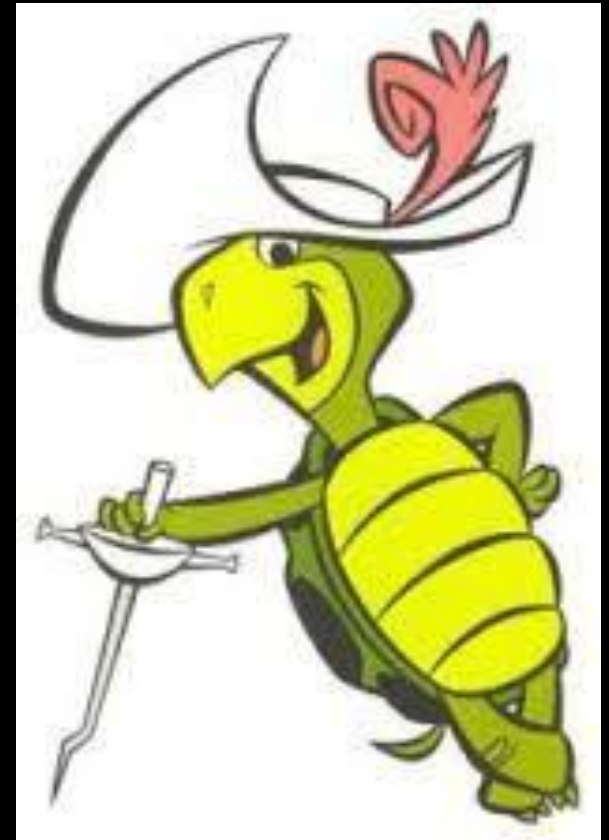
- The international legal community needs to revisit the definition of “celestial object.”
- A new naming regime needs to be adopted for asteroids. The nomenclature of year discovered + alphanumerics simply won't grab the public's attention



I propose that asteroids be renamed using
1960s cartoon characters

2006RH120, for example,
would become:

Asteroid Touche Turtle!



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Thank You!

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