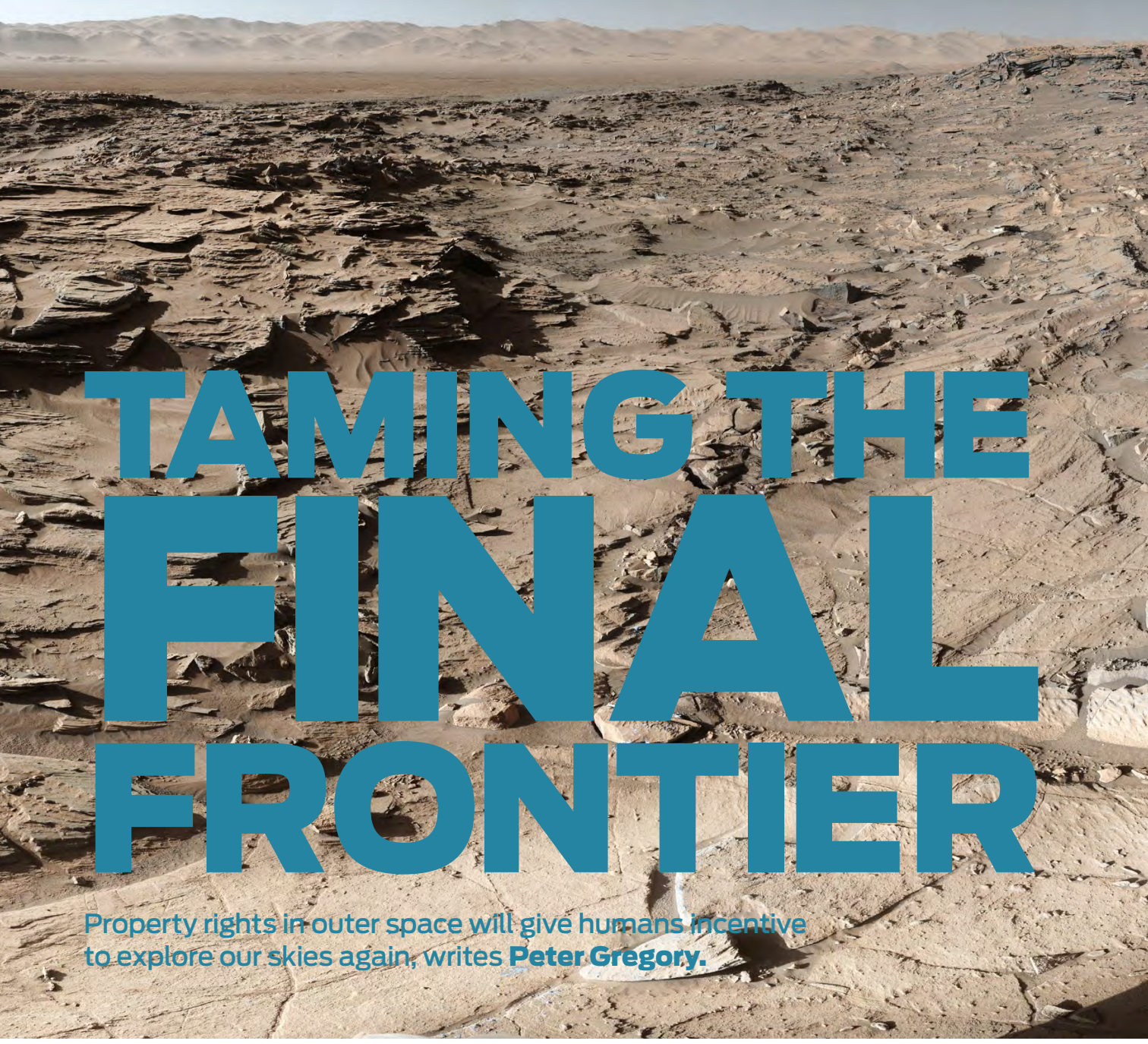

TAMING THE FINAL FRONTIER

Property rights in outer space will give humans incentive to explore our skies again, writes **Peter Gregory.**

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On November 25 last year, Barack Obama signed what one commentator described as 'the most sweeping legislative recognition of property rights in human history'. The cause for such a grand claim? The *US Commercial Space Launch Competitiveness Act*. The Act enables American citizens to claim property rights over the entire non-living universe (apart from earth). The form of property rights established in the Act are those espoused by 17th century British philosopher John Locke. Locke believed that if a person invested their labour into an object, they could acquire a property right over it. In practice, the Act means that if an American company mines an asteroid, or anything else in the cosmos, in the eyes of the US government, it owns whatever it finds.

It is hoped this legislation will give entrepreneurs the legislative security they need to launch projects that will lead to human flourishing in space.

In March 2015, Microsoft billionaire Naveen Jain said of human activities in space: 'It's clear that the baton has been passed from the government to the private sector.' It is because of this shift that the US government has attempted

View from 'Naukluft Plateau' on Mars taken from NASA's Curiosity rover | NASA

to update international space law, crafted when space exploration was purely the province of governments.

Various attempts are underway to kick-start industries in space. Planetary Resources—a company formed by Google executives Larry Page and Eric Schmidt—intends to mine asteroids. Jain plans to use robots to mine the moon with his company Moon Express. He aims to send the first commercial robotic spacecraft to the moon this year.

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Shackleton Energy Company intends to mine ice from the moon to create propellant for planetary missions.

The X Prize Foundation has launched the Lunar X Prize ($US30 million) to the first company that lands a commercial spacecraft on the moon, travels 500 metres across its surface and sends high-definition images and video back to Earth. But it must do this by the end of 2016.

Whilst it is impossible to say when these companies will be in a position to launch serious economic projects in space, recent advances in technology have made them closer than ever. Advances like the SpaceX Falcon Heavy Launcher, for example, should

A rendering of SpaceX's Falcon Heavy rocket | SpaceX

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allow material to be shipped into space for about a thousand dollars per pound.

As has been recognised for some time, unlocking outer space may have unimaginable benefits for humanity. The moon is known to have gold, cobalt, iron, palladium, platinum, tungsten and Helium-3, a gas that may enable nuclear power to be generated without radioactive waste. Asteroids contain valuable and often rare elements such as neodymium, scandium, yttrium, iridium, platinum and palladium.

Of course, what we know about space is infinitesimal compared to what we don't know. The possibilities for humanity in space are endless.

These projects require adequate property rights to go ahead. It goes without saying that private property rights underpin all economic prosperity. Risk and innovation can't happen if people are unable to say with any certainty that they own things. This is only exacerbated in the case of space property rights. It is still fantastically expensive to travel to space and an understatement to say that investing in an asteroid mining venture would be anything but highly speculative. It simply will not happen unless entrepreneurs know they will be able reap any benefits that ensue from such a project.

TRAGEDY OF THE INTERPLANETARY COMMONS

The Act attempts to provide this for the American space industry. To understand its significance it is necessary to understand the history of international space law. International space law developed in the context of the space race as a proxy of the Cold War. The most important piece of international space law is the 1967 Outer Space Treaty (OST). Its main priority was to prevent nations claiming national sovereignty over outer space. Whilst it allowed for non-government activity

in outer space, this had to take place under government supervision. Furthermore, the OST remained unclear on whether individuals could claim property rights.

As a result, some private activities have been able to take place in space, including commercial telecommunications, remote sensing and spacecraft launching industries. But as space technology has continued to evolve, it has become clear that a legislative framework that protects property rights is necessary to provide investors and entrepreneurs with the security necessary to make incredibly expensive and speculative space projects worthwhile.

Muddying international space law further is the 1979 Moon Agreement signed by 16 non-spacefaring nations (including Australia at the behest of the Fraser Government). The Moon Agreement stated that all of space was public land and couldn't be owned by individuals. All benefits of space—economic or otherwise—must be distributed between nations with special consideration given to poorer nations. Significantly, the US was not a signatory to the Moon Agreement.

With only 16 non-spacefaring signatories, clearly the Moon Agreement is a failed treaty. But it still challenged the notion that individuals would ever be able to claim property rights in outer space.

There are a couple of precedents back on earth that demonstrate the benefits of workable individual property rights regimes for uninhabited territories. In 1959, the Antarctic Treaty was signed with the intention of preventing the militarisation of Antarctica and ensuring that scientific exploration be allowed to continue. It also prevented individuals from acquiring property rights there and stopped any economic activity. As a result, many of the benefits Antarctica has to offer humanity have remained untapped to this day.

Contrast this with the growing resource sectors emerging in the Arctic Circle which is under the jurisdiction of the Artic nations who to varying degrees have established property rights regimes that do enable economic activities to take place. It is telling that in 1960 US President Eisenhower recommended that the coming OST be based on the Antarctic Treaty.

> IT IS SHAMEFUL THAT AUSTRALIA IS A SIGNATORY TO THE 1979 MOON AGREEMENT, WHICH (UNSUCCESSFULLY) CONSIGNS THE UNIVERSE TO BEING AN INTERGALACTIC SOVIET WASTELAND.

A further example is seabed mining. Seabed mining is considered by many to be the next frontier of the resources sector but it is yet to take place beyond countries' territorial waters. The seabed in international waters is governed by the International Seabed Authority (ISA) under the auspices of the United Nations Convention on the Law of the Sea.

Thus far, the ISA has issued only exploratory licences—not licences for production—and has indicated in the past that it would expect mining companies to share proceeds with developing nations. The extent of seabed mining in nations' territorial waters with relatively effective property rights regimes compared to the complete lack of seabed mining in international waters is instructive. The international community must take heed of these examples when crafting future space property rights arrangements.

An important element of the Commercial Space Launch Competitiveness Act is that the US is not claiming national sovereignty over any of the territory its citizens may occupy in space. This is an acknowledgement of the OST which, as mentioned above, stipulated that no nation could claim sovereignty over space. Mines built by Americans on asteroids will not become part of America. But the US will recognise that US citizens applying their labour to parts of outer space will be able to claim a property right over them.

Obviously, a few questions remain. If these areas aren't part of the US, what are they part of? Will the US defend the property rights of their citizens by force if necessary? If long-term economic activities are established in space requiring large groups of people to operate them over an extended period of time, will new legal jurisdictions and political entities and eventually even countries be able to be formed in outer space?

Australia too has a role to play. It is shameful that Australia is a signatory to the 1979 Moon Agreement, which (unsuccessfully) consigns the universe to being an intergalactic Soviet wasteland. Australia should renounce this treaty as soon as possible.

Furthermore, Australia could do worse than to follow America's lead. Although Australia doesn't have a space industry, it doesn't mean it can't have one in the future. It is unlikely one will emerge with the current property rights arrangements in place.

Humans are only just taking our first tentative steps into space. To realise the space's full potential, we must heed the property rights lessons learned on earth.