



Obtaining resources from space, like space solar power or helium 3, could change how space efforts are perceived as part of national policy and international relations. (credit: NASA)

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## The rise and fall of great space powers

by Nader Elhefnawy

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In Warren Ellis's graphic novel *Ministry of Space*, a ruthless Royal Air Force officer uses captured German rocket scientists and Holocaust gold to launch a British space program at the end of World War 2. Britain puts the first man in space in 1949, and not long after, has solar power stations in orbit, Moon bases, and Martian colonies, salvaging Britain's position as a great power, and turning the British empire into the world's first space empire.

*Ministry*, a Sidewise Award winner, is an alternate history rather than a counterfactual, driven, as Ellis explains, more by pre-war fantasy than the actual possibilities of Britain's post-war situation. (At the very least, could any amount of Nazi loot compensate for Britain's wartime exhaustion, or its industrial inferiority relative to the US and the Soviet Union?) Nonetheless, Ellis's story is very well thought out at many points, particularly in Britain's quickly proceeding from "first ever" stunts to turning a macroeconomic profit on space sufficient to affect the global balance of power. Britain can let go of the Suez Canal through which its oil moves when Nasser nationalizes it in 1956 precisely because it is building solar power stations in orbit that make oil politics irrelevant to its national well-being. In short order, it moves beyond these to establish itself on the Moon and Mars.

This is precisely what no space power has done to date, and until that changes, space remains an adjunct to activities on Earth: space systems limited to servicing terrestrial economies by collecting and relaying information from one point on Earth to another—and space programs being entirely subject to the ups and downs of those economies. The Soviet Union, the only space power that may be said to have "fallen" to date, did so not because of frustrations with its space program, but because its Earth-based

economy stagnated and unraveled in the 1970s and '80s.

The point may seem so basic as to not need stating, but state it one must because that moment of transition will be an epoch-making change in the development of space, one that had been expected to have arrived by the early twenty-first century in certain circles. As Robert Heinlein put it in his essay "Where To?", by "2000 A.D we could have O'Neill colonies,

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self-supporting and exporting power to Earth," as well as "a permanent base on Luna." Indeed, he was sure that even if the United States failed to capitalize on the "endless wealth... out there for the taking," and its potential to solve "not one but all of our crisis problems"—employment, inflation, pollution, population growth, energy, shortages of nonrenewable resources—other countries would surely do so. If there was to be no American Moon colony, then Germany would establish one, or Japan, or possibly the Soviets or the Chinese.

This obviously did not come to pass, and Heinlein's argument that a Moon colony twenty years after 1980 is no more implausible than a Moon landing was twenty years after 1950's *Destination Moon* can't help but arouse some skepticism, even as a broader audience begins to take a second glance at these ideas. One may not hear the term "O'Neill cylinder" very often, but there has certainly been a revival of interest in space as a source of energy, whether through solar energy satellites, or the mining of the Moon for helium-3. (See "[The limits to growth and the turn to the heavens](#)", The Space Review, January 2, 2007)

This upsurge of interest may represent the anxieties of the moment more than any real move in this direction, of course, and as a practical matter can do little to alleviate the causes of those anxieties. The plans are too long range to do anything about the price of oil this year or the next, or if the peak oil theorists are correct, the big crunch due in the next decade. Helium-3 may not be a practical energy source for decades, if ever, and in either case, a great deal of work likely remains to be done both lowering the cost of space launch, and reducing the size and weight of the payloads needed to get a space-based infrastructure up and running. (See "[Diversifying our planetary portfolio](#)", The Space Review, August 6, 2007) Still, if these or other such plans were realized they would mark the end of the time when space was just a critical node in terrestrial information flows, and the beginning of one in which space itself provides substantial, tangible, essential resources.

It may also mark the start of our groping our way back to those grander earlier visions, with all their implications. Asteroid mining on a large enough scale sufficient to have macroeconomic significance, or transfers of Earth's population into space colonies large enough to matter in demographic terms, would mean the return of extensive development to the importance it once enjoyed,

resetting the rules of today's efficiency-obsessed economic game. If carried far enough, it could create the postmodern equivalents of the maritime powers of the "Columbian era." Just as seafaring nations like Portugal or the Netherlands became the seats of much vaster, far-flung colonial empires, today's leading industrial countries (or larger groupings like the European Union) could become the centers of space empires extending from near-orbit to the asteroid belt and perhaps beyond, as Ellis's alternate Britain did. Space power would cease to be a symbol of or prop to national power, as they are today, and become instead its foundation. (Indeed, such thinking may well underlie the current round of Moon missions planned by the United States, China, and virtually every other country that can hope to pull one off.)

Of course, this sort of space-age mercantilism has never seemed to be the only possible future, and it may well be that the notion of "great space powers" will prove hollow long before that point. The idea that space should be used by all for the benefit of all is an old one, going back at least to Nikolai Fedorov, and well established in the law regarding space, particularly the 1967 Outer Space Treaty. While its arms control provisions may be its most frequently discussed aspect as of late, Article 1 holds that the

use of outer space, including the moon and other celestial bodies, shall be carried out for the benefit and in the interests of all countries... and shall be the province of all mankind.

The treaty very specifically holds that these bodies will be open to "use by all States without discrimination of any kind, on a basis of equality" with all enjoying "free access to all areas of celestial bodies." Article 2 of the treaty underlines the point by asserting that "Outer space, including the moon and other celestial bodies, is not subject to national appropriation" by any means, not only including formal claims of sovereignty, but use or occupation as well.

Such regimes can be reversed, with many observers terming the 1982 United Nations Convention on the Law of the Sea just such a reversal, "territorializing" much of the world's oceans by extending territorial waters, as well as through zones of lesser but significant control, like Exclusive Economic Zones. The world in 2007 seems to be moving in a very different direction than it had appeared to be in 1967, and with a change in the perceived opportunities, as well as the international balance of power, states might decide their interests would be better served by another arrangement. (Indeed, it would not be the first time the Outer Space Treaty was challenged: eight equatorial countries attempted to do so in 1976 with the Bogota Declaration, in which they asserted that the portion of geosynchronous orbit over their national territories belonged to them.)

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Nonetheless, there is reason to think governments will go on preferring the current one. In a future where the world's economy depends on an energy source mined in space, as seems possible to some, the Moon could well become the next Persian Gulf, and sharing control may be the only way to avoid a potentially disastrous conflict—which was the rationale behind agreements like the Outer Space Treaty in the first place. (It may be hoped that the solar system will allow plenty of room for everyone to expand, but mercantilism and great power conflict tend to go hand in hand.) Indeed, as the derision with which much of the international community reacted to Russia's planting of its flag at the North Pole earlier this month indicates, the day when countries could claim territory in this manner may be far behind us. Meanwhile, since it remains to be seen just how the broad positions of the Outer Space Treaty will be translated into a framework of practical rules governing the actual use of space in these ways, every possibility remains that even if countries cannot claim space, those regulations may afford ample room for the pursuit of national interest.

The legalities and their associated politics, however, are but one constraint. Whatever the economics of space development prove to be in the future, fiscal reality today dictates that what was originally to be America's space station Freedom is now the International Space Station, reflecting its funding on an international, even global basis. (The station, originally intended as a response to the Soviet space program, is not only a beneficiary of Russian participation, but, ironically, has been highly dependent on Soviet-designed launch vehicles for its operation.) Much more ambitious projects, like helium-3 mining, may have to be organized on a similar basis, just to raise the needed amount of capital. Under those conditions some states may have greater weight at the negotiating table than others, but in the final analysis their room for maneuver is limited because they cannot go it alone.

Then again, the political will for such cooperation has proven disappointing time and again, subject to the same kind of backsliding as, well, space development. There seems to be little public interest in greater funding for government-run space programs, while a large part of it continues to see privatization as a panacea for public sector failure. Multinational corporations, the biggest of which have values that dwarf the gross domestic products of all but the industrial heavyweights, seem just as capable as government of raising the capital the task requires, and the X Prize has given a public relations boost to enthusiasts of private efforts.

Yet, unfashionable as it may be to say so, there are grounds for doubt here as well. Despite its hype, business tends to walk beaten paths. (The privately-funded SpaceShipOne sent people on suborbital flights in 2004—over four decades after Alan Shepard and Gus Grissom performed the same feat.) It also tends to seek government

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subsidies that render marketplace pieties dubious, especially when the risks are so large and the capital demands so great. We may, as a good many of the dreamers hope, see heroic venture capitalists blazing a path across the heavens, but can one totally discount the possibility of Halliburton landing an obscenely padded, no-bid, cost-plus contract to build the first Martian colony that helps sour public opinion on the enterprise?

In the end, despite assurances that the future of space development clearly lies in one direction or another, the field actually remains wide open. However, whether it proves to be a scene of old-fashioned *realpolitik* where powers rise and fall in the manner described by Paul Kennedy, George Modelski, and innumerable others; of international cooperation in which space development brings the world closer together; or the predominance of private enterprise in a borderless market as broad as the reach of our spacecraft; how, and indeed if, we go about the task will as much as anything reveal the shape of our economic and political future.



*In addition to having written extensively about space, security and international issues, Nader Elhefnawy has written on science fiction and culture for numerous publications including The New York Review of Science Fiction, Foundation: The International Review of Science Fiction, Strange Horizons, The Humanist, and Changing The Times, and is also a reviewer with Tangent Online.*

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