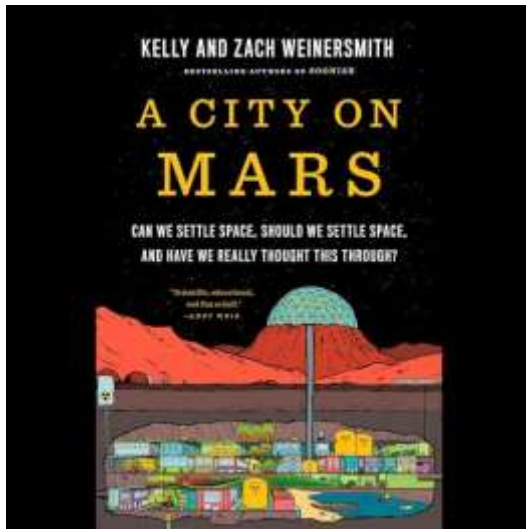


A City on Mars



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Kelly & Zach Weinersmith

Can We Settle Space,
Should We Settle Space,
And Have we Really Thought This Through?

Hardcopy: November 7, 2023

Publisher: Particular Books; 1. Edition

ISBN-10 : 024145493X

ISBN-13 : 978-0241454930

"The Earth is the cradle of humanity, but one cannot forever live in the cradle"
(Tsiolkovsky)

This is the most quoted argument for settling on the Moon or colonizing space.

With the growing consciousness about our fragile planet this quotation seems to become even more relevant – however, having grown up with the earliest space enterprises, starting with the launch of the first Russian satellite and the first step on the Moon, after many years of enthusiasm for space exploration I feel a growing uneasiness, in particular with Elon Musk’s fixation to send humans to Mars to stay there and demonstrate that we, humanity can become a *multiplanetary* society.

The book “A City on Mars” promises in its subtitle to support my feelings, so I decided to become a little wiser on space settlement.

The tendency of the book is proclaimed in the foreword: “Leaving a 2⁰ C warmer Earth for Mars would be like leaving a messy room so you can live in a toxic waste dump”.

The authors Kelly & Zach Weinersmith not only proclaim this, but substantiate their conviction in a highly scientific and methodical way by listing and critically probing all the myths built around space settlements.

Space Settlement Myths:

1. Space will save humanity from near term calamity by providing a new home.
2. Space settlement will save Earth’s environment by relocating industry and population off-world.
3. Space resource will make us all rich.
4. Space settlement will end, or at least mitigate war.
5. Space exploration is a natural human urge.
6. Space will unify us.
7. Space will make us wise.
8. Creating Nations in space will reinvigorate our homogenized bureaucratic and general wussified, Earth culture.

And, the authors even try to come up with some good reasons to settle space.

Good Reasons to Settle Space:

1. Having a Mars settlement with enough people and habitat that it should survive earthly calamities seems to fit the bill. It will not save us from climate change or from any of the other ways to destroy ourselves in the near term, but it may still be a worthwhile long-term endeavor. “As with the cathedrals of Earth, those of us who cast the first few bricks may not be around to see the spire pined on top, but we might nevertheless want to start building”.
2. The Hot Tub argument: It is just you want a hot tub and someone is selling it, and nobody has any right to stop you. This is not the most noble or uplifting argument for any particular action ... but if the reason for going to space is not philosophical or even just about return on investment, well, that's okay “because it's awesome”.

In order to round off the picture I asked chatGPT (AI should know better than any pre-dispositioned human) why Elon Musk does want to settle Mars.

ChatGPT:

“Elon Musk has expressed a long-standing interest in settling Mars, and he has outlined several reasons for pursuing this goal:

1. **Multiplanetary Species:** Musk believes that becoming a multiplanetary species is crucial for the long-term survival of humanity. Establishing a human presence on Mars could serve as a backup in case of catastrophic events on Earth, such as an asteroid impact or nuclear war.
2. **Risk Mitigation:** Musk is concerned about the potential existential threats that could jeopardize the future of humanity. By establishing a self-sustaining colony on Mars, he aims to reduce the risk of the human species being wiped out if something were to happen on Earth.
3. **Inspiration and Innovation:** Musk sees the colonization of Mars as a way to inspire and drive technological innovation. By setting ambitious goals, he believes that humanity can push the boundaries of what is currently possible and accelerate technological advancements in areas like space travel, energy production, and life support systems.
4. **Space Exploration:** Musk is passionate about space exploration and believes that making Mars more accessible is a natural step in expanding humanity's reach into the cosmos. He envisions a future where humans can travel to and from Mars, opening up new possibilities for scientific research and exploration.
5. **Making Life Multiplanetary:** Musk has stated that making life multiplanetary is a fundamental value and objective for him. He envisions a future where millions of people could live and work on Mars, turning it into a self-sustaining civilization.” [1]

As a personal note and after having read Kelly & Zach Weinersmith's book, I would only agree with #3 of Musk's motivations.

Kelly Weinersmith as Bioscientist of Rice University meticulously picks apart all the above arguments, and American cartoonist and writer Zach Weinersmith illustrates the book with striking cartoons and his own chapters.

The book is written in a popular language but contains the up to date, state of the art knowledge of human space medicine, biology and closed loop ecosystems, psychology, space- and planetary environments, all of which is presented and discussed extensively in every detail from a predominantly American point of view, but also quotes international scientific research and results in those fields as far as available (e.g., from available Russian and Chinese research publications).

The last part of the book deals with the “broad” formulations and interpretations of the existing two treaties for space exploitation, the Outer Space Treaty (OST) and the Moon Agreement (res nullius = nobody's stuff) and their curious consequences by looking from commercial and military aspects at them and the few experiences we had with those agreements already.

Two more examples of international agreements for “res nullius” - places on Earth are discussed, the Antarctic Treaty System (*works fine*) and the UN Deep Sea Bed mining exploitation treaty “UNCLOS” established by the International Seabed Authority – ISA (*works decently, so far*).

And finally Kelly and Zach Weinersmith embark on the delicate discussion of *Nation* building by establishing *Sovereign States* in outer space respecting the OST, by describing the processes which led to the existence of new States on Earth and by quoting rather problematic examples from recent history.

Last but highly interesting is also the discussion about possible causes for conflicts or even war in outer space, and their possible avoidance, which would require governance, regulations agreements and international laws which currently can only be structured according to our “earthly” experiences.

The pros and cons for the above arguments are valid and well taken – on the surface. However, the authors zoom in on the nitty gritty details of everyday life and, once you have finished the book “A City on Mars”, you have learned, that “the universe wants you dead” and, there are a multitude of technical and medical issues which are not solved or too little known yet.

In addition the authors point out that space law treaties and regulations would require lawyers and institutions which must have international acknowledged authority, not to mention the enormous amounts of money that would be necessary to build up any settlement in space and to finance the long-term operational dependence, logistics and resupply of any settlement far from Earth.

Conclusions

I can agree with the two statements in the book:

> Good reson#1: “As with the cathedrals of Earth, those of us who cast the first few bricks may not be around to see the spire paced on top”

> Wait and go, it must not be in the next three decades.

There is enough material presented to draw your own conclusions, depending on your optimistic or pessimistic feelings about the current state of affairs on Earth.

But the authors definitively will dampen your enthusiasm that space settlement will solve any of our problems on Earth because, most likely we will carry our earthly problems with us into space – after all, we are only human beings.

I personally think we might have a better chance to save humanity in the long run by investing our money in the asteroid deflection program of the NASA Planetary Defense Coordination Office (PDCO) and clean up our act on Earth.

Moon and Mars are the closest reachable options for permanent human settlement – but neither has any “Goldilocks”-aspects nor commercial aspects in favor of it. Human exploration should be carried on for scientific reasons aided by robotics to gain experience under the motto “wait and go”.

Kelly and Zach Weinersmith lead you by scientific, well-founded arguments to believe it would be much better to concentrate to maintain and improve life on Earth globally in a more sustainable way. As the authors say: “A wasted, dystopic Earth is still a better place to live than to start [from scratch] on Mars.”

‘The City on Mars’ is a book everybody should be interested in, because it deals with life or death of humanity and it also suggests that taxpayers money can go a long way, but always is a matter of priority where to spend it.

King Charles III has said humans are carrying out a "vast, frightening experiment" on the planet, taking the natural world "outside balanced norms and limits".(COP28UAE):

“The Earth does not belong to us, we belong to the Earth.”
(King Charles III, CPO28, December 1, 2023)

References

[1] chatGPT: “Why Elon Musk does want to settle Mars?”

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