If we discover extraterrestrial life, what happens next?

The search for extraterrestrial life is seen as one of pure curiosity. But, as in other areas of science, we should worry about the consequences of success.

Fifty years ago the era of robotic exploration of our solar system was just beginning. In July 1965 the Mariner IV probe sent back data showing that Mars did not have vegetation, much less canals crisscrossing the planet as envisioned by earlier generations of astronomers. The New York Times opined that Mars was “The Dead Planet” with the chances for life of any kind to be “infinitesimal.”

Carl Sagan, astronomer and early rock star scientist, asked why the media was so quick to “deduce a lifeless Mars?” The answer, he wrote, was a sense of “relief.” He posited that “finding life beyond Earth – particularly intelligent life … wrenches at our secret hope that Man is the pinnacle of Creation.” The meaning of the possible discovery of extraterrestrial life Sagan concluded is “many things to many men.”

Earlier this week Stephen Hawking, theoretical physicist and modern rock star scientist, along with Russian billionaire Yuri Milner announced that they would be launching a new project to boost efforts to look for intelligent life outside our solar system. Milner, who is funding the effort, said that he had been “thinking about this since I was a child, reading Carl Sagan’s book.”
Upon hearing of the new project, **called Breakthrough Listen**, I was reminded, of all things, of a recent prison break. Last month two convicted murders escaped from a New York prison. They had spent months carefully planning and executing their escape, which involved cutting and digging their way through walls, pipes and concrete. Remarkably, however, the pair gave little thought to what they would do if they actually succeeded in their plans. The consequence of the lack of planning was a short effort to flee from authorities followed by the death of one prisoner and re-capture of the other by authorities.

The search for extra-terrestrial life shares some similarities. We are investing considerable attention and resources into the search, but little into thinking about the consequences of success. As Carl Sagan imagined, it is as if we expect to fail, which would be a relief. Even Milner says, “It’s quite likely that we won’t find anything.” But what if we do succeed? What then?

Let’s face it, talking about aliens can be seen as a little weird, even in academia, where we study all manner of weird things. A search of Google scholar for “extraterrestrial life” returns only 15,100 hits, the vast majority of which are about “search.” In contrast, “genetically modified” returns more than 800,000, “nanotechnology” almost 900,000 and “climate change” more than 1.6 million.

Assessing technologies and their implications for society is clearly important, but it seems that we have a bit of a blind spot when it comes to the possibility of success of projects like Breakthrough Listen. So, what should we be doing instead?

Fortunately, we have developed various institutions and mechanisms for discussions among experts and the public on topics of science and technology. One of the leaders in this area is the Rathenau Institute (formerly called the Netherlands Organization for Technology Assessment), which the Dutch government relies on to “to contribute to public debate and to help shape political opinion about trends in science and technology.” Europe, in particular, is home to an impressive array of technology assessment organizations.

Yet, I find precious little evidence that these bodies, or their US or British counterparts, have devoted much attention to the social, political and cultural implications of the discovery of extraterrestrial life. As with the scientific literature more generally, when attention is focused on this topic it emphasizes the challenges of detection, but not its consequences. One notable exception was a discussion meeting held in 2010 by the Royal Society and a subsequent special journal issue on “The detection of extra-terrestrial life and the consequences for science and society.”

Politicians tend to stay away from talking about aliens (unless they are “illegal aliens”) for obvious reasons. The United Nations briefly took up the issue of extraterrestrial life in 1977, but has let the issue lapse since then.

Following the 2010 Royal Society meeting, the UN’s Director of the Office for Outer Space Affairs, Mazlan Othman, categorically denied that she was the “the take-me-to-your-leader person” if the Earth were to be contacted by alien life forms.” It does sound a bit silly. But when pressed Othman “stressed that she did not know what role she would play.”
In fact, it seems unlikely that any policy makers in national or international settings have a clearly thought-through plan for responding to the discovery of extraterrestrial life, whether that be microbes on another body in our solar system or beady-eyed aliens looking to invade. The conversation is only silly if we assume that efforts to detect alien life will never succeed.

Good decision making typically involves exploring the consequences of uncertainties and areas of ignorance. Perhaps it is no surprise that the best treatments of the consequences of the discovery of alien life come from popular literature and Hollywood. Fiction and film can be essential for helping us to explore and discuss the consequences of technologies that don’t exist or discoveries yet to occur. But they are not a complete substitute for a broader societal discussion.

The 21st century is one in which science and technology are forcing a lot of important conversations among experts and the public across civil society. Energy systems, agricultural technologies, diseases, extreme events and disasters, terrorism, artificial intelligence, gene editing, synthetic biology … the list seems to have no end. Should we also be talking about the societal consequences of discovering extraterrestrial life?

My answer is the same one I apply to other areas of investigation and invention. So long as we are searching, we should be discussing the consequences of success of that search. If we discover alien life we may not end up dead or captured, like the New York prison escapees, but we will better prepared for the possibility of success if we consider success possible.

Given the profound implications of a discovery of life beyond Earth, it is irresponsible to embark upon a search without a parallel effort to help society prepare for success in that effort, or even the implications of continued failures.