First Biological Nano-Robots Created

by Joseph P. Farrell
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Source

So many people sent me various versions of this story – and did so seemingly all at once – that it was one of those rare stories that almost immediately made it into this week's "final cut" of stories to blog about, and in reading it, I can understand why it caught the attention of so many readers of this website, because there's all sorts of thorny "high octane implications" to it. Here's the version that most caught my eye:

Scientists create first 'living robots' in major breakthrough

It's difficult to talk about this article without citing all of it, but let's focus on these paragraphs:

Scientists have created what they claim are the first "living robots": entirely new life-forms created out of living cells.

A team of researchers have taken cells from frog embryos and turned them into a machine that can be programmed to work as they wish.

It is the first time that humanity has been able to create "completely biological machines from the ground up", the team behind the discovery write in a new paper.

…

"These are novel living machines," says Joshua Bongard, the

University of Vermont expert who co-led the new research. “They’re neither a traditional robot nor a known species of animal. It’s a new class of artifact: a living, programmable organism.”

The new creatures were designed using a supercomputer and then built by biologists. They could now be used for a variety of different purposes, those behind the creation say.

“*We can imagine many useful applications of these living robots that other machines can’t do like searching out nasty compounds or radioactive contamination, gathering microplastic in the oceans, travelling in arteries to scrape out plaque,*” said co-leader Michael Levin who directs the Center for Regenerative and Developmental Biology at Tufts University, where the xenobots were actually created.

…

The researchers admit that there is the danger that such developments could be harnessed in ways that we don’t even understand, leading to unintended consequences. If the systems become sufficiently complex, it might be impossible for humans to predict how they will start to behave.

“If humanity is going to survive into the future, we need to better understand how complex properties, somehow, emerge from simple rules,” said Mr Levin n a statement. “This study is a direct contribution to getting a handle on what people are afraid of, which is unintended consequences,” he said. (Emphases added)

As the article makes clear, there are a number of quite beneficial applications than can emerge, for example, it states these micro-programmable organisms could be fit with very small pouches to deliver medicine to specific areas of the body. One such use springs to mind, and that is the potential ability to bridge the blood-brain barrier, and deliver medicines or chemotherapy to otherwise inoperable

types of brain tumors like a glioblastoma multiform, or to types of bone marrow cancers. It specifically mentions their potential utility in cleaning out arteries and vessels, and one can imagine their potential for getting rid of tumors bite by tiny bite, a kind of microsurgery that sums up to a macrosurgery, without the cutting and scraping of current surgical techniques.

But that's the rub, because as usual, we're being sold on the technology by a litany of potential benefits, while the article itself ends on the warning note about "unintended consequences." That, plus that "little" admission that the nano-bio-machines were designed by a supercomputer, gave me pause. So for the purposes of today's "high octane speculation," let's couple that admission to the "Elon Musk Scenario". Mr. Musk, a few years ago, warned about the possibility that in our quest to create a real "artificial intelligence" that the danger might be that we inadvertently transduce a "someone" or a "something" into that machine, i.e., the machine wakes up, but acquires a "personality" that is less than human-friendly. Next let's couple that idea to 3D printing, and what results is an AI that could literally design, and then create, organisms-to-design, its *own* design, and they might not be very human-friendly. With this, *voila!* We have a bio-apocalypse of almost unimaginable scale.

And there's yet another possibility, which for want of a better expression, we might call the "unknown biological firewall." Might there be, within nature herself, an in-built safeguard against too much genetic tinkering, a limit that says "this far, but no further?" And if so, what might it entail? A total reset mechanism that wipes all such engineering out if that wall is breached? I certainly don't know the answers to those questions, but my intuition – based on certain old doctrines such as *logoi spermatikoi* or *rationes seminales* – says that might indeed be the case. Indeed, if

there are such things as “seminal reasons” embedded in reality, and in things, then they are, as “reasons” or “rational principles,” discoverable, and as the Latin language version of the doctrine suggests, the root here is *ratio*, reason, proportion, ratio in the arithmetic sense, and hence, harmony. All of those things suggest quantifiability. So perhaps before we take yet another technological plunge without knowing those “unintended consequences,” we’d better re-examine some ancient doctrines, and examine them first with a view to finding that firewall.

See you on the flip side…

Tidbit: A Poem by C.S. Lewis

Again, apropos of today’s main blog, there’s this poem – one of my favorites in fact – by C.S. Lewis, and one might substitute the word “evolution” with “genetic engineering”:

Evolutionary Hymn
by C.S. Lewis

Lead us, Evolution, lead us
Up the future’s endless stair;
Chop us, change us, prod us, weed us.
For stagnation is despair:
Groping, guessing, yet progressing,
Lead us nobody knows where.

Wrong or justice, joy or sorrow,

In the present what are they
while there's always jam-tomorrow,
While we tread the onward way?
Never knowing where we're going,
We can never go astray.

To whatever variation
Our posterity may turn
Hairy, squashy, or crustacean,
Bulbous-eyed or square of stern,
Tusked or toothless, mild or ruthless,
Towards that unknown god we yearn.

Ask not if it's god or devil,
Brethren, lest your words imply
Static norms of good and evil
(As in Plato) throned on high;
Such scholastic, inelastic,
Abstract yardsticks we deny.

Far too long have sages vainly
Glossed great Nature's simple text;
He who runs can read it plainly,
'Goodness = what comes next.'
By evolving, Life is solving
All the questions we perplexed.

Oh then! Value means survival-
Value. If our progeny
Spreads and spawns and licks each rival,
That will prove its deity
(Far from pleasant, by our present,
Standards, though it may well be).