

Science for manipulation?

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Highlights:

- * In practical terms science and technology are being used as means for the control and forceful manipulation of whatever has attracted our attention.
- * The motive to manipulate for self-centered gain has shifted the modern science towards exceedingly mechanistic understanding of nature.
- * To maintain control we also need to control the cascading ripple effects until it is no longer possible to control every aspect and we end up losing all control. By choosing science for manipulation of life as our main paradigm in medicine we are setting ourselves up for an inevitable failure and collapse of healthcare.

Introduction

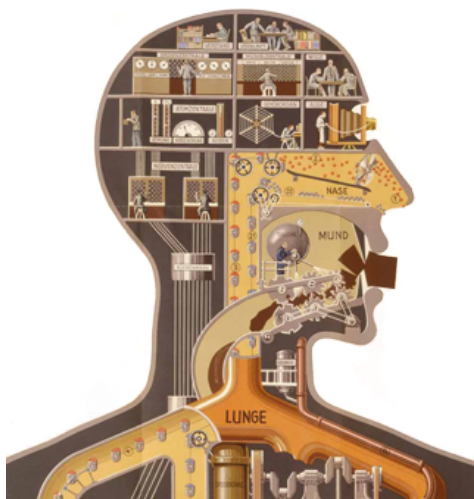
Today technology sets the pace for our civilisation. And despite political, economic and ideological turmoil everywhere we see a relentless, unstoppable accumulation of scientific knowledge.

But through an unquestioning trust in every new technological advance we now find ourselves on the brink of self-destruction. Severe crises in access to clean water, the loss of half of the world's topsoil, over-exploitation of 85% of the world's fisheries, to name a few, means that, to put it bluntly, we are running out of nearly every natural resource. And much of this we managed to exhaust in mere decades what it took nature hundreds and thousands of years to build up!

Given the profound dependency of our civilisation on it's technological backbone we must start challenging our perception of science and technology. And I am referring not to debates about which technology is more effective for that purpose or this but rather the need to consider its underlying relationship to all of life.

Motive

In practical terms science and technology are being used as means for the **control and forceful manipulation** of whatever has attracted our attention.



Fritz Kahn 1926

With the science of medicine and biotechnology we are preoccupied with the discovery of

methods to manipulate the body mechanically (surgery) or chemically (pharmaceutically), because in the war against disease we seek to eradicate, cut out or replace the "faulty" parts. With the science of plants and agriculture we seek to eliminate pests and disease and manipulate the soil chemistry and even plant genetics to get maximum yield. Minerals, water, climate, energy, finances, public opinion, shopping preferences and even emotional responses can be studied, dissected and subjected to control and manipulation.

Obviously, scientific knowledge, or any true knowledge about life, for that matter, is neutral. There are no bad or good facts about life, for this is what is. But the moment we interpret and then act on that knowledge, our motive for manipulation defines the nature of the outcome.

Looking at the world around us our motive as humans becomes plain to see. It is self-centered gain and it goes like this:

> "Whatever I want in the moment becomes the centre of my world and my main driving force. I turn outward, to the rest of the world, to get what I want through any means necessary."

And the same motive more often than not applies to any nation, group of people or single individuals, who are seeking means to gain power over.

Some forms of manipulation seem to be completely benign like, for example, handling clay to make bricks to build a house. But let us look deeper at how that motive to manipulate and control has profoundly influenced how we view and approach the world.

Mechanistic view of the world

Modern science became synonymous with the study of mechanisms of how the world works. Whenever we want to learn about something, we isolate it from the environment, "open" it up and focus on the internal workings. What are the parts that make up the whole? How do the properties of those parts explain the function of the whole? Once we gain an understanding of the mechanism we proceed to manipulate it, hoping to control the whole and direct it where we want it

The following video though simplistic still is a graphic illustration of how we study and learn to control the processes in the body.

(youtube: https://www.youtube.com/watch?v=__OGncEPgrE width: 100% height: 400)

Let us turn to a specific example. One of the most celebrated scientific advances was the discovery of antibiotics. Since bacteria were found to be the cause of fatal infections, the strategy of "antibiosis" or "against life" chemical manipulation was adopted to eradicate bacteria in our bodies. Countless lives were saved at the time of the introduction of antibiotics. But rather than using antibiotics as a last resort emergency measure, during the last 70 years the

antibiotics euphoria led to its sky-rocketing usage. The average child in the U.S. receives nearly 3 courses of antibiotics by the age of two ([Blaser 2014](<http://www.missingmicrobes.com/>). Missing Microbes: How the Overuse of Antibiotics Is Fueling Our Modern Plagues).

Undoubtedly, forceful manipulation can bring great rewards in the short term. Nobody can question the need for emergency medicine. But unfortunately because this strategy assumes having *_power over_* it is also open to abuse and can be extremely profitable. If we gained control over and the means to manipulate, what can stop us from stripping the soil of nutrients in intensive agriculture, scooping entire fish populations or plain robbing other people or countries of their natural resources?

Challenges inherent within manipulation

But there is one problem. Yes, it is easy and extremely profitable to manipulate one process for a short period of time, but to maintain that control would require controlling the ripple effects as well. Evolution of life on this planet took place over billions of years and it tends to return to its inherent course after big or small perturbations. But because manipulation goes against that natural process we now have to manipulate further and further disturbances in the web of life. And very soon all our resources are consumed by the necessity to control and compensate for negative side effects of other effects of other effects. At some point it is no longer possible to control every aspect and we end up losing all control.

To go back to the example of antibiotics. The strategy of total annihilation can be successful for 99,999% of bacteria, but what happens with the rest? Can we truly hope to stem the tide of evolution that has been driving life on this planet for billions of years? Watch the following presentation where a common intestine bacterium *_E. coli_* evolved to survive in the most hostile antibiotic environment:

(youtube: <https://www.youtube.com/watch?v=pIVk4NVIUh8> width: 100% height: 400)

As a result of the extreme overuse of antibiotics, the future of antibiotics is very bleak. New strains of bacteria have evolved in hospitals, such as Methicillin-resistant *Staphylococcus aureus* (MRSA) that are resistant to existing antibiotics and therefore fatal. Many scientists already foresee catastrophic consequences of the abuse of antibiotics when these highly dangerous strains have spread far and wide.

Hand in hand with manipulation come many other problems. An inherent challenge of mechanistic science is having to deal with staggering, overwhelming complexity. To exert more and more powerful control we have to study and manipulate finer aspects of the mechanism from gross body mechanics to cellular mechanics, genetics and even individual molecules. With each progressive level of complexity we have to control for multiplying cascades of negative side effects. Even if a particular drug has been tested for safety, it will never be tested in all possible combinations with other drugs. Underlining the above comes the rising costs of new

manipulative technologies associated with development and manufacture, legal fees due side effects, specialised training and so on.

And the worst effect of such technologies is making us dependent on a drug, doctor, system or a device. The disempowerment, fear and destruction run deep in the human psyche and create even deeper wounds and dis-ease.

The need for a different approach to science and technology

The critical challenges of modern medicine I have described above are well known and they are not limited to overuse of antibiotics. The entire healthcare system of the modern world is on the verge of collapse. But what I am bringing to your attention is that this catastrophic situation cannot be resolved by more powerful antibiotics that kill 99,999999% of bacteria, or DNA editing, or bigger diagnostic machines or growing artificial organs to replace the ones destroyed by the very same system.

The problem is inherent within the "against life" thinking. By choosing manipulation and control of life as our main scientific and technological paradigm we are setting ourselves up for an inevitable failure. It is only a logical outcome that overmedication and medical error is now the third leading cause of death in the U.S.

Fight against life equals suicide in a literal sense. It never can be a viable evolutionary strategy.

An entirely different approach is needed. I call it science for life.