How could science be different?

Even without a precise definition of what the word "science" means, and sticking only to the general meaning, you can conclude that everything changes and science a few hundred years ago and science a few hundred years from now differs from science today. If we want to estimate what alternative avenues of science might be, or what science might look like in the future, we must first consider where science came from and what it is for.

Already in prehistoric times, man was aware that what is happening around him is not completely random, but that there are some dependencies between various phenomena. He needed to understand the world not only out of his curiosity but mainly for practical reasons.

Mankind has gone its way from the first observations and considerations of prehistoric man to modern science, but how could this path look different?

We get to know the world through our senses, which provide the brain with signals, based on which brain creates a picture of the outside world. One wonders what impact it might have had on the development of thinking and, consequently, on the development of science, if people had other senses. For example, if they had poor eyesight and excellent sense of smell. They could track the motion of some objects in the past, and, probably, had a better idea of spacetime. Even if this was not the case, one can try to analyze various possibilities and wonder what the image of the world could look like today in such circumstances.

An important event that accelerated the development of mankind was the invention of writing. And the question is, could there be science, if there was no writing? The stored information creates some kind of external memory that can be used by all individuals of a given society, which, in the case of people, led to dissemination of knowledge and elimination of limitations resulting from the capacity of their own memory. One may wonder, however, whether writing is necessary for the advancement of science. For example, could dolphins (or some dolphin-like creatures) that have no ability to write, achieve something that may be called science?

Writing is certainly very useful but I don't think it is necessary, if you have good memory with large capacity. I can imagine intelligent creatures in a virtual world in a computer that will not use writing and they will conduct research, that can be called scientific.

For humans, however, writing played an important role. It is worth considering what impact the type of language and writing has on people's thinking and, consequently, on science. I don't know Chinese but I read somewhere that the more difficult learning to read and write in Chinese, the more it supports development of mind. In the modern world, relatively simple English language plays a major role. It is worth considering whether, along with the development of artificial intelligence, a new language and a new type of writing should not be created, which may be better suited for scientific work and also for communication with artificial intelligence.

The next big step forward towards the emergence of science was related to development of mathematics. It seems to us that mathematics is great for describing and modelling the world. But do we always use the right math? And could math look different? We write equations on a flat sheet of paper and it seems to us that the number line is a line going to infinity.

Newton formulated his laws for infinite Euclidean space, and Einstein formulated his equations so that they correspond to Newton's equations for small velocities and masses. Geometrically, the graphs of functions are curves in a plane.

However, if ancient Sumerians had written on clay balls instead of clay tablets, and we had written and drawn on spherical surfaces today, the equations would look different.

We use a certain mathematical apparatus and it may not be the best one. But it is difficult to get rid of something that has been instilled in us since childhood, which we know well and which has turned out to be useful in many cases. When Stephen Wolfram published *A New Kind of Science*, where he proposes to model the world with cellular automata, the reaction was rather restrained.

No one is willing to abandon what they know well and what is generally recognized and learn something completely different that they do not know if it is worth it. Science would probably look very different today, if Wolfram's ideas came earlier than Newton's.

The sequence of discoveries, formulations and publications can sometimes be more important than we think.

Let's return to the question "why did science arise and what is it for?" In short - to get to know the world better. For this purpose, the so-called scientific methods, appropriate language, scientific institutions and a system of reviewing scientific works before publishing were established. Does this ensure that science gives us a true picture of the world? NO. It only tries to give the best approximation that can be achieved at the moment. But is the whole intellectual potential of people used? Only what is understandable and acceptable to reviewers is published. These days, a new Einstein would rather have trouble publishing. So the amount of published content is huge and the problem is to follow them. However, it is possible that good ideas, that could expand our understanding of the world, are lost in this way. One of the best chess players in history Alexander Alekhine liked to study amateur games because he used to find interesting ideas in them (even though they were not completed), which just needed to be refined.

Could it be otherwise? Unauthorized publications could be placed and shared somewhere in the cloud and (in addition to being viewed from time to time by interested scientists) examined by artificial intelligence. Then, selected works could be submitted to other reviewers.

There is one more thing that determines to a large extent what kind of research is conducted and in which direction science is heading. These are finances. Even if we omit extreme cases of bribing scientists in order to publish different opinions or create new directions in science, in which there are no experts by now and in which they will appoint themselves as

experts, it is difficult to allocate the available resources to ensure the most effective development of science even with the best efforts.

It is not known in advance when and which scientific research will bring some specific benefits, therefore, decisions are rather subjective and influenced by various pressures.

Could it be better? It's hard to predict the future. Artificial intelligence will almost certainly play a big role in it. It is not known if and when it will match for human intelligence but it can already bring benefits, if it is properly used. When the computer defeated world chess champion Garry Kasparov, it seemed like the end of chess. Today, there are more chess players than before, and, thanks to computers, at a much higher level. The fact that artificial intelligence can do something better than a human does not mean that people do not have to do anything anymore. There will always be something to do. Therefore, there will remain questions without a clear answer. Based on what is written below, how do we decide: YES or NO?

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