

Theses

1. Sometimes the example of nature is not followed

Think of flying. A manmade object flying the way birds do still does not exist. In this case a different solution had to be chosen. While a wing of a bird or an insect supplies lift and buoyancy, in the case of airplanes these two functions had to be separated. There are rigid wings and engines. If pioneers of aviation had insisted on the natural model we could not fly even today.

Maybe it sounds oversimplified, but in my opinion this necessarily change of approach has not happened in robotics.

The anatomy of robots usually imitates natural models, mainly that of the human body.

There is a framework instead of skeleton, electric engines instead of muscles and computers instead of nervous system. Despite the developed technologies the result is like an automaton.

The only exceptions to this rule know are robotic arms and snakes.

2. Mechanical linkages have keep sg in store

Surely there must be still unknown, but potentially viable solutions which will allow us to build simpler new constructions.

I would like to demonstrate this by some relatively new samples eg.

PACO Spiralift, LOC-LINE system, Theo Jansen's mechanism or Rubik's square. All of them are the result of the highest level of creativity.

On micro and nanoscale things work differently from what we experience in our well-known macro-scale world.

Because of new results of research of nanotechnology, we can hope that new inventions will appear which will influence normal-size mechanical linkages.

3. The most responsible joint, which does not exist

At the beginning I outlined what are mobile joints in my opinion. I pointed out that movable, but one-piece parts are in fact not joints. After examining the topic from different angles, I have come to the conclusion that creating a fine joint is a difficult task. It does not seem a big result after long years of work.

If we can substitute a joint by a non-joint, it results in a creative and cost-efficient solution.

Some examples are: Fiskars scissors, a medical blood pump, a foldable spoon for yoghurt or a convertible plastic cover for a pocket calculator.