



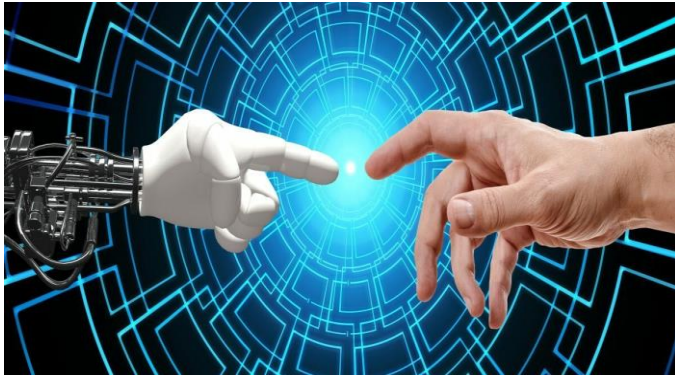
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измеримая “физическая величина” имеет объективную
вероятность “определенных значений”, а ее “наблюдатель”
может быть заменен автоматом.

Д. фон-Неймана 1964

Семинар по специальности на английском языке

ЛЕКЦИЯ 6: THREE OVERLAPPING REVOLUTIONS

11 марта 2021



What would happen if technology continued to evolve so much more rapidly than the animal and vegetable kingdoms?

Would it displace us in the supremacy of earth?

We are daily giving [machines] greater power and supplying by all sorts of ingenious contrivances such as self-regulating, self-acting power which will be to them what intellect has been to the human race.

—SAMUEL BUTLER

WONDERS OF LIFE AND MISERY OF DISEASE ARE INFORMATION PROCESSES?

After three billion years of evolution, we have obtained the instruction set that carries each of us from the one cell through adulthood to the grave.

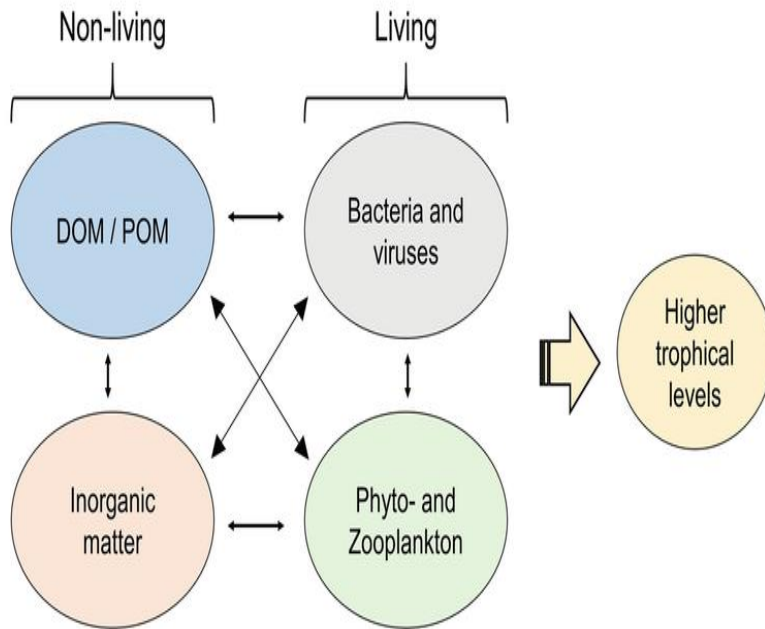
—DR. ROBERT WATERSON

Deriving physics from information processing could reconcile relativity and quantum theory:

- the former creates the space-time **operating system** and
- the latter how it creates energy and matter **applications.**

These information processes and control software programs, are surprisingly compact. The human genome is a sequential binary code containing only about eight hundred million bytes of redundancies information (800 MB). If redundancies are removed we are left with only thirty to one hundred million bytes, equivalent to the size of an average contemporary software program.

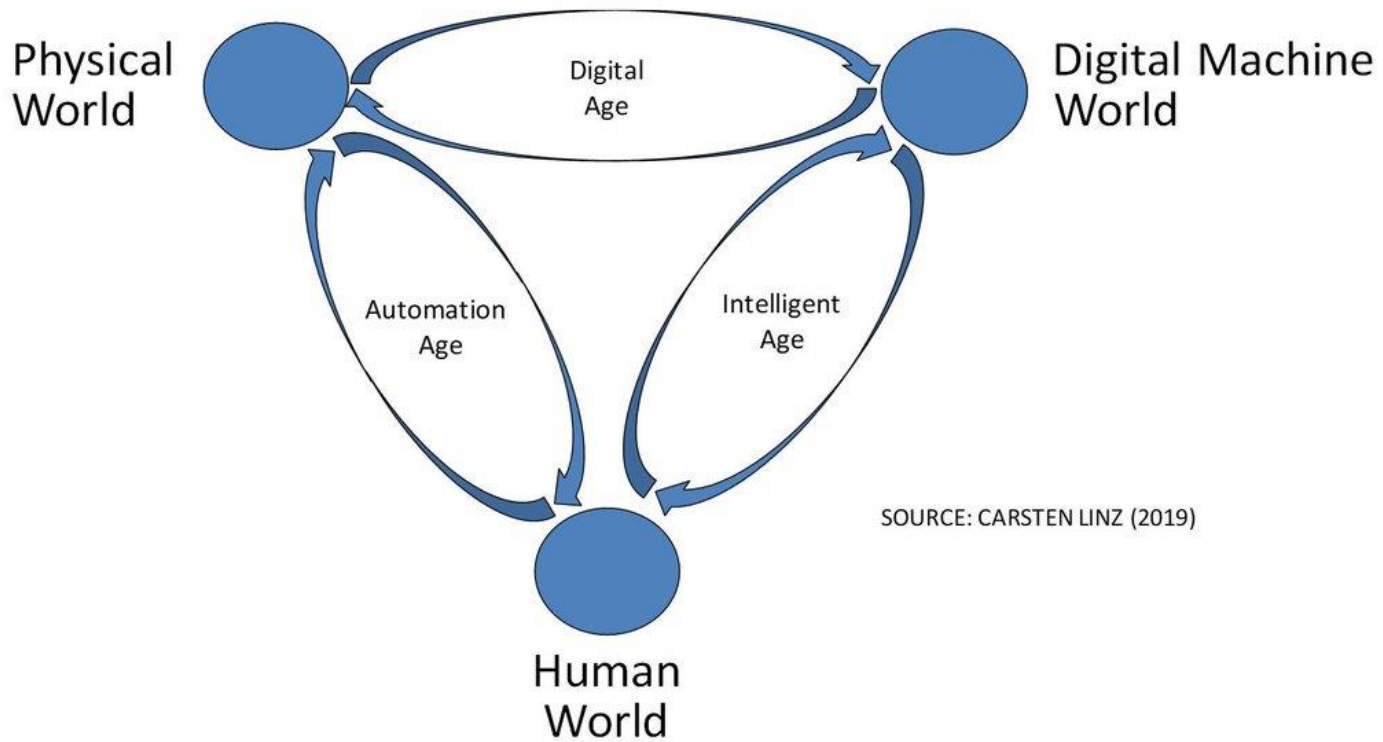
This code is supported by a set of biochemical computer machines that translate these linear (one-dimensional) sequences of DNA "**letters**" **into strings** of simple building blocks called amino acids, which are in turn folded into three-dimensional proteins, which make up all living creatures from bacteria to humans.



Viruses occupy a niche in between living and nonliving matter but are also composed of fragments of DNA or RNA.)

This machinery is essentially a self-replicating nanoscale replicator that builds the elaborate hierarchy of structures and increasingly complex systems that a living creature comprises

physical world is a virtual reality ?



SOURCE: CARSTEN LINZ (2019)



С точки зрения компьютерных наук проблема сводится к трем аспектам

Аспект 1. сведение физических процессов к вычислениям, в которых программы – суть объективные законы.

Аспект 2. открытие законов, действия которых приводят к уменьшению энтропии.

Аспект 3. разработка технологий расшифровки семантики генетических кодов и синтаксиса целенаправленных процессов экспрессии генов