The Antiphysical Review

A New Kind of Science
An investigation into Antiscientific Aspects of the World
A research project

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Beyond and besides the scientific world there exist the endless world of Non-Science. It is not explained, it is not theorized, the only way of telling about it is to live it descriptively, step by step, like in a computation obeying one or other rule. The cellular automata do that, for what is undecidable, unprovable, intractable, computationally irreducible and universal.

A New Kind of Science is all about that. Certainly, with all due respect, the author was striken off by computers, and their ability of leading into complex situations, much more complex than the natural world itself. Unfortunately, heavily computing and its cellular automata paradigm are not able in the least to give an account of the simplest situations, like the Principle of Inertia, the Principle of Relativity, the Second Law, Maxwell's equations, Schrodinger's equation or Einstein's equation. All the latter are the Four Principles of Science.

Being forced to speak out, even about the Irrational, the author cannot still circumvent a scientific question: OK, let the world be governed by a few computing rules (emphatically named the Principle of Computational Equivalence), but then the question arises Why would that be so, *i.e.* precisely why the world be governed by that or that rule? Talking meaningfully is unescapably scientific.

Cellular automata is art of tapestry and weaving sold as science. The author and the book miss the point that Science is not manufacture. Science is Vision. Almost a clairvoyance.

Undoubtedly, the work is intellectual, especially the *Notes*. A bit more anti-scientific than Darwin's *Origin of Species*. Which is almost a compliment. The mechanism of author's mind works finely, and it is a pleasure to watch its steadily ticking. But it works in vain. Another exercise in futility.

Cellular automata may well reproduce snowflakes, crystal growth, turbulence, leaves, shells or frog pigmentation. But science is not about frogs. *A New Kind of Science* may be of importance for frogs, but certainly not for our, humans', problem. Our problem is, for instance, the idea of frog, not the frog itself.

Albeit non- and anti-scientific, *A New Kind of Science* is still useful: it suggests a lot of work. The mankind will presumably end up by computing all forms of natural (and super-natural) processes and life, instead of experiencing or living them. Our understanding will finally be living by computing.

1 Cellular automata proceed usually by sequentially computing the cells in a row, by using the input from the preceding row, according to rules. One may imagine a parallel computation whereby each cell is computed by one computer. Computing time is much shorter, the process is

infinitely speed up, and more complex situations can be checked faster. Of particular interest may be the turbulence, for instance, in which context there would be interesting to cast the recursive rules of cellular automata in space-time differential equations, in order to compare them with the Navier-Stokes equations.

2 Typical chaotic problems (like the 3-body problem, Lorenz weather forecasting, self-excited processes or machining instabilities) are definitely amenable to parallel computing. In particular, the 3-body problem, that might be computationally irreducible, can be approached this way by multiple series expansion in trajectory parameters, the series terms being parallely computed.

3 Nanostructures are generally computed by giving random positions of atoms, and letting them move in steps according to forces, till the energy reaches a local minimum. Each computer may compute the movement for each atom, by comunicating between them every step, in a parallel computation scheme. The procedure is very similar with cellular automata, and may produce quickly extremely complex structures.

4 In general, parallel computing on cellular automata is also rewarding in producing a large amount of pictorial material, which cannot be told otherwise except by displaying it in artlike enterprises.