

Book Review

Hacking Matter by Wil McCarthy

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If the marketing guy has but two words to sell a book then you should never buy a book by its title. I recently came across a book with *Quantum Brain* title and half way through there was nothing on quantum or the brain. Is there something left to write about in this book, *Hacking Matter*? There certainly is if you can forgive this title as well. In fact, there are so many good things one can do with electrons I would not even get involved in the matter of matter and let the electrons carry the title of the book. *Electron Keepers*, perhaps? It is much more enjoyable to get into electrons right from the start rather than getting into “pretend matter” and then undo the protons and strip the hype until but pure electrons are left anyway. When the future closes in it will be about electrons and photons while custom atomic core and custom shape of matter will be in the second wave.

In *Hacking Matter* Wil introduces us to the colleges where professors get paid and students get to hack with electrons. It turns out the lowly ball lightning is still in the gee-whiz category resisting awards, not impressed by the stars from East coast colleges and corporations. What we get are quantum dots. Quantum dot is an appropriate name for a microstructure that holds the electron as a standing wave. Pythagoras is smiling on this as well because the quantum dot can also become a quantum wire (read line) and quantum area. The author then whets the investment appetite with such possibilities as diamond-strong valence bonds, associative memory, color displays the size of a building, super battery, and programmable or switchable super magnets. Super battery is where the ball lightning lurks. Super magnet is where Pauli is biting his tongue for his spin exclusion principle, for that is the effect of a particular atomic symmetry, and not a matter of principle. One application gets rolled out in the form of biological markers and the author tries to improve the marker’s smarts beyond the plain yes-no, marker-is-in, marker-is-out applications.

There are some funny moments when the memory guy does not know how to write into the memory of the quantum dots before he could associatively access it. I also looked for people empowerment – that is, will quantum dots help you and I the way PCs did, for example. The empowerment, then, is different from donating your car battery for a wheelchair or giving some “poor fella” a scholarship at Harvard. The book does not have and does not try to make a case for ‘When in the course of human events.. .’ Electrons, however, have their own way of tunneling through. Regardless of patents and quantum traps, electrons will come to you just as you learn to spell decoherence.

At the tail end of the book a passing comment makes a point that Einstein *partially* explained the photoelectric effect and the author says nothing that would support photonic pressure or photonic momentum on a free electron. Einstein’s full misunderstanding of the photoelectric effect may not be surprising to some but this is the first break with officialdom such as NASA and Nobel I’ve seen. Wil McCarthy is not academia and I would place a bet Wil can change his engine oil before the professor could open the little red preaching book.

Wil McCarthy put together a decent book about the challenges and the opportunities of the quantum electron where the technical and the financial attributes are in naturally entangled states.