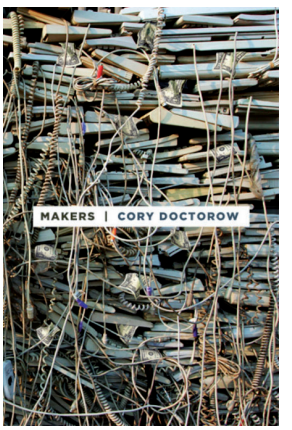
หนังสือน่าอ่าน : Book Review

Title : Industrial Revolution 2.0: a fictional account

Cory Doctorow. Makers. Tor, 2009

Reviewed: Kevin Carson[1]
Michel Bauwens



Based on the research on emerging infrastructures of material production in the age of the Internet, which we tried to visualize in a mindmap[2], we arrived at the following conclusions, i.e. a description of a new 'ecological' model of industrial development around shared design communities. The new institutional reality could be described as follows:

[1] Michel Bauwens is Lecturer at the DPUIC, researcher for the Asian Foresight Institute, and founder of the P2P Foundation. Kevin Carson is research associate at Center for a Stateless Society, and the author of Studies in Mutualist Political Economy and Organization Theory: A Libertarian Perspective; he has written for the UK Libertarian Alliance and publications including The Freeman: Ideas on Liberty.

[2] Open Everything mindmap <http://www.mindmeister.com/28717702/everything-open-and-free>.

THE FIRST LAYER: COLLABORATIVE PLATFORMS

- At the core are the enabling collaborative socio-technological platforms, that allow knowledge workers, software developers and open design communities to collaborate on joint projects, outside of the direct control of corporate entities.

Interesting questions already arise here: who is the driving force behind the creation & development of such platforms? They can be initiated by developing communities, managed and maintained by a new type of non-profit institution (like the FLOSS Foundations), or they can be corporate platforms that have been opened up to external participants.

THE SECOND LAYER: OPEN DESIGN COMMONS

- Around the corporate platform is the open design community and the knowledge/software/design commons ruled by a set of licenses which determine the particular nature of the property.

THE THIRD LAYER: ENTERPRENEURIAL COALITIONS

- Around the commons are the entrepreneurial coalitions that benefit and sustain the design commons, create added value on top of it, and sell this as products or services to the market.

Important questions raised here are: how is the coalition itself organized? Do all parties have equal say, as in the Linux Foundation, or does one big party dominate, like with the Eclipse Foundation and IBM? How does the business ecology relate to the community? Is is nothing but a corporate commons?

THE FOURTH LAYER: FUNDING ECOLOGIES

- In addition, there is a funding infrastructure.

What process governs the stream of returns from the monetized market sphere, to the commons, its community, and the infrastructure of cooperation? Do businesses support the community directly, through the foundations? Is the government or a set of public authorities involved? Are there crowdfunding mechanisms?

THE FIFTH LAYER: THE PARTNER STATE AS ORCHESTRATOR?

- Finally, there is the role of public authorities and governments in orchestrating the public-private-common triad in order to benefit from the local effects of the new networked coopetition between entrepreneurial coalitions and their linked communities.

In the not so far future, wealth building or sustaining capacity will be determined to a large degree by the capacity of cities, regions and states to insert themselves within the global coopetition between different enterpreneurial coalitions (think drupal vs. joomla, but on a much larger scale).

This emergent reality, presently only existing at the margins, has been explored fictionally by Cory Doctorow, in a very convincing way.

The story begins with a press conference by Landon Kettlewell, frontman and CEO for the newly-formed Kodacell (a merger of Kodak and Duracell). "Capitalism is eating itself.... The days of companies with names like General Electric and General Mills and General Motors are over." There are, in other words, no longer any surviving forms of capital-intensive, large-batch production sufficient to gobble up enormous amounts of investment capital.

Kodacell's new business model is to liquidate most of its surplus manufacturing capability, and use its cash on hand for microlending to hardware hackers, to fund thousands of micromanufacturing startups.

Almost before Kettlewell's press conference is finished, this becomes the dominant investment model for the dying Fortune 500 corporations that find 90% of their plant and equipment superfluous and have no idea what to spend their capital on.

The story focuses on one such startup, run out of an unfinished mall cum salvage yard by a couple of hardware hackers named Perry Gibbons and Lester Banks. In a direct parallel to the creation of Web 2.0 by unemployed or underemployed veterans of the dotcom bust, Gibbons and Banks are both former tech industry employees. Their operation is a perfect illustration of the principles of agility inherent in open-source peer production and networked organization; low-capitalization, low-overhead microenterprises are like rats in the corporate dinosaurs' nests.

The big question, which Doctorow only addresses obliquely, is why the New Work boom in his story collapsed. My conjecture on that question (which Doctorow has confirmed) follows.

The New Work boom went bust because it was too successful. We see in Part Two, roughly a decade later, that the production technologies of the New Work, if anything, are even more ubiquitous than in Part One. ส If the toys went in the trash, the technology itself remained as the basis of the physical production economy.

The U.S., a character says in Part Two, is a "post-manufacturing" economy. The economy of Makers may be "post-manufacturing" in the sense that there are no longer "jobs" in "factories," but if so it's the kind of post-manufacturing economy in which every shantytown in America has a collection of microfactories, operating out of abandoned storefronts and garages, that can make anything a conventional factory used to make in the 20th century. The collapse of the New Work boom didn't mean the micromanufacturing technology it was based on disappeared; rather, it became so cheap and common it was impossible for venture capitalists to make money off it.

The failure of the New Work boom is a brilliant fictional illustration of how conventional economies are wrecked by abundance. The key to why the failure of the New Work boom is the fallacy of composition inherent in Kettlewell's investment model, and that of the other big corporate venture capital funds. Those hundreds of thousands or millions of ventures, cumulatively, weren't enough to soak up even a large fraction of all the capital lying around waiting to be invested. What he described was an excellent model for a single small venture capitalist with several thousand dollars to invest. But despite the astronomical ROIs for individual projects, the abslute quantities of capital required for such startups was quite small. A corporation with fifty billion can't repeat the same process a million times-especially when the entire Fortune 500 is doing the same thing.

What's more, those enormous ROIs were quite unstable. They depended on individual startups being sufficiently agile to switch rapidly to new products as returns collapsed on the old ones. But with the initial capital outlays required so small, and entry barriers so low, the period of entrepreneurial rents from being first to market kept getting shorter

and shorter, until the investors were barely staying ahead of the shock wave of competitive price implosion.

Doctorow's near-future scenario can be seen as the culmination of a long trend that began in the 1970s. According to Charles Sabel and Michael Piore, there has always been a cyclical tendency for mass-production industry to shift output into the craft periphery during economic downturns[3]. The reason is that investing in the expensive product-specific machinery used in mass-production industry requires confidence in sufficient demand to utilize it at full capacity.

In the 1970s world capital markets became saturated, ending a grace period of twenty-five years or so following WWII's destruction of most plant and equipment outside the U.S. It was, consequently, the beginning of a period of long-term stagnation and declining profit. With recurring energy shocks thrown in, corporate management was faced with exactly the kind of uncertainty it likes to avoid in making long-term capital investments. According to Sabel and Piore, this meant the shift of production to the craft periphery became a long-term structural trend. The technical possibilities for doing so were enhanced by Japan's development of cheap, small-scale CNC machine tools.

From the 1980s on we've seen progressively larger shares of total industrial production shifted to flexible manufacturing networks like those of Emilia-Romagna and Shenzhen, and the growing shift of contract production to independent supplier networks. The desktop manufacturing movement in recent years has taken things further in the same direction.

According to Douglas Rushkoff, the destructive effect of the desktop computer on the old information and culture industries resulted from the imploding cost of the means of production[4]. As Yochai Benkler described it, in a few decades the cost

---

[3] Charles Sabel and Michael Piore, The Second Industrial Divide: Possibilities for Prosperity (New York: HarperCollins, 1984).

[4] Douglas Rushkoff, "How the Tech Boom Terminated California's Economy," Fast Company, July 10, 2009 <http://www.fastcompany.com/article/how-tech-boom-terminated-californias-economy>.

of basic machinery required for desktop publishing, sound editing, software coding, etc., has fallen by two orders of magnitude[4]. When the initial capital outlays for information and cultural production fall by a factor of a hundred, all the capital previously absorbed by those industries becomes superfluous.

We're seeing the same economic consequences now in the physical realm. The desktop manufacturing revolution, with its cheap homebrew machine tools, is in the process of making most investment capital superfluous, just as the desktop computer revolution destroyed the information and entertainment industries. The implosion of capital requirements and overhead, and the unenforceability of "intellectual property" law from which artificial scarcity rents are derived, mean the traditional sources of monetized value are collapsing. The economy is awash in surplus capacity and surplus investment capital, with no plausible scenario by which that capacity can be utilized or productive outlets for that capital can be found.

Take these trends a few years further, and you get the scenario at the outset of Makers.

---

[5] Yochai Benkler, The Wealth of Networks: How Social Production Transforms Markets and Freedom (New Haven and London: Yale University Press, 1006), pp. 179, 188.