

CHAPTER 5

“Siren Servers”

There Can't Be Complexity Without Ambiguity

We are aware of emergent, complex problems like global climate change only because of how much data there is. But there are special challenges in assessing problems that come into our awareness because of big data. It's hard to confirm that such broad problems definitely exist. Then, even if a consensus emerges about existence, it is hard to test remedies. One truism has emerged in the networked age. The mere existence of big data doesn't mean that people will agree about what it means.

The problem I am acting on is that a particular way of digitizing economic and cultural activity will ultimately shrink the economy while concentrating wealth and power in new ways that are not sustainable. That mistake is setting us up for avoidable traumas, as machines get much better in this century.

Some will say that the problem I worry about does not even exist. There is a legitimate claim of ambiguity on this point, and that ambiguity is completely typical of how problems present themselves in our modern world of networked big data. For instance, one might argue that some of the hundred-thousand-plus jobs that seem to have been lost in the transition from Kodak to Instagram will be made up for because people will be able to use photo sharing to sell their handicrafts more efficiently. While this might turn out to be true in one instance or another, I argue it is false in the big picture.

My initial interest was motivated by a simple question: If network technology is supposed to be so good for everyone, why has the developed world suffered so much just as the technology has become widespread? Why was there so much economic pain at once all over the developed world just as computer networking dug in to every aspect of human activity, in the early 21st century? Was it a coincidence?

There are a number of different explanations for the Great Recession that can be helpful. Brushing up against fundamental limits to growth is part of it, as is the rise of new powers of India, China, and Brazil, so that suddenly there are more customers with means bidding for the same resource base. There are also a lot more old people in most parts of the developed world, and more ways to spend money on their medical care than ever before.

But there's something else going on as well, which is that the mechanisms of finance failed and screwed almost everybody. If we acknowledge the extraordinary way in which virtually the whole developed world seemed to go into hopeless debt at once, an explanation is demanded beyond the rise of China, or the expense of social safety nets in southern Europe, or deregulation in the United States.

There's a simple answer to the mystery: Finance got networked in the wrong way. The big kinds of computation that have made certain other industries like music “efficient” from a particular point of view were applied to finance, and that broke finance. It made finance stupid.

Consider the expansion of the financial sector prior to the Great Recession. It's not as if that sector was accomplishing any more than it ever had. If its product is to manage risk, it clearly did a terrible job. It expanded purely because of its top positions on networks. Moral hazard has never met a more efficient amplifier than a digital network. The more influential digital networks become, the more potential moral hazard we'll see, unless we change the architecture.

A First Pass at a Definition

A Siren Server, as I will refer to such a thing, is an elite computer, or coordinated collection of computers, on a network. It is characterized by narcissism, hyperamplified risk aversion, and extreme information asymmetry. It is the winner of an all-or-nothing contest, and it inflicts smaller all-or-nothing contests on those who interact with it.

Siren Servers gather data from the network, often without having to pay for it. The data is analyzed

using the most powerful available computers, run by the very best available technical people. The results of the analysis are kept secret, but are used to manipulate the rest of the world to advantage. That plan will always eventually backfire, because the rest of the world cannot indefinitely absorb the increased risk, cost, and waste dispersed by a Siren Server. Homer sternly warned sailors to not succumb to the call of the sirens, and yet was entirely complacent about Hephaestus's golden female robots. But Sirens might be even more dangerous in inorganic form, because it is then that we are really most looking at ourselves in disguise. It is not the siren who harms the sailor, but the sailor's inability to think straight. So it is with us and our machines.

Siren Servers are fated by their nature to sow illusions. They are cousins to another seductive literary creature, star of the famous thought experiment known as Maxwell's Demon, after the great 19th century physicist James Clerk Maxwell. The demon is an imaginary creature that, if it could only exist, would be able to implement a perpetual motion machine and perform other supernatural tricks.

Maxwell's Demon might be stationed at a tiny door separating two chambers filled with water or air. It would only allow hot molecules to pass one way, and cold molecules to pass in the opposite direction. After a while, one side would be hot and the other cold, and you could let them mix again, rushing together so quickly that the stream could run a generator. In that way, the tiny act of discriminating between hot and cold would produce infinite energy, because you could repeat the process forever.

The reason Maxwell's Demon cannot exist is that it does take resources to perform an act of discrimination. We imagine computation is free, but it never is. The very act of choosing which particle is cold or hot itself becomes an energy drain and a source of waste heat. The principle is also known as "no free lunch."

We do our best to implement Maxwell's Demon whenever we manipulate reality with our technologies, but we can never do so perfectly; we certainly can't get ahead of the game, which is known as entropy. All the air conditioners in a city emit heat that makes the city hotter overall. While you can implement what seems to be a Maxwell's Demon if you don't look too far or too closely, in the big picture you always lose more than you gain.

Every bit in a computer is a wannabe Maxwell's Demon, separating the state of "one" from the state of "zero" for a while, at a cost. A computer on a network can also act like a wannabe demon if it tries to sort data from networked people into one or the other side of some imaginary door, while pretending there is no cost or risk involved. For instance, a Siren Server might allow only those who would be cheap to insure through a doorway (to become insured) in order to make a supernaturally ideal, low-risk insurance company. Such a scheme would let high-risk people pass one way, and low-risk ones pass the other way, in order to implement a phony perpetual motion machine out of a human society. However, the uninsured would not cease to exist; rather, they would instead add to the cost of the whole system, which includes the people who run the Siren Server. A short-term illusion of risk reduction would actually lead to increased risk in the longer term.

Where Sirens Beckon

Some of the prominent present-day Siren Servers include high-tech finance schemes, like high-frequency trading or derivatives funds, fashionable Silicon Valley consumer-facing businesses like search or social networking, modern insurance, modern intelligence agencies, and a multitude of other examples.

The latest waves of high-tech innovation have not created jobs like the old ones did.* Iconic new ventures like Facebook employ vastly fewer people than big older companies like, say, General Motors. Put another way, the new schemes, the Siren Servers, channel much of the productivity of ordinary people into an informal economy of barter and reputation, while concentrating the extracted old-fashioned wealth for themselves. All activity that takes place over digital networks becomes subject to arbitrage, in the sense that risk is routed to whoever suffers lesser computation resources.

*This is documented in Martin Ford's book *The Lights in the Tunnel* (2009). He sees jobs going

away, and proposes that people in the future be paid only for consuming wisely, since they eventually won't be needed for producing anything. I find that idea inadequately human-centric and overly dismal, but it is an interesting contrast to my proposal.

The universal advice of our times is that people who want to do well, as information technology advances, will need to double down on their technical educations, and learn to be entrepreneurial and adaptable. These are the skills that might win you a position close to a Siren Server.

Planning to get as close as possible to a Siren Server is good advice in the near term. That is how the great fortunes of our age are being made. But there won't be enough positions close to Siren Servers to sustain a society unless we change the way we do things.