

Jaron

Lanier

Who Owns the Future?

Author
of

*You Are
Not a
Gadget*

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A refreshing and important book that will make you see the world differently.”

—Tim Wu, author of *The Master Switch*

“This book is rare. It looks at technology with an insider’s knowledge, wisdom, and deep
caring about human beings. It’s badly needed.”

—W. Brian Arthur, author of *The Nature of Technology*

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Who Owns the Future?



Jaron Lanier

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*To everyone my daughter will know as she grows up.
I hope she will be able to invent her place in a world in which it's
normal to find success and fulfillment.*

Introduction to the Paperback Edition

A story from the history of music turned me into a digital idealist in the 1970s, when I was only a teenager. African American slaves were forbidden to play drums for many years because drums could be used as a form of communication. Slave owners feared that drums could play a role in organizing revolts.

Throughout human history, humans have been their own worst enemies, and whenever someone is oppressing someone else, the oppressor seeks to control the tools of communication. Digital networks seemed to me and my compatriots to present a new twist on this old game. A digital network by its nature must constantly adapt to flaws and errors by routing around them. Dominating a digital network would therefore be hard. Digital networks might become the drums that would never be silenced!

That was the starting idea, from way back before the Internet came into existence. It still sounds right to me, and some version of it must be workable, but the particular, strange way we've built our networks has backfired.

Right now is the time when people are learning how to live with digital networks as we've made them so far. Once you understand this, current events that might seem unrelated to each other—and might also appear to be rather senseless—will suddenly fit into a coherent story. For instance, two gargantuan malfunctions in the United States that exploded during the period between the hardback and paperback editions of this book seemed to be unrelated at first glance. But look a little deeper and they can be understood as mirror images of each other.

The first malfunction was when the United States was nearly torn asunder by the extraordinary struggle over “Obamacare.” Portions of the government were temporarily shut down, and the nation teetered on renegeing on its debt obligations. While there are various useful ways of thinking about the Obamacare conflict, it's also important to remember what the conflict was about.

On a literal level, we were fighting about how society integrates “Big Data.” * As explained in these pages, the advent of big data reversed the motivations of insurance companies. Back in the ancient days before cheap, connected computation, the primary way an insurance company could increase its profits was by insuring more and more customers. After the appearance of big data, motivations perversely inverted: The road to increasing profit was to insure only those who could be determined by algorithms to need insurance the least.

*“Big Data” is the ubiquitous term used to describe the massive amounts of information being gathered in every possible way about everyone and everything in order to make the algorithms that are called “artificial intelligence” seem to function on their own. The fact that Big Data is needed is proof that these algorithms are actually only a repackaging of human effort in such a way that it is anonymized and that people aren't acknowledged or paid. Both Big Data and Artificial Intelligence are economic and political constructions that disenfranchise most people.

This strategic reversal left vast numbers of Americans uninsured. Since Americans are fundamentally compassionate, this did not result in the uninsured dying in the streets outside hospital emergency rooms. Instead, the public paid for health care in the most expensive way possible, by treating people only in emergency conditions. This, in turn, resulted in a drag on

the economy, a decrease in personal freedom (since people were locked into jobs in order to keep insurance), and a lessening of economic growth and innovation. It also resulted in decreased overall health in the nation.† Obamacare is a method of reversing the reversal by demanding that many more people be insured, and that insurance companies compete in a way that's somewhat reminiscent of the days before big data.

†<http://www.iom.edu/Activities/HealthServices/InsuranceStatus.aspx>.

No one disputes that big data can be an essential tool in medicine and public health. Information is by definition the raw material of feedback, and therefore of innovation. But there is more than one design for integrating big data into society. Because digital technology is still somewhat novel, it's possible to succumb to an illusion that there is only one way to design it. Is it conceivable to use big data in such a way that both people and their economies get healthier? That is the kind of question addressed by this book.

The second malfunction exploded around Edward Snowden's leaks, which revealed that the National Security Administration was overstepping its charter; snooping on everyone, friend and foe; undermining the encryption that secures our transactions; and turning the consumer-facing world of "free" Internet services into an Orwellian monster.

The NSA has been hard-pressed to show specific benefits that have come out of algorithmically spying on everyone. Old-fashioned intelligence work on the ground has been delivering results, such as locating Osama Bin Laden, while the hope for automatic security through big data algorithms has simply not been realized. The bombing of the Boston Marathon took place the same week as the American publication of this book, and no number of hidden city-sized server farms, metadata analysts, or street cameras prevented it.

In fact, the crazy stretch of the NSA's digital Hoovering demanded such a large labor pool of techies that it compromised its own discipline, making the appearance of a Snowden inevitable. Completely aside from whether one is supportive or horrified by the NSA's strategies in the age of big data, the undeniable fact is that it has made itself less competent.

The NSA and American health insurance companies fell prey to exactly the same disease, which is a form of institutional addiction. They became addicted to what I call a "Siren Server." A Siren Server is a powerful computational resource that out-computes everyone else on the network and seems to grant its owners a guaranteed path to unbounded success at first. But the benefits are illusory and lead to a grand failure before too long.

The Snowden leaks made people all over the world feel violated. We don't know who has read our most tender emails. It feels bad, and if we ever get used to that feeling, that would feel even worse.

But at the same time, why was everybody in the world pouring all their personal information into computers owned by big corporations? The NSA forced its way into those private computers in secret, but why did anyone think that near-unanimous consumer support of a titanic surveillance industry would not eventually morph into a surveillance state?

The dramatic cliffhanger of our age is whether we—meaning all of us, not just those who tend the Siren Servers—will learn to overcome the lure of Siren Servers.

This is the overarching drama that unites otherwise contradictory trends. Here is another instance: On the one hand, computer networks are said to be disrupting centralized power of all kinds and giving it to the individual. Customers can bring corporations to their knees by tweeting complaints. A tiny organization like WikiLeaks can alarm the great powers with

nothing but encryption and net access. Young Egyptians were able to organize a nearly instant revolution through their mobile phones and the Internet.

But then there's the other trend. Inequality is soaring in rich countries around the world, not just in the United States. Money from the top 1 percent has flooded our politics. The job market in America has been hollowed out; unpaid internships are common and "entry-level" jobs seem to last a lifetime, while top technical and management posts become ever more lucrative. The individual appears to be powerless in the face of tough prospects.

The disruption and decentralization of power coincides with an intense and seeming unbounded concentration of power. What at first glance looks like a contradiction makes perfect sense once you understand the nature of modern power.

Dissect almost any ascendant center of power, and you'll find a Siren Server at the core. It's a state of affairs that stings me especially hard, because it was partially brought on by the angelic intentions of early digital idealists. We thought the world would be a better place if everyone shared as much information as possible, free from the constraints of the commercial order. It was an utterly reasonable idea. We were building the drums that could not be silenced. Surely an ability to route around the artificial blindness that has traditionally sealed brutality in place would bring about an era of improved fairness and decency.

Why did the ideal of free information sharing fail? Because it ignored the nature of computation. If a bunch of precomputational people are sharing openly, there might be problems—as the history of socialistic experiments has taught us. But on the other hand, at least in special circumstances, there's no guarantee they will fail.

If those same people have a computer network, however, then there *is* a guarantee that whoever among them has the most effective computer will gain information superiority. People are created equal, but computers are not. A top computer can bring limitless wealth and influence to that lucky computer's owner and the onset of insecurity, austerity, and unemployment for everyone else.

In the past, power and influence were gained by controlling something that people needed, such as oil or transportation routes. Now to be powerful can mean having information superiority, as computed by the most effective computer on a network. In most cases, this means the biggest and most connected computer, though very occasionally a well-operated small computer can play the game, as is the case with WikiLeaks. Those cases are so rare, however, that we shouldn't fall into the illusion of thinking of computers as great equalizers, like guns in the Wild West.

Siren Servers are usually gigantic facilities, located in obscure places where they have their own power plants and some special hookup to nature, such as a remote river that allows them to cool a fantastic amount of waste heat.

This new class of ultrainfluential computers comes in many costumes. Some run financial schemes, such as high-frequency trading, and others run insurance companies. Some run elections, and others run giant online stores. Some run social network or search services, while others run national intelligence services. The differences are only skin deep.

The motivation for Sirenic omniogling is that it leads to marginally effective behavioral models both of inanimate phenomena, such as financial events, and of human beings. These models are far from perfect, but are just barely good enough to predict and manipulate people gradually, over time, shaping tastes and consumption in even more effective and insidious ways than subliminal advertisements could supposedly do. A slight, sessile advantage

accumulates and amplifies, like the soaring tide of compound interest.

Manipulation might take the form of paid links appearing in free online services, an automatically personalized pitch for a candidate in an election, or perfectly targeted offers of credit. While people are rarely forced to accept the influence of Siren Servers in any particular case, on a broad statistical basis it becomes impossible for a population to do anything but acquiesce over time. This is why companies like Google are so valuable. While no particular Google ad is guaranteed to work, the overall Google ad scheme by definition must work, at least for a while, because of the laws of statistics. Superior computation lets a Siren Server enjoy the magical benefits of reliably manipulating others even though no hand is forced.

Since networking got cheap and computers became enormous, the financial sector has grown fantastically in proportion to the rest of the economy, even though it has done so by putting the rest of the economy at increased risk. This is precisely what happens naturally without any evil plan, if you have a more effective computer than anyone else in an open network. Your superior calculation ability allows you to choose the least risky options for yourself, leaving riskier options for everyone else.

A Siren Server gains influence through self-effacement. There is a Zen quality to it. A big computational-finance scheme is most successful when the proprietors have no idea what they are doing in finance. The whole point is to make other people take risks, and knowledge means risk. The new idea is to have no idea whether the security you bundled is fraudulent or not.

Once this principle is understood, the seeming contradiction—that power is being more and less concentrated at the same time—melts away. An old-fashioned exercise in power, such as censoring social network expression, would reduce the new kind of power, which is to be a private spying service on people who use social networking.

We must learn to see the full picture, and not just the treats before our eyes. Our trend-setting gadgets, such as smartphones and tablets, have given us new access to the world. We regularly communicate with people we would never even have been aware of before the networked age. We can find information about almost anything at any time. But we have learned how much our gadgets and our idealistically motivated digital networks are being used to spy on us by ultrapowerful, remote organizations. We are being dissected more than we dissect.

Back at the dawn of personal computing, the ideal that drove most of us was that computers were tools for leveraging human intelligence to ever-greater achievement and fulfillment. I remember early Apple brochures that described personal computers as “bicycles for the mind.” This was the idea that burned in the hearts of early pioneers like Alan Kay, who a half century ago was already drawing illustrations of how children would someday use tablets.

But the tablet is no longer just a physical form for a device; it enforces a new power structure. A “tablet,” unlike a “computer,” only runs programs approved by a single, central commercial authority. That it’s lightweight and has a touchscreen is less important than the fact that the owner has less freedom than owners of previous generations of digital devices.

A tablet doesn’t really enable one to fully run one’s own affairs on one’s own terms. A personal computer is designed so that you own your own data. PCs enabled millions of people to run their own affairs. The PC strengthened the middle class. Tablets are instead optimized for delivering entertainment, but the real problem is that you can’t use them without ceding information superiority to someone else. In most cases, you cannot even turn them on without giving over personal information.

By the time tablets finally found success in reality, Steve Jobs announced that personal computers were actually like “trucks.” They were tools for vaguely burdened working-class guys in T-shirts and visors; most consumers would surely prefer cars. Flashy cars. This formulation suggests that sexy people prefer the superficial gloss of status and leisure to the actual attainment of influence or self-determination. The problem isn’t Apple, but is characteristic of the whole industry. Microsoft once upon a time saw itself as a tool company. But what seems to have won consumers’ hearts most is Microsoft’s XBOX, which is more like a content delivery system.

This triumph of consumer passivity over empowerment is heartbreaking. It does seem that consumers for the moment prefer not to be as smart or empowered as I am sure they, meaning we, could be. This would be a bleak enough observation even without the concurrent rise of the surveillance economy. Not only have consumers prioritized flash and laziness over empowerment, but we have also acquiesced to being spied on all the time. The two trends are actually one.

The only way to sell a loss of freedom, so that people will accept it voluntarily, is by making it look like a great bargain at first. Consumers were offered free stuff (such as web searches and social networking) in exchange for acquiescing to being spied upon. The only power a consumer has is to look for a better deal. The only way to say no to *that* deal is to transcend the role of consumer once in a while.

To be free is to have a zone around you that is private, where you can be with your own thoughts, your own experiments, for a time, between confrontations with the larger world. When you are wearing sensors on your body all the time, such as the GPS and camera on your smartphone, and constantly piping data to a megacomputer owned by a corporation that is paid by “advertisers” to subtly manipulate you by tweaking the options immediately available to you, you gradually become less free.

It’s not just that you’re making far away people rich, even if you are not getting rich yourself, but that you are accepting an assault on your own free will, bit by bit. In order to make tech into something that empowers people, people have to be willing to act as if we can handle being powerful.

If we demand free services in the present, we must also learn that we’ll actually pay a price for them in the future. We must demand an information economy in which a rising tide raises all boats, because the alternative is an unbounded concentration of power. A surveillance economy is neither sustainable nor democratic.

The Internet has often been compared to the Wild West, with its dreamers and schemers, its glimmering promise of free land (primarily accessible, of course, through a monopolized railway). We have evolved out of these something-for-nothing schemes before, and we can do so again.

The story of our times is that humanity is deciding how to be as our technological abilities increase. When will we grow proud enough to be a match for our own inventions?

Prelude

Hello, Hero

An odd thing about this book is that you, the reader, and I, the author, are the immediate protagonists. The very action of reading makes you the hero of the story I am telling. Maybe you bought, or stole, a physical copy, paid to read this on your tablet, or pirated a digital copy off a share site. Whatever the prequel, here you are, living precisely the circumstances described in this book.

If you paid to read this, thank you! This book is a result of living my life as I do, which I hope provides value to you. The hope of this book is that someday we'll all have more ways to grow wealth as a side effect of living our lives creatively and intelligently, with an eye to doing things of use to others.

If you paid to read, then there has been a one-way transaction in which you transferred money to someone else.

If you got it for free, there has been a no-way transaction, and any value traded will be on the books, recorded not in any ledger but rather in the informal value systems of reputation, karma, or other wispy forms of barter. That doesn't mean nothing has happened. Maybe you'll get some positive strokes over a social network because of what you say about the book. That sort of activity might benefit us both. But it's a kind of benefit that is unreliable and perishable.

The clamor for online attention only turns into money for a token minority of ordinary people, but there is another new, tiny class of people who always benefit. Those who keep the new ledgers, the giant computing services that model you, spy on you, and predict your actions, turn your life activities into the greatest fortunes in history. Those are concrete fortunes made of money.

This book promotes a third alternative, which is that digital networking ought to promote a two-way transaction, in which you benefit, concretely, with real money, as I do. I want digital networking to cause more value from people to be on the books, rather than less. When we make our world more efficient through the use of digital networks, that should make our economy grow, not shrink.

Here's a current example of the challenge we face. At the height of its power, the photography company Kodak employed more than 140,000 people and was worth \$28 billion. They even invented the first digital camera. But today Kodak is bankrupt, and the new face of digital photography has become Instagram. When Instagram was sold to Facebook for a billion dollars in 2012, it employed only thirteen people.

Where did all those jobs disappear to? And what happened to the wealth that those middle-class jobs created? This book is built to answer questions like these, which will only become more common as digital networking hollows out every industry, from media to medicine to manufacturing.

Instagram isn't worth a billion dollars just because those thirteen employees are extraordinary. Instead, its value comes from the millions of users who contribute to the network without being paid for it. Networks need a great number of people to participate

them to generate significant value. But when they have them, only a small number of people get paid. That has the net effect of centralizing wealth and limiting overall economic growth.

Instead of enlarging our overall economy by creating more value that is on the books, the rise of digital networking is enriching a relative few while moving the value created by the many off the books.

By “digital networking” I mean not only the Internet and the Web, but also other networks operated by outfits like financial institutions and intelligence agencies. In all these cases, we see the phenomenon of power and money becoming concentrated around the people who operate the most central computers in a network, undervaluing everyone else. That is the pattern we have come to expect, but it is not the only way things can go.

The alternative introduced in this book is not a utopian idea; it won't be hard to foresee its annoyances and messiness. However, I will argue that monetizing more of what's valuable from ordinary people, who turn out to be the uncompensated sources of the data that make networks valuable in the first place, will lead to a better future.

That will make power and clout more honestly distributed, and might even lead to a persistent middle class in an information economy, which would otherwise be an impossible goal.

Terms

It would be impossible to only use preexisting terminology to communicate the ideas in this book. The problem is not that there are no relevant, familiar terms, but that all the preexisting terms have baggage or common uses that are just enough askew from what I need to say that they bring more confusion than clarity. So unfamiliar terms and expressions will appear. An appendix contains a list of some of these terms, along with the pages on which they first appear. Think of it as the high-priority index.



First Round

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