

# How Big-Tech Barons Smash Innovation

And How to Strike Back

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## THE SUMMARY IN BRIEF

Surveys reveal that lots of us are concerned about corporate power in many markets, including in the digital economy. But, seemingly, people still believe that innovation has been unaffected. It remains synonymous with the online economy. Indeed, as the pandemic showed, we can do more online, from social interactions to work, from shopping to learning. But as we increasingly go online to do these things, we come to understand that these innovations have a dark side—whether to our privacy, well-being, or autonomy.

Many devices, apps, and services come from digital ecosystems controlled by a few powerful firms. These Tech Barons govern competition, they also determine the nature of innovation that makes it to the market. And this puts companies, consumers, and innovators in a tough spot. In *How Big-Tech Barons Smash Innovation – And How to Strike Back* authors Ariel Ezrachi and Maurice E. Stucke show how the ripple effects of the Tech Baron’s toxic innovations are harming our children, ripping apart our social fabric, and undermining political stability and democracy. But we can restore the digital economy with the three fundamental principles offered in this book.

## IN THIS SUMMARY, YOU WILL LEARN:

- The rise of the Tech Barons and their threat to Tech Pirates
- How the Tech Barons smash disruptive innovation
- The ripple effects of toxic innovation
- Three fundamental principles to strike back against it

### The Rise of the Big-Tech Barons

The Tech Barons who control the digital ecosystem are Google, Apple, Facebook, Amazon, and Microsoft, or GAFAM for short. It has been said that apps are worth millions, and platforms are worth billions. But on top of the food chain are the Tech Barons' ecosystems. Management literature commonly refers to an ecosystem as "a network of interconnected organizations that are linked to or operate around an organization or a technology platform."

The Tech Barons' ecosystem is more powerful than the sum of its parts—the platforms, services, the data collected, and the analytics undertaken. One may avoid a platform, but not the Tech Barons' expanding and tightly controlled ecosystem. In designing and supporting infrastructure, the Tech baron ensures itself unparalleled access to data and other critical inputs of the digital economy, which are used to improve the Tech Barons' products, services, technology, and algorithms to significant advantage over others.

Interconnections are also vital in the digital economy and the Tech Barons control the bridges and the information flows. They also serve as gatekeepers when it comes to governance. The Tech Barons create and enforce the rules of the ecosystem and ensure they benefit them. While not immune from competitive pressure, the gatekeeper position enables them to block innovations that might jeopardize its ecosystem.

The Tech Barons invest in innovation and often attract other innovators. Their platforms can significantly lower costs that have traditionally inhibited innovation. By promoting interoperability and functionality, other products and services can attach to their platforms and operate from them, using the cost savings to invest in research and development. So, as these costs and barriers decline, innovation levels should increase and we should be better off.

It is of little surprise that as a society, we often bet on the Tech Barons to help lead us to more discoveries and sustainable growth. It is a beautiful, aspirational narrative. But it hides a darker reality in which Tech Barons quash disruption, stifle third-party innovation efforts, and limit innovation diversity within their ecosystems.

With power comes the ability to reorient innovation efforts away from market demand. The result is that R&D efforts focus on exploiting users and extracting value. The true power of the Tech Barons can be understood by looking at the innovation pirates.

### The Tech Pirates

Innovators are often referred to as *pirates*. As one software engineer on the Macintosh team recounted, "Being a pirate meant moving fast, unencumbered by bureaucracy and politics...It meant being audacious and courageous, willing to take considerable risks for greater rewards."

Innovation pirates develop tomorrow's technology. Our society relies heavily on their creativity and motivation. Their organization, business models, and cost structures are geared toward uncharted water. And they often persist, against the odds, regardless of uncertainty and risk. In our story, these pirates are the heroes. They are distinguished from other companies that heavily invest in R&D by the use of disruptive innovation.

For our purposes, when we refer to disruptive innovation, we discuss a process in which the innovation pirate's business model, products, or services disrupt the existing value chain, which is the prevailing business model, the range of activities needed to create a product or service, the profits generated from them, and how the profits are allocated among the firms.

Since their initial strategies for entering markets will not always succeed, the pirates gear their organizations toward ongoing discovery. First they must learn how the customers will actually use their products and next must update their offerings and the underlying value chain. The pirates must seek new connections to help build out their platforms to achieve scale. In their journey, the pirates will face many obstacles. The pirate's obstacles vary by industry and technology and its corporate structure and size. But the rhythm of innovation is to overcome these barriers.

In the digital economy, a significant external threat may undermine their survival—the risk of being quashed by the Tech Barons. Built into the pirates' disruptive strategy is its threat to the Tech Barons' ecosystem and profit model.

That tension is at the heart of the digital innovation story. Thus, pirates would often seek to avoid the Tech Barons' elephant trail. To establish themselves, they will seek out emerging or insignificant smaller markets or create new markets. Over time, as they test their technologies, and gain scale and success, they will journey into the mainstream.

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### Disrupting Disruptive Innovation

The Tech Barons can secure themselves against defeat and

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tip the odds heavily in their favor by designing and controlling their ecosystems. They can plan and execute strategies that determine the flow of innovation and the level of access granted to third parties. Through their shaping strategies and attrition warfare, the Tech Barons can thin the ranks of disruptive Tech Pirates and manipulate the supply of innovation to protect their value chains. Using a range of exclusionary strategies, they win the battle before it begins.

To appreciate the potency of the Tech Barons' exclusionary power, we will first look at technologies they deploy to scan the ecosystem and identify and target potential disruptors. We will then share some of the Tech Barons' myriad exclusionary tactics to decrease the odds of dynamic disruption.

The Tech Barons control expanding ecosystems where others operate. From this position of power and collection of data, they deploy advanced analytics that transform near-perfect market surveillance into a detailed picture of ongoing market activities, trends, and emerging threats. This technology is referred to as *nowcasting radars*.

Using their nowcasting radar, these Tech Barons can monitor in real-time competitive portals where start-ups may emerge—within and outside their ecosystem—and identify and neutralize nascent threats. At times, the Tech barons may better understand the technology's disruptive potential than the Tech Pirates themselves, as they see the whole ecosystem and can identify trends, opportunities, and threats.

Data advantage turns the nowcasting technology into a game-changer. Being subjected to ongoing monitoring and targeting, Tech Pirates have fewer places to hide. So, the nowcasting radar itself can chill disruptive innovation.

Besides nowcasting radar, the Tech Baron can resort to an arsenal of additional weapons to distort the supply of innovation, all of which are designed to diminish the Tech Pirate's viability and ability to scale up. These strategies include:

- Excluding the Tech Pirate from the ecosystem or reducing its visibility
- Reducing interoperability with the Tech Pirate's innovation

- Copying the Tech Pirate's innovation

The Tech Barons can use these torpedoes to blast the Tech Pirate out of the market, platform, and ecosystem. The Tech Pirate must either sail to another ecosystem or adjust the innovation to comport with the existing value chain to survive.

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## Distorting the Demand for Innovation

Many of us tend to think we're independent, spontaneous, free-spirited, and unique. But in the grand scheme of things, what if we are more predictable and malleable? So much that an algorithm can reveal our identity from several data points, including our geolocation data, and can divine our secrets, which we believe are closely guarded, with enough of our Likes on Facebook and our online interactions, to then influence our behavior.

What if the Tech Barons look at us as a means to extract value? While we believe we're snowflakes—unique, unpredictable, and autonomous—our value is in our predictability and manipulability that serve the Tech Baron's ends. The Tech Barons can impact our demand for disruptive innovation. This side of the story is essential.

While the Tech Barons can exclude the disruptive Tech Pirates from their ecosystems, they cannot permanently delete all of them from the digital or brick-and-mortar economy. However, they can deprive them of scale by dictating the direction in which we migrate.

Earlier generations often took decades to adopt game-changing technologies, like landline telephones and automobiles. By contrast, today it typically takes only years, if not months, to adopt major technologies, such as tablets and smartphones.

And yet, at times, a technology, despite being beneficial *and having potential demand*, never takes off or is delayed in its adoption. This is partially because of the Tech Baron's ability to distort the demand for innovation.

Two fundamental forces that affect the adoption of innovation in the digital economy are *friction* and *retention*. The

Tech Barons increase retention of users, reduce friction to the complementary sustaining innovations that fortify their ecosystem, and increase friction to the potentially disruptive innovations.

These obstacles are enough to deprive the Tech Pirates of scale and experimentation. Granted, the technologies anointed by a Tech Baron will not always prevail. But through retention and friction levers they can increase the odds of a given technology's adoption or failure.

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### Toxic Innovation Galore

As the Tech Barons thin the ranks of pirates and narrow their possible innovation paths, what happens to the *value* and *type* of innovation? The Tech Baron's growing power increases the likelihood that the resulting innovation within its ecosystem will serve the Tech Barons' interest, not ours. What does that mean? More innovations that extract value, siphoning more money into the Tech Barons' pockets, or destroying value with some truly privacy-invasive technologies.

To appreciate the rising toxicity, one must first understand the relationship between the increase in power over the ecosystem and the diminishing value of the implemented innovation. The more concentrated the market becomes, the less likely its innovations will maximize our interests.

Competition, at times, can be a race to the bottom that harms both rivals and customers. At times, firms make more money exploiting our weaknesses. At other times, the competitive pressure causes a degradation in quality, safety, and the environment. When competition is toxic, the innovations can also be toxic, in that they extract or destroy value.

In winner-take-all markets with multiple network effects, the Tech Barons' collect far more data *about* us but not necessarily *for* us. As the Tech Barons' power increases, our privacy erodes. The Tech Barons continuously run experiments on us to see how we react to subtle changes and to better predict our behavior.

Facebook, for example, reportedly uses an artificial intelligence powered engine to predict user behavior. The technology enables Facebook to predict user loyalty to a particular brand and the likelihood of switching to a competitor's. Third parties and advertisers use this to target people and alter their anticipated course, based on decisions they haven't even made yet. Instead of working for us, these toxic innovations now serve its new barons.

Our privacy and autonomy have already taken a toll from innovations developed to maximize behavioral advertising revenue, such as how long our mouse lingers over an image, what we search, what we "like," where we go, and what we say and do—all observed from our smart appliances, wearables, digital assistants, phones, computers, and cars.

Thus, the current frontier is our emotions, where algorithms will predict our feelings better than our closest family members and friends with the likely goal of manipulating us.

To envisage how this can harm our well-being, let's consider Instagram. Since being under Facebook's control they began focusing on winning what they viewed as a race for teen users. And it worked. By 2021, about twenty-two million teens logged on to Instagram in the US each day. The impact this usage has on their mental health is of great concern.

Facebook's Zuckerberg downplayed any concern while testifying to Congress, but that was deceptive. Internally, Facebook knew of the harmful effects of its Instagram platform on millions of young adults, as a *Wall Street Journal* series revealed.

As internally noted, teens using the app reported feeling less attractive, anxious and depressed, worse about their mental health, and even suicidal. Further, teens regularly reported wanting to spend less time on the app but lacked the self-control to do so because they felt addicted.

Now imagine children navigating the Tech Barons' technological advances in neuromarketing, neurotechnology, and the metaverse, where the incentives are skewed by behavioral advertising. If the platforms are purposefully addictive now, consider their toll on mental health and well-being when the last bastion of privacy—mental repose—collapses.

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### Ripple Effects

Faced with increased toxicity, we have to face the broader consequences of the Tech Barons' innovations—the ripple effects of toxicity. The ripple effects from toxic innovation extend far beyond the Tech Barons' ecosystems, the digital economy, the user experience, and the impact of the Tech Pirates. *What happens online doesn't stay online.* These toxic innovations ultimately corrode our social and political fabric and harm our autonomy, democracy, and well-being.

To illustrate, we will look at three ripple effects, each with different consequences.

If fear, rancor, anger, and antagonism increase our engagement, expect the algorithms throughout the Tech Barons' ecosystems to recommend even more divisive content.

**1: Tribalism and Rancor:** Once triggered by a post, video, or story, our anger and fear do not stop with us. They create a ripple effect, where we spread our anger and fear to others through sharing and commenting on content that is suggested to us. Indeed, an emotional contagion study by Facebook warned that its News Feed algorithms, "If left unchecked," it would feed users "more and more divisive content in an effort to gain user attention and increase time on the platform." Similar ripple effects occur on Google's YouTube platform.

If fear, rancor, anger, and antagonism increase our engagement, expect the algorithms throughout the Tech Barons' ecosystems to recommend even more divisive content. Thus, the Tech Barons' algorithm "isn't actually rewarding content that drives meaningful social interactions," but content that exploits racial division, spreads fad or false science, and puts forth disturbing news and images.

**2: Undermining Democracy:** Political consultancy Cambridge Analytica trained its algorithm to predict and map personality traits to target voters and appeal to their hopes, neuroses, and fears. That required a lot of personal data, which they collected on Facebook, and produced personality scores for each person. They then matched these personality scores with US voter records to target them and manipulate their behavior.

As the company CEO, Alexander Nix, elaborated, "we were able to use data to identify that there were very large quantities of persuadable voters there that could be influenced to vote for the Trump campaign."

Cambridge Analytica also deployed these methods in other democracies to identify and persuade swing voters. And this is only one example of the microtargeting, manipulation, and deception of voters spawned by these toxic innovations. Many national elections are won by small margins. In swinging hyper-targeted groups, these innovations can and will determine political governance.

**3: Innovation Feudalism:** There is no survey data of the number and types of Tech Pirates. However, general data on small and medium-sized enterprises shows that the percentage of companies less than one year old has declined

by almost half over the last generation. And those declines swept across industries, including tech. With reduced dynamism and disruption, leading companies can entrench their position. Entrenched powerful companies with deep pockets can mount even more effective strategies against Tech Pirates, leading to marginalization and exclusion.

It will only be natural then for society to increasingly rely on a few companies for its future prosperity. The Tech Barons' ecosystems reflect "innovation feudalism" where many companies and individuals become the serfs toiling away.

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## Current Antitrust Enforcement

When the CEOs of Google, Apple, Facebook, and Amazon testified before Congress in 2020, they all agreed that the current antitrust laws and policies in the US foster the entrepreneurial spirit. Why would the Tech Barons celebrate the current antitrust policies, which are supposed to crack down on mergers that may create a monopoly or prevent monopolies from acquiring or crushing competitive threats? Because the current antitrust framework generally works in the Tech Barons' favor. Here's why. The current antitrust policies focus on:

- What is quantifiable, like price and output, rather than what is essential in the digital economy, namely innovation, quality, and privacy
- Narrowly defined antitrust markets rather than ecosystems
- The past, rather than the current or future anticompetitive practices
- What the defendants did, not why they behave the way they do

As a result, despite the recent flurry of antitrust enforcement, the existing antitrust policies will not significantly deter the Tech Barons nor halt the spread of toxic innovation. But the call for change should not be anchored in nostalgia of past antitrust policies when enforcement was more robust. The key is understanding the need to keep up with the digital economy.

### The Way Forward: Three Fundamental Principles

Disruptive innovation is path-dependent. This means that current impediments to innovation affect the future levels, types, and value of innovation. It also means that the Tech Barons' current and past anticompetitive behavior will be felt for many years and that some potential innovations will be lost forever. Left to its own, the digital economy will advance the Tech Barons' narrow interests and gravitate further away from the public interest.

Something needs to be done, but the cost of regulatory failure is steep. If policymakers shoot wildly, innovation and competition can be harmed. On the other hand, while the regulators figure out where to aim, the Tech Barons will kill more pirates, distort innovation paths, and deliver innovation that increasingly extracts or destroys value, and this damage is not reversible. So how do we get to where we need to be?

To encourage innovations that actually and significantly benefit us, we suggest following three interrelated principles that can help countries overhaul their policy switchboards:

#### **Principle 1: Value—Consider the type of innovation and ask whether it creates, destroys, or extracts value.**

As we have seen, innovation is neither inevitable nor invariably desirable. Since not all innovation increases value, policymakers and enforcers must inquire whether the innovation is sustaining or disruptive and whether it destroys, extracts, or increases value, and thus increases or reduces well being.

#### **Principle 2: Incentives—Ask who's designing the ecosystem and influencing the innovation paths, what are the ecosystem's value chains, and what incentives it fosters.**

As we have seen, what's good for the Tech Baron is not necessarily what's good for us. And so, one must understand the incentives at play and ensure that the flow from the value chain aligns with our interests. Every ecosystem is regulated—whether by Tech Barons, informal norms, or laws, rules, and regulations. If policymakers assume that the marketplace is naturally self-regulating and that the market participants' incentives will always align with our interests, they are ill-informed.

#### **Principle 3: Diversity—Promote an effective competitive process that enables disruption and innovation plurality and offers Tech Pirates a viable opportunity to prosper.**

The diversity of innovation paths is crucial for future prosperity. We cannot predict who will emerge as the next Tech Pirate, given their high rate of failure and evolutionary selection on which we rely to ensure that the right innovations prosper. But we can hedge our bets by fostering a plurality of innovators and the ensuing collision of ideas from different fields.

The Value, Incentives, and Diversity principles can inform policy choices on two complimentary levels: *optimization* and *innovation* support. Many policy choices create incentives and disincentives that affect the nature and value of innovation. To the same extent, so does inaction. The challenge is striking the right balance to enable the benefits from the digital economy while promoting a diversity of value-creating innovation.

There is no single law or set of financial penalties or incentives that will fix the digital economy. What's needed are multiple policies, packed with levers that affect the supply and demand for different types of innovation.

*Optimization* policies include things like competition laws, intellectual property laws, privacy and data protections, and other laws that influence the appropriation of knowledge and the commercialization and monetization of ideas. Policymakers are already considering how to recalibrate these levers to promote innovation, such as increasing interoperability, limiting the Tech Barons' ability to acquire nascent competitive threats, and requiring some structural separation so that Tech Barons cannot own a platform while competing with others on it.

*Innovation* support policies include things like providing resources, grants, loans, state guarantees, capital investment, and tax breaks. Other measures include coordinating innovation efforts and technology transfers and assisting in the technology's commercialization.

Ideally one could calibrate which setting among the many levers would yield the optimal return of value-added innovation. Reality, as expected, is more complex. In a dynamic economy, policymakers must periodically adjust the levers to prevent distortion of incentives and innovation. They must also alter the levers or add new ones to keep pace with new technologies and changes in existing technology, business models, or prevailing ecosystems.

The Tech Barons' value chain helps us understand an underlying contributor to the populism and fear-mongering that are destabilizing democratic institutions today. It

is the instinctive understanding, on the part of the public, that their incentives are not necessarily aligned to ours. They may not actually save us. They might even do us harm. This is not surprising because they are not ultimately designed for our benefit.

The current incentives and policies have put the digital economy on the wrong trajectory. And we can't expect this trajectory to self-correct. We need to fundamentally overhaul policy, invest in Tech Pirates, and more generally, in diversity. We can, and should, expect more, but only if we demand it.



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