

Exponential Organizations: Why new organizations are ten times better, faster and cheaper than yours (and what to do about it)

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Executive Summary:

Introduction

- An Exponential Organization is one whose impact (or output) is disproportionately large – at least 10 x larger – compared to its peers because of the use of new organizational techniques that leverage accelerating technologies.

Ray Kurzweil, who has studied this phenomenon for thirty years, to make four signature observations:

1. First, the doubling pattern identified by Gordon Moore in integrated circuits applies to any information technology. Kurzweil calls this the Law of Accelerating Returns (LOAR) and shows that doubling patterns in computation extend all the way back to 1900, far earlier than Moore's original pronouncement.
2. Second, the driver fueling this phenomenon is information. Once any domain, discipline, technology or industry becomes information-enabled and powered by information flows, its price/performance begins doubling approximately annually.
3. Third, once that doubling pattern starts, it doesn't stop. We use current computers to design faster computers, which then build faster computers, and so on.
4. Finally, several key technologies today are now information-enabled and following the same trajectory. Those technologies include:
 - artificial intelligence (AI),
 - robotics,
 - biotech and bioinformatics,
 - medicine,
 - neuroscience,
 - data science,
 - 3D printing,
 - nanotechnology
 - and even aspects of energy

When facing exponential growth, the experts in almost every field always projected linearly, despite the evidence before their eyes.

Kurzweil took Moore's Law several steps further, noting that every information-based paradigm operates in the same way, something he called the Law of Accelerating Returns (LOAR).

Ten years ago we had five hundred million Internet-connected devices.

Today there are about eight billion.

By 2020 there will be fifty billion and a decade later we'll have a trillion Internet-connected devices as we literally information-enable every aspect of the world in the Internet of Things.

The Internet is now the world's nervous system, with our mobile devices serving as edge points and nodes on that network.

Think about that for a second: we'll be jumping from eight billion Internet-connected devices today to fifty billion by 2025, and to a trillion a mere decade later.

We like to think that thirty or forty years into the Information Revolution we are well along in terms of its development.

But according to this metric, we're just 1 percent of the way down the road.

Not only is most of that growth still ahead of us, all of it is. And everything is being disrupted in the process.

Rapid or disruptive change is something that large, matrixed organizations find extremely difficult.

Indeed, those who have attempted it have found that the organization's "immune system" is liable to respond to the perceived threat with an attack.

Two key factors enabled Waze to succeed, and those two factors hold true for all next-generation ExO companies:

1. Access resources you don't own. In Waze's case, the company made use of the GPS readings already on its users' smartphones.
2. Information is your greatest asset. More reliably than any other asset, information has the potential to double regularly. Rather than simply assembling assets, the key to success is accessing valuable caches of existing information.

The real, fundamental question of our exponential age is: What else can be information-enabled?

The key outcome when you access resources and information-enable them is that your marginal costs drop to zero.

Quite possibly the granddaddy of information-based ExOs is Google, which doesn't own the web pages it scans. Its revenue model, the butt of many jokes ten years ago, has enabled Google to become a \$400 billion company, a milestone it reached by essentially manipulating textual (and now video) information. LinkedIn and Facebook together are worth over \$200 billion, and that's just as a result of digitizing our relationships—that is, turning them into information.

CHAPTER FIVE Implications of Exponential Organizations

In this chapter, we'll examine in depth some of the characteristics of an ExO ecosystem.

In particular, we've identified 9 key dynamics at play:

1. Information Accelerates Everything

In 1995, 710 million rolls of film were developed at thousands of processing centers.

By 2005, nearly 200 billion digital photographs, equaling about eight billion rolls, had been taken and edited, stored and displayed in ways that were unimaginable just a few years before.

Today, web users upload almost one billion photographs per day to sites like Snapchat, Facebook and Instagram.

As we add trillions of sensors on every device, process and person, the process will accelerate even faster to an almost unimaginable pace (Big Data).

A final outcome of this trend is that we seem to be entering an era of "winner-takes-all" markets.

There's really only one search engine (Google), one auction site (eBay) and one e-commerce site (Amazon).

Network effects and customer experience lock-in seem to be at the root of this fundamental change in the nature of competition.

2. Drive To Demonetization

One of the most important—and least celebrated—achievements of the Internet during the last decade was that it cut the marginal cost of marketing and sales to nearly zero.

By this we mean that with the web, it is possible to promote an online product worldwide for a tiny fraction of what it cost just twenty-five years ago.

A case in point: it costs Uber essentially zero to add an additional car and driver to its fleet.

By the same token, Quirky can find its next consumer product for essentially zero.

ExOs are able to scale their businesses with near 100 percent variable costs, even in traditionally capital-expenditure-heavy industries.

As technology brings us a world of abundance, access will triumph over ownership.

By comparison, scarcity of supply or resources tends to keep costs high and stimulates ownership over access.

3. Disruption is the New Norm

We see a consistent set of steps around disruptive innovation comprising the following:

- Domain (or technology) becomes information-enabled
- Costs drop exponentially and access is democratized
- Hobbyists come together to form an open source community
- New combinations of technologies and convergences are introduced
- New products and services appear that are orders of magnitude better and cheaper
- The status quo is disrupted (and the domain gets information-enabled)

We are seeing this evolution occur in drones, DNA sequencing, 3D printing, sensors, robotics and, certainly, Bitcoin.

4. Beware the “Expert”

History has shown that the best inventions or solutions rarely come from experts; they almost always come from outsiders.

That is, from people who aren't domain experts but who offer a fresh perspective.

5. Death to the Five-Year Plan

In an exponential world, the five-year plan is not only unworkable, it is seriously counterproductive, and perhaps, deadly.

The future is changing so quickly that any forward look is likely to produce false scenarios, so much so that today's five-year plans have a high probability of offering the wrong advice.

ExOs, sees five-year plans being replaced with the following elements:

- MTPs for overall guidance and emotional enrollment.
- Dashboards to provide real time information on how a business is progressing.
- Leveraging "Moments of Impact" for clean, productive decision-making.
- A one-year (at most) operating plan that is connected to the Dashboard.

6. Smaller Beats Bigger (aka Size Does Matter, Just not the Way You Think)

The answer to the question of how big an Exponential Organization can get yields yet another, more precise, question: How quickly can you convert exponential growth into the critical mass needed to become a platform?

Once that happens there is no practical limit.

7. Rent, Don't Own

It is estimated there are now hundreds of "fablabs" operating around the world.

Soon, every town and neighborhood will have one, meaning that any individual or small team will be able to rent equipment and be as capital-empowered as an established corporation.

Today, airlines pay for engines by the number of hours flown.

In other words, something as expensive and complex as an aircraft engine has now become a rented, pay-as-you-go asset, rather than an expensive internal business unit.

8. Trust Beats Control and Open Beats Closed

Five key precepts to Zappos that drive culture across the organization:

1. Vision: What you're doing
2. Purpose: Why you do it
3. Business model: What will fuel you as you're doing it
4. Wow and uniqueness factors: What sets you apart from others
5. Values: What matters to you

Anything predictable has been or will be automated by AI or robots, leaving the human worker to handle exceptional situations.

At Facebook, however, development teams enjoy the full trust of management.

Any team can release new code onto the live site without oversight.

As a management style, it seems counterintuitive, but with individual reputations at stake—and no one else to catch shoddy coding—Facebook teams end up working that much harder to ensure there are no errors.

The result is that Facebook has been able to release code of unimaginable complexity faster than any other company in Silicon Valley history.

In the process, it has seriously raised the bar.

9. Everything is Measurable and Anything is Knowable

We usually track our health using just three basic metrics: temperature, blood pressure and pulse rate.

Now, imagine if we could measure each one of those ten trillion cells—and not with just three metrics, but with a hundred.

We are moving toward a world in which everything will be measured and anything can be knowable, both in the world around us and within our bodies.

Only enterprises that plan for this new reality will have a chance at long-term success.

CHAPTER TEN The Exponential Executive

5 Likely Breakthrough Technologies:

1. Sensors and the Internet of Things

- We'll see a leap from eight billion Internet-connected devices today to fifty billion by 2020.
- Anything and everything will have sensors embedded, from wearables and packages to even food.

Implications:

- Infinite computation (as Moore's Law continues) and infinite storage, both essentially free; the Quantified Employee; AaaS (Analytics as a Service); hardware as the new software via developments such as Arduino; new business models based on connected products.

2. AI, data science and analytics

- Ubiquitous usage of Machine Learning and Deep Learning algorithms to process vast caches of information.

Implications:

- Algorithms driving more and more business decisions; AIs replacing a large percentage of knowledge workers; AIs looking for patterns in organizational data; algorithms embedded into products.

3. Virtual/augmented reality

- Avatar-quality VR available on desktop in 2-3 years. Oculus Rift, High Fidelity and Google Glass drive new applications.

Implications:

- Remote viewing; centrally located experts serving more areas; new practice areas; remote medicine.

4. Bitcoin and block chain

- Trustless, ultra-low-cost secure transactions enabled by distributed ledgers that log everything.

Implications:

- The blockchain becomes a trust engine; most third-party validation functions become automated (e.g., multi-signatory contracts, voting systems, audit practices). Micro-transactions and new payment systems become ubiquitous.

5. Neuro-feedback

- Use of feedback loops to bring the brain to a high level of precision. Implications: Capacity to test and deploy entirely new classes of applications (e.g., focus@will); group creativity apps; flow hacking; therapeutic aids, stress reduction and sleep improvement.

These new technologies will, in turn, underpin the appearance of five likely meta-trends:

5 Likely Meta-Trends:

1. Perfect knowledge:

Implications:

- With the Internet of (Every)thing, sensors, low Earth orbit (LEO) satellite systems and unlimited sensors, users will be able to know anything they want, anywhere and at any time.

2. Virtual worlds

Implications:

- Philip Rosedale notes that Hollywood special effects migrate to the desktop after five years.
- Avatar is now three years old and will soon be available on the Oculus Rift.
- Almost perfect VR is around the corner, and will deliver experiential reality and transform retail, travel, and living and working environments.

3. 3D printing

Implications:

- 3D printing (and soon 4D) will not radically change big manufacturing, but it will enable an entirely new class of products that will displace traditional manufacturing. A Kinko's model of local 3D printing of virtually anything will appear shortly and the technology will have a major impact on warehousing and transportation. U.S. manufacturing will be revitalized as recent offshoring trends reverse.

4. Disruption of payment systems

Implications:

- In 2012, Visa and MasterCard credit card purchases totaled more than \$1.5 trillion in the U.S. alone.
- Payment systems and money transfer mechanisms haven't changed for decades, but with Square, PayPal and now Clinkle and Bitcoin, this domain is ready for a major transformation.
- One form will come via mobile/social wallets and seamless transactions.
- A second will come via micropayments (probably via the block chain).
- The ability to move infinitesimal transaction amounts will underpin entirely new business models.

5. Autonomous vehicles

Implications:

- In September 2014, California will issue the first license plates for driverless cars. Starting with delivery vehicles and then taxis, predictions call for existing road capacity to increase 8-10 times once a critical mass of AVs is reached.
- Ridesharing is an intermediate step toward fully automated transportation, which may have a bigger visible impact on society than anything else, including sustainability, urban planning (almost no parking lots) and fewer traffic fatalities.