



NAVIGATING THE TURN

mapbook and question guide for directors and managers of companies hoping to thrive in 2025





“What if we don’t change at all ...
and something magical just happens?”

*“If the rate of change on the outside is greater than the
rate of change on the inside, the end is near.”*

Jack Welch

Former CEO

General Electric

About Ed Marsh



Ed is an independent director, advisor and consultant for small and middle market B2B industrial manufacturing firms.

He specializes in strategy, digital disruption, digital marketing & social media and global diversification.

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His credentials and affiliations include:

- Export Advisor to American Express
- Governance Fellow® and active member of the National Association of Corporate Directors (NACD)
- Association for Corporate Growth (ACG)
- International Executives Resource Group (IERG)
- Presidential "E" Award Winner
for Excellence in Exporting
(awarded by President Barack Obama)
- Appointed to Northeast District Export Council
- Johns Hopkins University
- Former US Army Airborne Ranger Infantry Officer
- Service Disabled Veteran/Commander of VFW Post

Ed was going to be an architect; before he was going to be an engineer; before he graduated from Johns Hopkins; before he was an Army Infantry Officer (Airborne Ranger); before he set B2B industrial sales records; before he was partners with a German capital equipment manufacturer; before he founded a distribution/rep company for industrial products in India; until

he concluded that managing operational & HR details wasn't what he enjoyed.

Ed loves and excels at recognizing and creating business opportunities; at synthesizing the science/engineering with the art/design; at connecting the business strategy dots; and at challenging traditional assumptions.

He understands the B2B manufacturing world and has developed successful industrial marketing programs around digital tools social media and qualitative buyer research. He's also built successful export sales programs around the globe, including: North, South & Central America, Southeast Asia, Western Europe, South Asia and Africa.

Part yankee, part grunt, part B2B silverback, he's straightforward and decisive. But he balances that with exceptional empathy and a nuanced and thoughtful approach to business challenges.

“All truth passes through three stages.

First, it is ridiculed.

Second, it is violently opposed.

Third, it is accepted as self-evident”

Arthur Schopenhauer

Executive Summary

Every business era is challenging and tumultuous as you navigate it. Some, often only in retrospect, are clearly different - periods of transition which form the crucible for “creative destruction.” **Some firms are lucky.** Some instinctively react well. A few anticipate and plan - positioning themselves proactively for success. **But most stagnate.**

Why? Because businesses have a model that was forged with the materials and knowledge appropriate for a place in time. And management incrementally adapts that model to meet changing market conditions. But they view every condition, challenge and opportunity through a conservative lense that first seeks to avoid collapse. Their innovation is typically experiments around the edges.

Most companies, were they to sit management and directors around the conference table to field the questions this book maps out, would ridicule or oppose many. Certainly the implication

of some of these questions will prove to have been misguided. In aggregate though, they'll point the way toward a SMB industrial manufacturing future which will later be accepted as self-evident.

Successful companies should ask the questions and explore the answers. Stated otherwise, the **companies that consistently ask these questions and explore the answers will position themselves for success well ahead of their competitors** - in fact in many cases they'll create new models which will have no initial competitors.

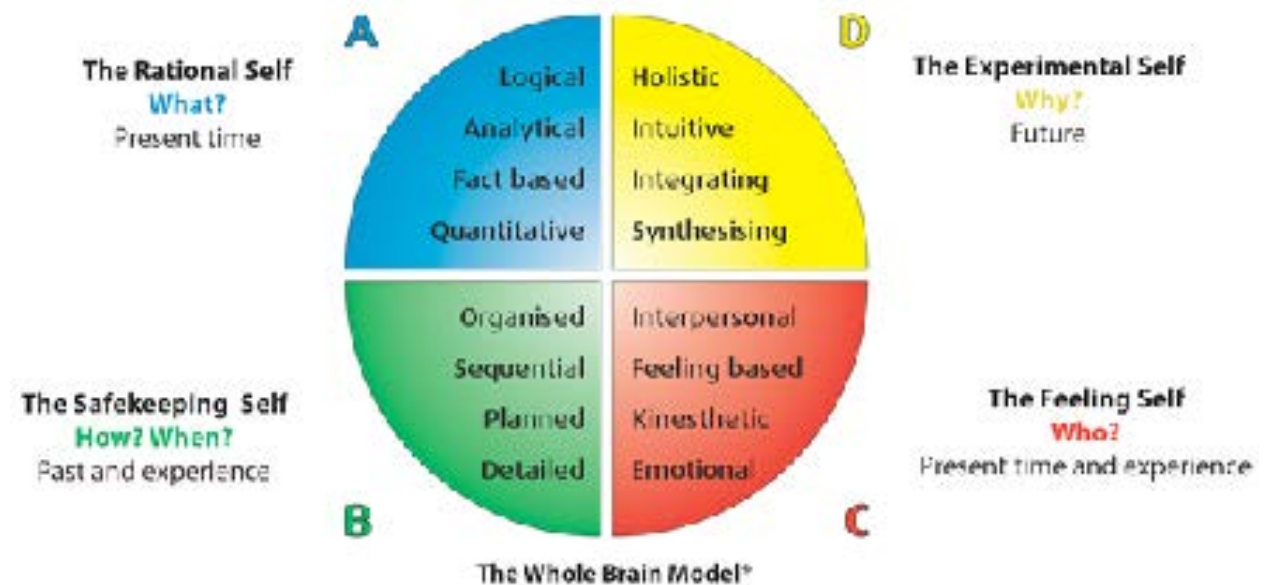
The biggest challenge in most companies, however, won't be creating space and time for the discussion. Rather the difference between success and failure will be the scope of outcomes considered and the unbiased observation of trends and factors.

That will require natural strength in the **Future Quadrant** (upper right / yellow) of the Hermann WholeBrain(™) model.

And it will require direct and inferred conversations with buyers, and the buyers' buyers - as well as research and data interpretation. Those are primarily the domain of marketing - and these techniques will demand strategic chops missing in many marketing departments. What's almost certainly true is that none among finance, operations or R&D will discern these patterns. Therefore "marketing" will become not only a larger day-to-day function of revenue growth as we'll see later, but

marketing will become the "killer app" of successful manufacturers. It's probably not coincidence that research shows a 3% premium in total shareholder return for companies whose board includes at least one marketing experienced director!¹

And realistically, even extraordinary management teams with rock star marketing departments will need engaged, strategic boards supported by provocative consultants and advisors to appropriately broaden the scope and synthesize the response.



This mapbook lays out the questions boards should ask....and marketing should be proactively answering.

¹Marketing Science Institute, Kimberly A. Whitler, Ryan Krause, and Donald R. Lehmann, [When and How Does Board-Level Marketing Experience Impact Firm Performance?](#)

*“Prediction is very difficult,
especially about the future.”*

Niels Bohr

Introduction

Welcome to a world with no answers

Of course that's misleading. There are answers, but coming up with them before they happen to you will be nigh on impossible, particularly as the rate of change accelerates. The answers will be different for each company, in each industry - and they'll vary by the moment in time when they're discerned.

The questions aren't a mystery though. They're easy to ask. And they're devilishly hard to work through. They can be debated on many levels. Those levels will map to the organizational level at which the debate occurs and role of the person. And they'll almost always be too tactical and short term - often through the lense of a variation of today - to provide the power and value which is important.

That's why this mapbook is written primarily for directors and advisors - those whose stock and trade are the probing, insightful and provocative questions designed to challenge the depth and perspective of analysis by presidents, COOs and GMs whose scope, in turn, is necessarily limited by today's urgent priorities.

Therefore **these questions anticipate “Nose in Fingers out” engagement** - supporting the boards need to be directly and actively involved in strategy and risk management without meddling.

Each question is accompanied by some context, examples of ways in which it may impact industrial manufacturers, and references for more background. These are starting points - much like discussion guides. The technologies and trends explored are evolving - some rapidly. Therefore it's important for board members and executives to mine their network for resources to curate information on the topics - and not just information which supports a position to which they're predisposed, whether ridicule, opposition or acceptance.

Pace and Magnitude



Some of these trends are developing slowly. Others will suddenly reach a critical point beyond which they explode according to a standard adoption curve.

But don't **conflate pace of change with magnitude**. These trends will dramatically disrupt business models - not merely require an evolution.

The decline in skilled workforce, for instance, is a gradual trend which is impacting many industrial manufacturers. It's even reached a crisis point for some who find that growth is constrained by their inability to add and retain skilled production

workers. But that's a gradual change and the solutions, such as public private partnerships around education and apprenticeships, are incremental approaches.

Lights out factories, however, or even the elimination of consolidated manufacturing, are massively disruptive changes.

That distinction will likely be the most challenging for companies to acknowledge. There is, **embedded in the linear manufacturing mindset of incremental improvement, an expectation that change is a gradual, albeit relentless process**. Additive manufacturing (3D printing) for instance will only be used for prototypes, until it will only be used for a few odd pieces, until it will only be used for high labor value machined pieces, until it will only be used for short runs, etc.

Manufacturers, whose view of the world is based on getting out of bed every morning to drive to a factory, won't be able to imagine a world in which

there are no factories; a world in which a "store" is a large room with printing machines which produce an endless array of products on demand.

Will that "outrageous" scenario come to pass?

Probably, but that's not the point here.

Mindset is the biggest challenge facing manufacturers preparing for 2025. They must expand the magnitude of changes which they ponder. They must also embrace planning windows of not just months, quarters, fiscal years and 3 year strategy - but envision dramatically different market conditions in 5-10 years and position their business defensively and offensively. The question, of course, is whether executive management and board members have the perspective to envision real digital disruption - seen as the greatest business challenge of the next 20 years.² Many resist the disruption in their own lives and business activities and are therefore poorly positioned to grasp the existential business threats and opportunities.

² Survey data, CEMS Masters in International Management 2016.

Your customers' customers

The other barrier to productive exploration of the trends is the focus of most SME manufacturers on their immediate ecosystem. Supply chain is viewed as a couple steps to get materials and components in their door - not the vast and complex array of trends which impact the industry and market environment for their suppliers.

Market research is often limited to the documented issues of their customers. That approach leaves a manufacturer **hostage to the limitations of their customers' strategic vision**. Therefore it's critical to survey and analyze the trends impacting the behavior and decisions of customers' customers - or perhaps even a step beyond in some industries. The benefit is not only strategic perspective for your company, but the opportunity to provide it by proxy to your customers who haven't yet

internalized the requirement. Talk about adding value!

And of course competitors... **Every company has a Darth Vader that they worry about** - and that's probably the least likely threat. Rather than analyzing which competitor has more sales channel reach, buys more ads or pirates the most ideas, competitors should be analyzed based on signs that they're considering these concepts, and particularly that they're considering their (and your!) customers' customers.

That requires an information collection and analysis effort well beyond what most companies have.

Directors and Advisors

Together these begin to hint at the skill set and approach which will be required of CEOs and company presidents in order to guide their businesses through the tumult. More importantly they point to the **range of skills and perspectives - the diversity of intellectual curiosity and experience - which must inform companies' boards of directors and cadre of advisors.**

If you're a board member or a senior exec and can't immediately finger who among you to call for insight into any of these topics, **then you're running without radar.** And to complicate the situation, issues of this magnitude and complexity are too big for any single person to broadly synthesize - so the board and advisors need a couple thinkers familiar and versed in each topic.

Having a strong finance person; a long-time corporate attorney; an effective "lean" culture - those are "table stakes."

Companies need to have a **Dr. Doom - someone empowered by the board to challenge every assumption and poke holes in every element of the strategic plan.**

As inherently difficult as forecasting potential major shifts is, predicting the timeframe is truly impossible. Change happens slowly until it suddenly happens quickly and unpredictably. So these questions aren't intended to lead to five specific bulleted action steps with accountability and suspense dates. They're to inform the broader conversation assuming that as companies approach 2025, their revenue model and makeup will be dramatically different than it currently is.

That's a challenge which most companies cannot and will not meet. That's to be expected. In fact many will face the dilemma that the resulting innovations will be acutely uncomfortable. "Doing something new that solves customers needs—even if it may be in conflict with your existing business."³

"Top dollar rooms in capitalism's grand hotel are always occupied, but not by the same occupants"

Schumpeter

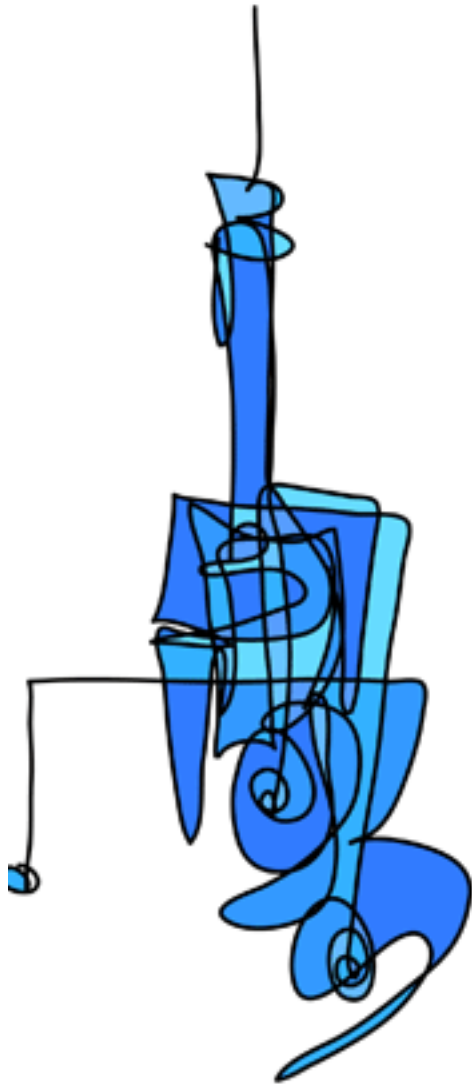
The question for your company is whether that means you'll be retaining your room in the grand hotel, leaving Motel 6 behind to attain that room, or losing your comfortable digs and finding yourself out in the cold.

In other words many companies will continue to ask simply tactical questions...and will be disrupted. A few will ask those, in the context of broader strategic understanding of trends, and they will have a much greater chance of being the disruptors. Neither will be easy...but the former will be terminal.

³ Crowd Companies, Jeremy Owyang, The Corporate Innovation Imperative

“Yet, most companies, in almost every sector, are struggling with innovation and transformation because they can and cannot see the actual problems they’re trying to solve or the opportunities that will earn greater relevance in the future. From the products and services they offer, to the systems and processes they use and follow, to the philosophy of what customer-centricity actually means at a time when many executives can’t appreciate this new generation of connected consumers and employees, executives have to unlearn to learn. They do not live their businesses the way their customers do and there is no excuse for that heading into an experience economy.”⁴

[Brian Solis](#)



We Need
TO FIND
New MARKETS...



WHAT'S WRONG
WITH OLD,
STAGNANT ONES?



A story of business model disruption -

“There is a company in the United States that began by offering a few products directly to consumers, and then quickly expanded its offerings until they included almost everything a person could want. This company went directly to the consumer, bypassing local brick-and-mortar stores, and became enormously successful, meeting the needs of its customers all over the country. Of course, the local stores were often (as economists will say) “disintermediated,” which is a fancy way of saying they couldn’t compete on price and selection, let alone delivery and convenience, and went belly up. And with them went the jobs of the people they employed.

‘Amazon’ you say to yourself. ... Except this isn’t about Amazon but rather about another icon of American retailing called Sears, Roebuck & Co.

In the late 1800s, Richard Sears began to sell watches by mail order. He sold that company, but a few years later he started another mail order business to sell clothing and other products. The initiation of rural free delivery in 1896 and parcel post in 1913 enabled Sears to send its merchandise to even the most isolated customers. The Sears catalog became a staple of American family life. By the 1960s one out of 200 US workers received a Sears paycheck, and one out of every three carried a Sears credit card. The Sears catalog was a book of dreams that allowed those of us who grew up in rural America to access products that were either not available or were very high-price in our local general store.

It’s hard for the younger generation to understand, but the Sears catalog coming to our mailbox was a big event in my youth. The Montgomery Ward catalog was a close second. The whole family perused those catalogs page by page to mull over what we needed or wanted. I’m sure I was not the only kid who circled a few toys that he hoped Santa would bring him for Christmas.

It’s hard to believe, but Sears didn’t really have a physical store until the 1920s, by which time the company was the largest retailer in the world. But Sears’ experience enabled Sam Walton, who didn’t start until 1962, to surpass Sears by 1990; and by 2000 Walmart’s sales were six times those of Sears.

Fast-forward to 2017. The 178,000 current employees of Sears are an endangered species. Sears had 3555 stores in 2010, and today it has 1503 and will close another 10% of those this year. Additional stores will be closed sooner rather than later. Unless hedge fund genius Eddie Lampert can pull yet another rabbit out of his seemingly bottomless hat, Sears will pass the way of Blockbuster and Kodak.”

Adapted from John Mauldin [Thoughts From the Front Line 7 February 2017](#)

Trends

There are eight broad trends which are directly impacting SME manufacturers. Of course there are many more at play. Inexpensive rocketry and colonization of Mars will likely happen, but for most SMEs that's not likely to impact business in a decade. We'll focus this roadmap on negotiating the eight that will. It's almost banal to list them, but we have to start from a common point. They are:

1. Aggregation

information is all immediately available (Google); communities are now vast (Facebook); inventories are limitless (AirBnB)

2. Disintermediation

the role of the "middle man" is collapsing as advances in logistics and ubiquity of knowledge overcome the barriers of availability and information asymmetry which were their opportunities

3. The Cloud

there is no longer here or there

4. Accelerating disruption

the tempo of major disruptions is accelerating

5. Buyer behaviors

B2B buyers expect B2C experiences while ownership and access become disconnected

6. Demographics

as trade raises billions in emerging economies, medical technology promises longer productive lifespans, and birth rates decline...all while the future of work as we know it becomes uncertain

7. 4th Industrial Revolution

everything, interconnected, completely changes the way machines, workers and organizations interact...and even the nature of manufacturing

8. Political Risk

all the others trends leave nervous populations seeking assurances, and that jeopardizes assumptions around taxes, trade, interest rates, regulation and more

In all cases the implications are multi dimensional. The distress and disruption which you may feel will also impact your competitors. Some companies will focus on enduring while others will seek the resulting opportunities.

“We always overestimate the change that will occur in the next two years and underestimate the change that will occur in the next ten. Don’t let yourself be lulled into inaction.”

Bill Gates

*“We cannot solve our problems with the same
thinking we used when we created them.”*

Albert Einstein

About QUESTIONS

Next up are the questions to be asking, but quickly before we go there, a bit about “good” questions.

To be effective questions must:⁵

- **Disrupt repetitive thought loops**
- **Help unpack to become an expert on what is yet to be....among a group that is often expert on what has been**
- **Paint the future state and then work backwards to get there**

Will all these questions fit all those criteria? No.

But Dirty Harry's point was valid - we all have limitations, in this case limitations of perspective.

We need to ensure that the questions we're asking probe the organizational blind spots, but also that our discussion is allowed to probe our individual blind spots.

Good boards have diversity of experience and perspective to provide that in general - but if all members are the same generation as the CEO whom they advise, how diverse will the perspectives be to questions around generational shifts? Or if all are social media skeptics or 3D Printing “ridiculers”?

What “Peak Oil” assumptions are embedded in your model, forecasts and strategy that will be simply shattered in short order by your industry's equivalent of fracking? (And which of your competitors will cling to the peak oil school of thought even in the face of evidence to the contrary?)

It's up to the questions to surface those blindspots, but you have to ask them relentlessly and listen carefully for gaps in the answers.

Agreement may not be a good thing!

⁵ [Create New Futures, Aviv Shahar as recapped by Julian Mitchell](#)

⁶ [The Inevitable, Kevin Kelly, p288](#)

In his book *The Inevitable* Kevin Kelly identifies the attributes of a “good question.”⁶ He suggests that a good question:

- is not concerned with the correct answer
- cannot be answered immediately
- challenges existing answers
- is one you badly want answered once you hear it, but had no inkling you cared before it was asked
- creates new territory of thinking
- reframes its own answers
- is the seed of innovation in science, technology, art, politics, and business
- is a problem - a what-if scenario
- skirts on the edge of what is known and not known, neither silly nor obvious
- cannot be predicted
- will be the sign of an educated mind
- is one that generates many other good questions
- may be the last job a machine will learn to do
- is what humans are for

*“The future is already here.
It’s just not evenly distributed.”*

William Gibson

Demographics

Among the enormous forces which will act on companies are demographic trends for which there are no reasonable analogs.

These include:

- a. **History's largest transfer of wealth** set to occur as boomers retire and dispose of businesses...or try to
- b. A workforce revolution as tenure and loyalty become briefer; the **“gig economy” gains speed** and legitimacy, and the average age in the workforce increases - colliding in some cases into “encore entrepreneurs” and other trends
- c. Biotech which is on the cusp of substantially **extending working & productive lifespans**
- d. **Millennials** who will step into leadership roles during the next “First Turning”¹⁷

¹⁷Idea from William Strauss & Neil Howe's Fourth Turning - but important to understand in parallel contexts of traditional life cycle (20 years each of youth, parenting, mid-life, retirement) and geopolitical life cycle (four 20 year seasons of history - High, Awakening, Unravelling, Crisis)

“This time, like all times, is a very good one, if we but know what to do with it.”

Ralph Waldo Emerson

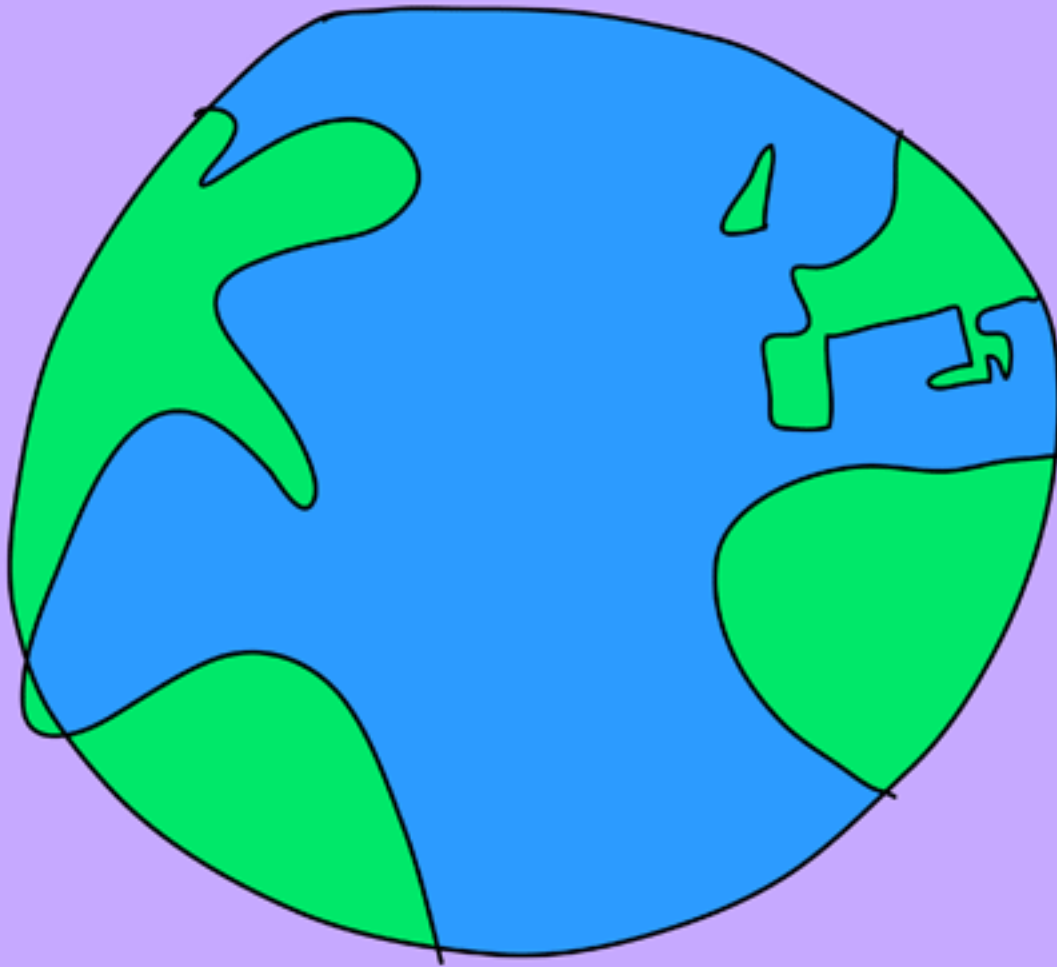
Demographics

Collectively these will disrupt frameworks for compensation, retirement, career progression, loyalty & longevity of working relationships, security, management and the role and responsibilities of companies as entities.

What questions should boards be asking themselves?

Examples include:

- What will the increased supply of similar companies impact our **valuation**?
- How will we provide advancement and growth opportunities as older employees remain in or return to the workforce?
- How can technology be adapted (internally as well as our products) to transcend generational ability rather than stratify it?
- What **inorganic growth opportunities** will we have as valuations are depressed? And what balance sheet & strategic finance preparations are prudent?
- How close could we come to **zero employees** today? What would the company look like? What would have to change to be zero employees in ten years?
- What changes will result in the way companies and workers use and interact with our products? What product development opportunities exist to participate in that trend?
- What skills have eroded that may be re-stored with experienced employees? What outsourced work may be comfortably insourced? And what work that hasn't been outsourced due to skills or cost will now be able to in a more robust gig economy?
- How will the growth of automation and resulting employment impact of elimination of up to 50% of current jobs impact our economy? What will replace them?



← INSTEAD OF
CHASING THE
SAME OL' DEALS,
HERE'S A
NEW ONE.

@gapingvoid

Globalization

The rise of nationalism and associated backlash against globalization may have some transactional impact and may even strain some supply chains. It won't, and can't, roll back the advances in communication and information - and those will drive unrelenting aspiration by large swaths of the world's 7.5 billion inhabitants to improve the condition of themselves and their families.

While there's clearly political risk, and it may feel particularly acute in early 2017, Inc. magazine identified Global Experience as an essential board skill.⁸ There's a reason why.....

This overlaps demographics, but extends beyond including

- a. Evolving fabric of developed, deteriorating, emerging, and frontier markets
- b. Efficiency and resilience of global supply chains
- c. Economic war (currency, sanctions, tariffs, restricted transfers, protectionism)

Appropriate questions include:

- How will **water evolve as a critical and limited resource for manufacturing, agriculture and consumption?**
- How will that shift alliances and areas of manufacturing & population density?
- What saeculum⁹ (80 year span with 4 segments) based assumptions are embedded in your product, market & business model that will be disrupted? As child bearing dips further below replacement rate? As healthy lifespans extend? As prime "consumption" years are diffused?
- How will markets evolve and develop if the "workshop" growth phase is eliminated by 3D printing?
- What disruptions can be reasonably predicted and how will those impact the business environment? For instance, the EU is in jeopardy of breakup and China seems decreasingly likely to manage a "soft landing" successfully.
- Will sanctions and **currency differential** be relevant if most products are exchanged as digital files for local "printing"?
- Which natural resources (and by extension countries with relevant extractive industries) are key to manufacturing process and distribution vs. which are components of finished goods? In other words as oil becomes less critical to transport goods which are made with additive manufacturing at the point of consumption, economies based on oil will falter. In contrast conductive properties will remain critical to product function, and therefore mining and refining metals which are conductive will remain important - and economies with large extractive industries for those materials may be inherently stronger.
- Will automation's elimination of jobs exacerbate or ameliorate the geopolitical trade tension around outsourcing and job creation?

⁸ <http://www.inc.com/marissa-levin/4-types-of-experts-that-leaders-must-have-on-their-boards-in-2017.html>

⁹ Idea from William Strauss & Neil Howe's Fourth Turning - but important to understand in parallel contexts of traditional life cycle (20 years each of youth, parenting, mid-life, retirement) and geopolitical life cycle (four 20 year seasons of history - High, Awakening, Unravelling, Crisis)

Security & Risk Management

It would be easy to frame these questions just in the context of how your business may change - for instance how will your customers pay you in the future? It's far more important to consider the implications to your broader business ecosystem - for instance what opportunity would you have if buyers could know with 100% certainty that "your product" on eBay or Amazon was genuine and not counterfeit?

As with many of these themes the breakthroughs will come in areas of intersection which are hard to visualize, but that's where questions should focus.

Areas of security concern & opportunity include:

- a. The power of **blockchain** to validate parties and transactions
- b. Irrefutable proof of authenticity and source
- c. **Cybersecurity** of IP, personal data and infrastructure¹⁰
- d. Supply chain disruptions and **"black swan" events**

¹⁰ NACD is increasingly focused on the directors responsibility for cybersecurity preparedness and [Inc also identified cybersecurity as one of four critical board skills.](#)

Security & Risk Management

Sample questions include:

- One of the thorny issues of **3D printing is IP protection**. How will blockchain be used to affirm rights to 3D printers to confirm that a product may be printed?
- What metrics or trends should we watch so we know when it's time to dive into a new technology rather than converting existing systems right away?¹¹
- Labeling and packaging have been the first realm of authentication and the cloud opens up opportunities for database reference of single codes like track and trace. How will **DNA tagging** be incorporated into routine use for absolute assurance that ingredients/components and finished goods are authentic? This applies across vast swaths of product including, for example, designer/luxury goods, OEM replacement parts, GMO free food products, cash currency and pharmaceuticals.
- By the time you read this the Border Adjustment Tax (BAT) proposals will have evolved....but this type of topic isn't going away.
- How will the treatment of imports advantage/disadvantage our business? Our competitors? Parallel industries? Which of our key customer segments?
- What industry opportunities will develop as hardened and renewed infrastructure is developed? How will states, regions or countries position their security laws to the (dis)advantage of business and specific industries? What business models will be jeopardized by new standards?
- How would a crafty competitor use advanced **cybersecurity as a competitive advantage against us**? How will that become a core competency as our business becomes increasingly cloud based?
- What components/suppliers would cripple your business if we didn't receive shipments from them for four weeks? Have any of our directors purchased a Tesla? The disintermediation of dealers and garages (car cares for itself through downloads) from the traditional auto model - one which must be experienced.¹²
- A "cambrian explosion" (as the Wall Street Journal referred to blockchain¹³) could impact our business how?
- Which competitors might it allow you to leapfrog? And which might use it to overtake us?
- What if our contracts and compliance were self regulating and monitoring? Or if asset management and internal controls were automated?¹⁴

¹¹ [Strategy+business](#)

¹² Fast Company, JJ. McCorvey, [Road Rules: How Tesla Plans to Change The Way We Buy Cars](#)

¹³ WSJ, Kim Nash, [Blockchain: Catalyst for Massive Change Across Industries](#)

¹⁴ Wired, Kariappa Bheemaiah, [Block Chain 2.0: The Renaissance of Money](#)

*“In theory there’s no difference between
theory and practice. In practice there is.”*

Yogi Berra

Business model transformation

Many manufacturing businesses view their business model (and revenue) as a **linear function of buying materials & components, applying some special sauce, and selling finished goods**. They're aware that goods are increasingly commoditized (too often insist that theirs are the only ones that aren't) but fail to consider the business model as an opportunity to gain & hold competitive advantage.

The Economist predicts "In many cases the successful companies will no longer be the ones that make the best products, but the ones that gather the best data and combine them to offer the best digital services."¹⁵

Beyond products and services, companies should consider business model disruption scenarios such as:

- a) **Manufacturing** morphing into **service** business
- b) Customer/client relationship by transaction vs life
- c) Manifestation of sharing economy in our industry
- d) Natural disruption resulting from evolving product categories

¹⁴⁵ Economist, [Does Deutschland do Digital?](#)

Business model transformation

Sample questions include:

- As [IoT progresses and data becomes an increasingly important asset](#) on the balance sheet, then product manufacturers risk relegation to commodity status as “sensors” that collect data. How can companies envision their current products, combined with customer relationships, recast as a package of service offerings? What are the revenue model implications (e.g. *monthly recurring revenue vs. capital purchase?*)
- As ThyssenKrup evolves from an elevator & escalator company into people moving technology with its [MULTI program](#), what role might urban planning consulting play in its business model going forward? What similar opportunities exist in our industry?
- Eli Whitney never intended to sell cotton gins, but rather to offer a service for 40% of the value of the cotton - why are we married to

our model?

- If Nestle' is building revenue expectations on a “service layer” to be built on top of CPG products using digital interaction,¹⁶ what could we be doing with our sophisticated industrial products?
- The compression of time and ubiquity of data mean that transactions will be tougher to win (more expensive and less predictable) - but relationships that are “sticky” will be more important to scalable revenue. How could we evolve our model from traditional industry norms to gradually introduce recurring revenue components?
- Which of your competitors has the most engaged “Uber / AirBnB” generation senior leadership team who will instinctively apply sharing economy bias to business execution? Which customer segments will be most receptive?
- Is our board and management team even capable of envisioning the impact of “gig” and

“sharing” economy? The work of the Pew Research Center indicates probably not - ignorance of the trends stands at 73% for the former and 89% the latter. Further, exposure falls tails off rapidly after the age of 45.¹⁷ And your board is how old?

- Is the **sharing economy** applicable in our industry? Is it even new? After all, what is UPS if not an opportunity to use trucks and planes that belong to someone else?
- What equivalent to the [Floow2 Sharing Marketplace](#) is slowly developing in our industry?

¹⁶ Mark Schneider, CEO, Nestle' during '16 earnings call on 16 Feb 2017

¹⁷ PewResearchCenter, Shared, Collaborative & On-Demand: The New Digital Economy

“Because the purpose of business is to create a customer, the business enterprise has two - and only two - basic functions: marketing and innovation. Marketing and innovation produce results; all the rest are costs. Marketing is the distinguishing, unique function of the business.”

Peter Drucker

Revenue Growth

Buyers disrespect silos which interfere with their research and purchase. **PR, marketing, sales and customer service are vestiges of an era when sellers controlled information.** Yet they persist for selfish internal reasons. Buyers expect a contiguous brand experience, expertise and resources, and a seamless transaction.

As buyers increasingly control their own buying process, consider perspectives such as:

- a. What would the **org chart** look like if the internal organization matched customer expectations for experience
- b. Customers don't care what you sell - they have **“Jobs to be done”**¹⁷
- c. Marketing closer to Socratic method or an obnoxious cocktail party blowhard
- d. Selling according to a traditional formula.... or the **way we buy**
- e. Convergence of B2C experiences and B2B buyer expectations

¹⁷ HBR, Clayton Christensen, [Know Your Customers' Jobs to be Done](#)

Sample questions include:

- What's the role of **inside sales** in our business? What skill sets does it demand?
- Which of our current revenue growth functions can be done not just more efficiently, but indeed more effectively with bots? Today? In 3 years?
- How will voice search and contextual search change the way customers interact with us?
- As companies like Clorox use crowdfunding, not to raise funds but to raise awareness, what **“hacks” are we missing** with our traditional focus?¹⁹
- How will our most successful competitors leverage virtual reality in their marketing, sales & service? If customers expect relationships and entertainment experiences, how can we borrow from the entertainment industry?
- Beacons could impact our customer interaction how?
- How often do we call our own main number and try to reach someone to answer a question or solve a problem? Are calls

successful?

- **What could a bot do better than our reps?** Why? Are reps inadequately trained or are bots a better solution for some things?
- What does our social media & digital discomfort mean to our sales effort? **How can we reasonably gauge how capable our team is if we are inept?**
- What power would decentralization without disintermediation create in your sales channels? ([Slock.it envisions complete transactional control - regardless of who's selling your stuff.](#))
- What levers can our management team pull to impact revenue growth? What metrics do they track to inform the adjustments?
- Is there any **IP in our revenue growth process?** What companies might want to acquire us to bolt on the process capability? What programs do we have to explicitly develop data as an asset?
- Can we reliably discern between incremental and genuinely disruptive changes? In the

market? By competitors? Proposed from within?

- How can you leverage the gap between the “trajectory of customers expectations and their current beliefs”?
- Do we have any customers that really feel ignored?
- What will be the role of **Sales Channel in a world where buying is self service?**

¹⁹ Advertising Age, Jack Neff, [Why Clorox Turned to Kickstarter to Help Fund Venture With Startup](#).

²⁰ Altimeter Group, Brian Solis, [The Insider's Guide To Digital Transformation And The Path To Innovation](#)

*“The reasonable man adapts himself to the world,
while the unreasonable man persists in adapting the
world to himself...therefore all progress belongs to the
unreasonable man.”*

George Bernard Shaw

*“If I had listened to what my customers desired I
would have bred faster horses.”*

Henry Ford

Industry 4.0

*“The way we make things is in the midst of a complete upheaval. New processes and materials are even redefining what we think of as manufacturing.”*²¹

‘Redefining what we think of as

manufacturing’.....Have you taken that yardstick to your business? Who on your management team even has the curiosity to explore that perspective?

Companies need to envision a continuum. On one end is today's asset intensive centralized manufacturing which focuses on products - on the other, automated kiosks from which they purchase on-demand manufactured products to order.

Not sure factory automation should be on the board agenda? EY argues otherwise. In a recent NACD article they wrote “Sitting on the sidelines is no longer an option...Leading organizations will focus on the long game, planning for scale, speed and pace of adoption on the automation journey.”²¹

Considerations along the way include:

- a. 3D printing (additive manufacturing) and **batches of 1**
- b. Disrupted supply chains
- c. Defining, protecting & defending IPR (intellectual property rights)
- d. **Data** - from byproduct to core product
- e. Security of operations if companies are no longer “physical” entities
- f. Data sovereignty
- g. Flexible automation and **self aware robotics**
- h. The impact of **IoT (Internet of Things)** on internal operations; on the products you sell & services you provide; and on the value you deliver.

²¹ KPMG, Leonard Brody, [The Great Rewrite](#), Forbes

²¹ NACD, Anthony Caterino, [Robotics and Automation: The Fourth Industrial Revolution Begins](#)

Sample questions include:

- What portion of our product cost is embedded logistics and handling of materials, components and finished product? Labor? What would the cost be IF we could completely print a finished good?
- What services, consulting, benchmarking could we provide if we had aggregate and anonymous data of efficiency, utilization, downtime and maintenance for every installation of our products?
- What smart connected devices do we routinely use in our private lives? Why have we persisted? What applicability does that experience have to our business products?
- What changes in our world if GE's Digital Chief Bill Ruh is correct when he says "We're going to end up in an industrial world where nothing ever breaks, because it's fixed first"?²³
- Is our primary expertise creating our product itself, or helping customers apply it to achieve their value creation objectives?
- Could we become authoritative enough on these changes to coach our customers through their own transitions?
- How do we defend our entity in the cloud? What unknown exposures are we creating? (e.g. export controls violations if a cloud provider mirrors data in an overseas center)
- What would "autonomous control of personal data" as envisioned by the [MIT's Project Enigma](#) mean to proposed business models?
- Which of our competitors is most likely to redefine customer expectations in your sector with an Amazon Web Services "shadow" version of the product?²⁴
- Should you aggressively move into additive manufacturing? Is it hype promulgated through myriad myths as MITSloan Management Review taunts²⁵...or will we be obsoleted? Does our strategy need to build in deep dive analysis and regular review?
- Should we vertically integrate modules and components that we've traditionally jobbed out? After all, [MakeTime](#) already envisions itself as Your Supply Chain in the Cloud!
- What will be the impact on our community? Customer base? When reality of automation catches up with the "four-fifths of workers who don't think their jobs will be affected by automation"?²⁶

²³ Strategy+business, The Thought Leader Interview: [GE's Bill Ruh on the Industrial Internet Revolution](#)

²⁴ Forbes, Alex Conrad, [Inside Google And Microsoft's Race To Catch Amazon In The Trillion-Dollar Cloud](#)

²⁵ MITSloan Management Review, [Getting Past the Hype About 3-D Printing](#)

²⁶ Economist, Automation Nation "[Denial is a powerful force, but technology is stronger](#);"

*“The challenge of changing the world is that there
is an old way of doing things”*

Christina Lomasney,

Cofounder and CEO, Modumetal

“We have two classes of forecasters. Those who don’t know - and those who don’t know they don’t know.”

John Kenneth Galbraith

Monetary & Fiscal Policy

Political risk isn't only an election year or international challenge. The cost of funds and available returns shape the competitive environment in which you operate, innovate and court investors. Even privately held company owners should consider the return on capital periodically to evaluate the relative merits of holding, divesting or liquidating.

Beyond the general economic impact, monetary & fiscal policy could impact your business through:

- a. Interest rates
- b. Comparable **rates of return on capital**
- c. Impact of both **cost & risk of leverage** on customers and suppliers
- d. **Secular shifts** in employment & consumption

Sample questions include:

- What would NIRP do to contracts that incorporate interest rate adjustments?
- What structural changes could we make to become less capital intensive in the event rates rise?
- Which of our business units? Suppliers? Customer segments are most exposed to either a decrease or an increase in rates?
- What impact will **demand stimulation** have on our business?
- How should we evaluate expenditure on R&D and other forward looking investments if a **decline in tax rates makes expenses relatively MORE expensive?**
- Which of our competitors is most likely to experience distress from excessive leverage? (As Michael Lewis notes “total amount of debt on balance sheets to more than double pre-crisis levels”²⁷)

- In early 2017 there's discussion of non-deductibility of interest - If this advances in some similar form, who will it advantage/disadvantage our business? Impact our strategic plans? Disrupt our competitors? Parallel industries? Which of our key customer segments?
- An important question for privately held companies - Is the business going to offer an appropriate return on our capital compared to liquidation and redeployment?

²⁷ Mauldin Economics, [Be Careful Out There](#)

“it’s difficult to get a man to understand something when his salary depends upon his not understanding it.”

Upton Sinclair

MANUFACTURING HAS TWO CHOICES:

global:



invisible:

@gapingvoid

Valuing the Enterprise

Many closely held small businesses are internally valued based on the stream of lifestyle income. Outside investors consider future revenue and asset valuation. **But the nature of business assets is changing, and the impact to valuation** - and therefore to strategy - is as well.

Strategy should weigh the creation and nurturing of non-traditional assets in addition to revenue streams. Considerations include:

- a) Role and **value of data**
- b) Beyond product IP - the role of business process IP
- c) Incorporating predictability and scalability in revenue growth
- d) Diversification

Sample questions include:

- What would an asset lite (AirBnB) version of our business look like?
- What modifications to data collection could substantially enhance the data value (from retrospective to predictive)?
- Do we have a management team that embraces data driven decisions in all phases of the business - not just manufacturing?
- If we KNEW which prospect would buy and their lifetime value, how would we change our customer acquisition and retention? How would we position ourselves for investment/acquisition?
- Which competitor is the biggest threat to our product/service IP? Which to our process?
- Are we really cognizant of resisting short term pressures? After all HBR recently declared "Finally, Proof That Managing for the Long Term Pays Off"²⁸
- What other businesses would find value in our data? Our terms of use precluding us

from extracting that value in the future?

- Are our investors somehow different than most other companies? (McKinsey&Company research indicates 75% of investors are 'intrinsic investors' focused on a company's value and willing to make large investments and favor decision that lead to long-term value creation.²⁹)
- What's the role of employees in value creation in a world where Thomas Donlon of Barron's forecasts the End of Labor³⁰ and 30% of employees are 1099s?³¹

²⁸ HBR, Dominic Barton, James Manyika, Sarah Keohane, Williamson, [Finally, Proof That Managing for the Long Term Pays Off](#)

²⁹ McKinsey, Rebecca Darr and Tim Koller, [How to build an alliance against corporate short-termism](#)

³⁰ Barron's, Thomas Donlon, [The End of Labor?](#)

³¹ Daily Pfennig, Mike Meyer, [Welcome To The 1099 Economy](#)

Adjacencies

These are the terrifying...and exciting voids in your strategic Venn diagram. They are the spaces that you recognize through questions which fire “new and novel synaptic connections.”³²

Some real threats...and real opportunities lie at the adjacencies of trends. You'll uncover these through your personal experiences and your board discussions. But as an example, when blockchain enables the protection and authentication of digital files for 3D printing...suddenly the IPR exposure of additive manufacturing is resolved. Skeptical? [Bitmark](#) is already doing this.

And how are you designing your CX (customer experience) to capture opportunity in the overlapping elements of these trends? **Do you interact with your company as a consumer?**

Do you experience the online security system while trying to place an order? Have you tried voice search to answer a question to see if you even appear in results?

Business table stakes include continuously improving within functional categories. Business breakthrough, which may become synonymous with business vibrancy, will increasingly be found where categories and trends collide.

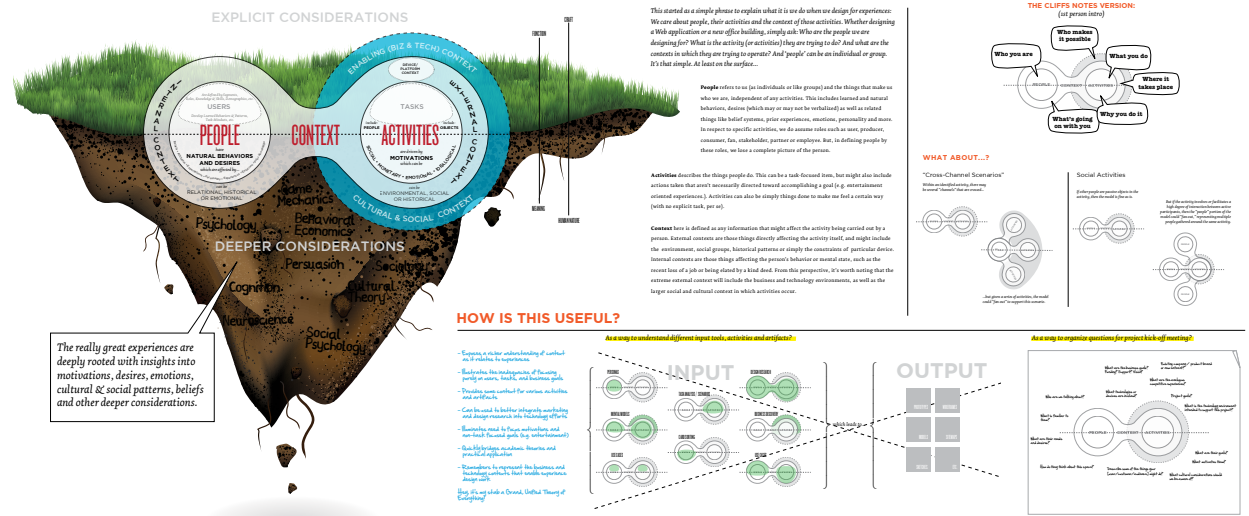
Experiment in the adjacencies in your personal life and seek out disrupters, speakers and writers who explore the collision of disciplines. You may

disagree (Matt Ridley's Evolution of Everything for instance evokes strong and polarized reactions.) but it's critical to not only stretch perspective, but to delve into other disciplines to tease out the seemingly unrelated insights that will inform your strategy for success through 2025.

THE FUNDAMENTALS of EXPERIENCE DESIGN

by Stephen P. Anderson

“Designing for experiences is fundamentally about people, their activities, and the context of those activities...”



<http://www.poetpainter.com/thoughts/files/Fundamentals-of-Experience-Design-stephenpa.pdf>

21. Aviv Shahar

“If you don’t like change, you’re going to like irrelevance even less!”

GEN Erick Shinsecki

Conclusion (or commencement)

*“There is a tide in the affairs of men.
Which, taken at the flood, leads on
to fortune; Omitted, all the voyage
of their life Is bound in shallows and
in miseries. On such a full sea are we
now afloat...”*

**Brutus to Cassius,
Julius Caesar, Act-IV,
Scene-III**

‘Boards can't simply rubber stamp senior management “strategy.”

The range and magnitude of challenges facing companies (and the converse - the opportunities) are enormous. Management teams are busy managing the business as it is today, and as it's predicted to be for the next several years. The **board's role is to look further out; to probe with questions; to think big. And to be proactive.**

Conclusion (or commencement)

“According to a study conducted by Accenture, high-performing companies that surpass their peers on financial metrics across business cycles and leadership eras, are those that develop capabilities before they need them. Average and low-performing companies don’t.”³³

In some case management teams are simply preoccupied with operations. In other cases they’re neither comfortable nor predisposed to envision substantial disruption in the company or industry. And so it falls to the board to ask the right questions, engage the right advisors and ensure that their own strategic scenarios are broad enough in scope.

While management asks the 10% questions, the board should ask [10X questions a la Larry Page](#).

Yet as Thomas Lounsbury cautioned “We must view with profound respect the infinite capacity of the human mind to resist the introduction of useful knowledge.”

Recognizing that limitation, I suggest using this guide as a tool to attack that infinite capacity.

It can be a:

- Discussion starter during retreats or meetings
- Handrail for evaluating the skill sets which the Nomination and Governance Committee should consider adding
- Guideline to evaluate outside consultants and advisors prior to engagement and renewal
- Shared resource with CEOs and key managers³⁴
- Create organizational perceptual acuity - collectively see around corners

Risk management is ultimately about balancing risk vs. return - and risk today is inherent not only in the actions company’s take but ever more acutely in the actions they fail to take.

This guide isn’t designed to in any way dictate actions to take - but it’s intended to stimulate awareness, discussion and planning.

³³ Whitney Johnson [on an Accenture study](#)

³⁴ Strategy+business, Ram Charan, [20/20 Foresight](#)

Board Reading List

There's probably no shortage of Barron's, New York Times and Wall Street Journal subscribers on your board.

But how many read Fast Company? Wired? Geopolitical Futures?

How many subscribe to blogs? Brian Solis'? Seth Godin?

Notes & References:

There are many resources available for further research or familiarization in these various topics.

Here are some easily digestible articles, grouped by category.

Blockchain

- [WSJ, CIO Explainer: What is Blockchain?](#)
- [Wire, Block Chain 2.0: The Renaissance of Money](#)
- [Strategy + business, John Plansky, Tim O'Donnell, and Kimberly Richards](#)
- [Strategy + business, Matt Palmquist, Protecting IP from 3D printing](#)

Revenue Growth Evolution

- [Altimeter Group, Brian Solis, It's About The Customer Experience; So, Why Is Your Brand Ignoring Customers](#)
- [OpenView Partners, Nadim Hossain, Why Marketing is Eating Sales](#)
- [McKinsey, Driek Desmet, Shahar Markovitch,](#)

[and Christopher Paquette, Speed and scale:](#)

[Unlocking digital value in customer journeys](#)

- [LinkedIn, Hugh Macleod and Brian Solis, \(get it for the illustrations!\) Attention is a Currency; B2B Storytelling](#)
- [BCG Perspectives, Jody Visser, Dominic Field,](#)
- [and Alannah Sheering, The Agile Marketing Organization](#)
- [McKinsey, David Edelman and Jason Heller, How digital marketing operations can transform business](#)
- [OpenView, Tracy Vides, How Geo-Targeting can Supercharge Your Marketing](#)
- [McKinsey, Oskar Lingqvist, Candace Lun Plotkin, and Jennifer Stanley, DO you really understand how your business customers buy?](#)

IoT

- [HBR, Michael Porter & James Heppelmann, How Smart, Connected Products Are Transforming Competition](#)
- [strategy+business, Frank Burkitt, A Strategist's Guide to the Internet of Things](#)
- [Manufacturing.net, Infographic The Internet of Things 2020](#)
- [Cerasis, The Internet of Things What is the Hyperconnected Era & "The Internet Of Things" and What does it Have to Do with Manufacturing & Logistics?](#)
- [BCG perspectives, Massimo Russo, Richard Helm, and Grant McCabe, The Industrial Internet: Six Critical Questions for Equipment Suppliers](#)
- [Bosch, Infographic](#)
- [IBM, Video, The Internet of Things](#)
- [TedX, Arlen Nipper, Video The Internet of Things is Just Getting Started](#)

Industry 4.0

- [Strategy+business, America's Real Manufacturing Advantage in text](#)
- [Cerasis, Infographic Industry 4.0: Powered by the Internet of Things & Digital Manufacturing](#)
- [FastCompany, Google shoots for the moon \(a bit of tongue in cheek,...\)](#)
- [BCG Perspectives, Harold L. Sirkin, Michael Zinser, and Justin Rose, The Robotics Revolution: The Next Great Leap in Manufacturing](#)
- [Cerasis, The Future of Manufacturing is Distributed](#)
- [Springwise, Is 3D Printing the Future of Construction?](#)
- [CLA Connect, Eileen Domanico, Infographic 3D Printing Is Transforming Industrial Supply Chains](#)
- [MIT Sloan Management Review, Jaime Bonnin Roca, Parth Vaishnav, Joana Mendonça, and M. Granger Morgan, Getting Past the Hype of 3D Printing](#)
- [The Economist, New Materials for Manufacturing](#)

- [BCG, Man and Machine in Industry 4.0](#)

Digital Disruption

- [McKinsey, Tanguy Catlin, Jay Scanlan, and Paul Willmott, Raising your Digital Quotient](#)
- [TechCrunch, Natasha Lomas, Amazon Patents "Anticipatory" Shipping — To Start Sending Stuff Before You've Bought It](#)
- [CirculateNews, Seb Egerton-Read, Farmlink: A Sharing Economy Model for Farming](#)
- [Saeculum Research, The Gig Economy is Alive and Growing](#)
- [Economist, Does Deutschland do Digital?](#)
- [American Supply Chain & Manufacturing in the Cloud - MakeTime](#)
- [Fleet Equipment, International's approach to connectivity, efficiency strengthens uptime promise](#)
- [X: The Experience When Business Meets Design, Brian Solis](#)
- [Gig economy - changing construct of wage vs. equity contribution & digital contracts](#)

“The car goes where your eyes go. Don’t look at the wall”

Mario Andretti

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“The best way to predict the future is to create it.”

Peter Drucker