



## Brandless

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## Tech-Lash

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## Peak TV

TV's gilded age may be great for starving actors, but for investors it could be a house of cards.



## Playing with FIRE

The new wave of spending less and saving more prioritizes time and experiences over income and things.



## Data Age

A new computing cycle is upon us; this "data-centered computing" era has the potential to double incremental enterprise tech investment over the next 10 years.



## Sex Recession

The U.S. is in a birth recession. Since 2010, the total number of births has declined almost every year.



## Multimodal Mobility

The next evolution of personal mobility is multimodal. As we saw many technologies and trends converge to create an emerging Passenger Economy, we anticipate more options for commuters and travelers.



## CRaP

E-commerce retailers are changing the dynamic and focusing on profitability, casting off categories and cheap items that Can't Realize a Profit.



## Cloud Gaming

The cloud is the future for video gaming, and promises to expand the addressable market for an already enormous business.



## Digital Detox

How much screen time have you had today? Some people are seeking ways to cut the amount of time they spend using electronics.



## Drones

Commercial drones are quickly moving from a niche hobby to a revolutionary tool in many industries, including precision agriculture, construction, transportation, insurance, and real estate.



## Deep Fakes

Deep fakes pose real world risks, as the technology can be weaponized to violate privacy, norms, and influence behavior.



## Brandless

Rapidly shifting consumer tastes and preferences are changing marketing strategy and branding for many companies. It used to be that brands could dominate consumer awareness through television advertising, information on product quality and comparison was difficult to obtain, and prime retail shelf space was critical. Today, media has dramatically fragmented, and targeted advertising allows companies to reach preferred demographic audiences easier and faster than ever before. This makes it significantly more difficult for any one brand to control a category. Information on product quality is just a click away, as product reviews are easily available and transparent. The rapid rise of e-commerce has entirely changed the marketing game. Large established brands no longer

control mindshare through prime retail shelf space, as an unlimited number of products can be displayed online, significantly increasing options for consumers.

Over the last few years, young challenger brands in a number of categories such as Food and Beverage, Household Products, and Apparel have been able to take significant market share away from many established leaders that previously held dominant market positions. At the other end of the spectrum, private labels offer many consumers a superior value proposition through comparable (or better) quality at a reduced price. Gone are the days of companies finding success with a five-star brand, but a two-star product.



## Tech-Lash

Nearly two decades ago, the Department of Justice accused Microsoft of holding a monopoly and engaging in anti-competitive practices. The case related to Microsoft's substantial market share of PC-based operating systems and its bundling of web browser software. While the case was resolved in 2001, the government's interest in Microsoft's monopoly power first began almost a decade earlier, in 1992. Today, we may be on the verge of another wave of anti-trust scrutiny as the current generation of Technology giants grow larger and ever more powerful.

In the aftermath of Facebook's highly publicized privacy breaches and data sharing abuses, Google/Android's anti-competitive fines in the EU, and increasing debate about potentially abusive competitive practices by Amazon (i.e. Monopsony Power), we believe broader regulation and anti-trust scrutiny of big tech is inevitable. While the U.S. led the regulatory push into Financials in the wake of the Financial Crisis, Europe appears to be leading the regulatory charge against big technology companies. In 2018, the General Data Protection Regulation (GDPR) was implemented in Europe, setting the first standard for consumer data protection policies. Data protection and privacy is one of few issues in Washington that currently has bipartisan support. Many questions remain regarding whether regulation will suppress innovation and/or if it will create even larger barriers to entry for new competition. However, increasing awareness by consumers and politicians about how technology companies collect, store, share, and analyze personal data in our highly connected digital economy will likely keep this topic one to watch.



## Peak TV

While speaking at an industry conference several years ago, John Landgraf, CEO of FX Networks, made a controversial presentation coining the term “Peak TV” while referencing the significant increase in video content production. According to Landgraf, “This is simply too much television. My sense is that 2015 or 2016 will represent peak TV in America.” He has since tempered his view and now believes that television is in a gilded age. According to the FX Networks study, the number of scripted original series has grown from a total of 216 in 2010 to a forecast of over 500 in 2018. Virtually all of this growth has been driven by online streaming companies, such as Netflix. This number of original scripted series appears poised to increase even further: AT&T is integrating

TimeWarner (HBO), Disney and Fox are combining, Netflix and Amazon are committing to even larger content budgets, and new entrants Facebook and Apple have announced billion dollar plus commitments for content development. Even Wal-Mart has been rumored to be throwing its hat into the TV video production game.

All this is progressing towards a content arms race to gain global scale, disrupt, differentiate and access direct-to-consumer relationships. Netflix has been the most aggressive and successful so far, burning through billions of dollars of cash per year. As Reed Hasting said during a company conference call in the summer of 2017, “In some senses negative free cash flow will be an indicator of enormous success.” While Landgraf’s original prediction of “Peak TV” may have been too early, serious questions remain as to whether increased content can be adequately monetized over the long-term. TV’s gilded age may be great for starving actors, but for investors it could be a house of cards.



## Playing with FIRE

The new wave of spending less and saving more prioritizes time and experiences over income and things. Financial frugality is gaining traction among a small, but growing cohort of primarily millennial households intent on “hacking retirement” by substantially increasing their savings rate in an effort to be Financially Independent and Retire Early (FIRE). In some cases, adopters of the FIRE movement look to save over 50% of their annual income, invest aggressively and find new ways to minimize expenses.

While the desire for financial independence isn’t new, the motivation for living a life of experiences and having control of your own time - rather than consumerism and things - is more unique to the current wave. Often, this means downsizing houses/cars/etc., moving to cheaper neighborhoods/cities, and generally cutting back on expenses in an attempt to maximize savings rates in a battle against lifestyle creep and the stresses that can come with it.

Many who pursue this path are tired of high-stress jobs, or places where they feel unfulfilled – and they’re not willing to “grind it out” for a good paycheck. They choose to live well below their means in a life rich on time, but short on other luxuries.



## Data Age

During the Industrial Age of the 20th Century, oil was widely considered to be the world's most valuable commodity, as it was the underlying resource powering global growth. Today, in our 21st century Digital Economy, it's becoming more commonly said, "Data is the new oil." The ability to collect, store, and analyze data is feeding many of the major mega-trends in the modern economy; understanding vast amounts of data is becoming a critical competency for every successful company. According to Morgan Stanley Research, a new computing cycle is upon us, and this "data-centered computing" era has the potential to double incremental enterprise tech investment over the next 10 years, while also speeding broader productivity growth for the first time in 20 years.

We're learning how to get value from large data sets, and the confluence of Internet of Things, Artificial Intelligence, Virtual/Augmented Reality, and Automation is expected to drive higher business investment in technology (previous innovation had focused on the consumer-level). According to Morgan Stanley, IT spending hasn't grown as a percentage of enterprise CAPEX budgets in 20 years – but that may change with this next wave in the data era, as IT investment growth is expected to outpace general fixed investment.

This will bring about a new wave of winners based on who can extract the most value from data sets – and not just in advertising & technology. Industrials & Utilities companies can use machine data to infer useful information about equipment performance. Health Care companies can drive better results with better analytics and more data. The next generation can be about worker empowerment (not just consumer empowerment) and improved productivity – and we're only getting started.



## Sex Recession

The U.S. is in a birth recession. Since 2010 the total number of births has declined almost every year. According to The Atlantic Magazine, there were some 500,000 fewer American babies born in 2017 than in 2007, even though more women were of prime childbearing age. The birth rate set a new record low, dropping 3% to 60.3 births per 1,000 females aged 15-44. The total fertility rate, which estimates the number of births a woman would have over her lifetime, dropped to 1.77 children per woman (below the replacement rate of 2.1). However, it is important to note that the United States has been below this theoretical rate since 1971.

So, why the decline? The December 2018 issue of The Atlantic may shed some light on this question. They conjecture the U.S. is in the midst of a Sex Recession. Despite the changes in society's view of sex or the general perception that people are having more sex, they are in fact, not. In addition, fewer people are marrying and those that do are marrying later. According to anthropologist Helen Fisher, who conducts Match.com's annual "Singles in America" study, young people are dating less, resulting in a decline in couple hood. *(...continued)*



Why is this important to investors? One of the simplest constructs of economic growth is:  $\text{Gross Domestic Product growth} = (\text{population growth}) \times (\text{productivity})$ . Population growth is the combination of immigration growth and birth rates. If we assume immigration and productivity stay constant, declining birth rates could, theoretically, have a detrimental impact on GDP growth. In addition, declining birth rates means lower household formation, which in turn could negatively impact housing demand. Social benefits, like Social Security and Medicare, depend in part on a young, vibrant working population. Finally, families are the bedrock of society. According to a Pew Research Center survey, one-in-ten Americans say they feel lonely or isolated from those around them all or most of the time, resulting in weak communal ties. This feeling is consistent across most major demographic groups, except one -- those who are married.



## Multimodal Mobility

The next evolution of personal mobility is multimodal. As we saw many technologies and trends (such as mobile connectivity, machine vision, deep learning, mobility-as-a-service, urbanization, and autonomy) converge to create an emerging Passenger Economy, we anticipate more options for commuters and travelers. No longer is the choice limited to either private car or public transportation. Multimodal Mobility simply refers to travel using multiple means of transportation which may include driving, taking a bus, hailing self-driving cars or shared-ride services that include cars, bikes, and now even e-scooters. This optionality is particularly relevant for people using public transportation, where routes are more limited. It's not surprising this multimodal trend did not originate in the U.S., but first gained

traction in Europe and Asia, where car ownership is much lower. A report recently published by the American Transportation Association finds that Millennials tend to be multimodal and choose the best transportation mode (driving, transit, bike, or walk) based on the circumstances of the trip they are planning. With navigation apps and connectivity, individuals can plan and schedule multimodal routes spanning private, public, shared, and soon autonomous vehicles. Depending on one's needs and goals, the route may minimize travel time, maximize sleep, minimize cost, maximize digital socializing, minimize environmental impact, involve a meal, exercise or a back rub – you get the idea.

Millennials also embrace the concept of Transportation-as-a-Service (TaaS), similar to the ongoing shift in music and video consumption where we have “access” to goods and services without the “burdens” of ownership. The internet, digitization and real-time connectivity are enabling product-oriented business models to transition to access-based services, and transportation is no exception. Likewise, the TaaS model is not only limited to moving people, but it also applies to movement of goods. For example, Kroger is partnering with Nuro, a self-driving car company founded by two former Google employees, to allow shoppers to schedule autonomous grocery orders. Multimodal TaaS will bring a paradigm shift to the distribution model of many other industries such as retail, healthcare, and restaurants. We may see subscription-based service models and new consumer behaviors emerge. Perhaps the way Amazon Prime encourages subscribers to shop more frequently with fast, free deliveries, a subscription-based TaaS network will alter the way customers purchase products and services, presenting new opportunities and challenges.



## CRaP

In the tech world, disruption has been more valuable than profits - a land-grab for eyeballs and share-of-wallets financed by valuation-indifferent investors. Now, e-commerce retailers are changing the dynamic and focusing on profitability, casting off categories and cheap items that **C**an't **R**ealize **a** **P**rofit.

Recognizing the land-grab may be nearing an end, many companies have begun locking in consumers using subscription business models. Most people are familiar with subscribing to media like cable or Netflix, or to services like internet or cell phones; companies are hoping you will also consider subscribing to cosmetics, toilet paper, razors, and clothing.

Retailers such as Walmart with their recurring “Beauty Box”, Nordstrom with their “Trunk Club”, or Amazon with “Subscribe & Save” hope to consolidate your monthly purchases, while brands hope to tap into demand directly with things like Procter & Gamble’s “Gillette on Demand”, Sephora’s “Play!”, or Blue Apron’s meal delivery service.

According to a McKinsey & Company report, subscription e-commerce has grown greater than 100% per year for five years through 2016, accounting for more than \$2.6 billion in sales, up from just \$57 million in 2011. As e-commerce wrestles with the balance between market share and profitability, a steady predictable revenue stream from subscriptions may offer the best of both.



## Cloud Gaming

As we saw with the eSports trend we cited last year, video gaming is going more and more mainstream. According to industry tracker Newzoo BV, the global games industry is on track to reach \$134 billion in annual revenues this year while growing faster than the broader entertainment sector. The cloud is the future for video gaming and promises to expand the addressable market for an already enormous business. Pricy hardware may no longer be necessary for top-tier games when streaming via the Internet (i.e. the cloud) allows users to access vast computing power online using smartphones and smart TVs. According to Barron’s, the number of households that own either a dedicated console or high-end gaming PC is estimated at 300-400 million worldwide; whereas, the

universe of all gamers (including the casual ones who play on their phones) numbers in the billions.

Cloud Gaming can also mean “Gaming-as-a-Service” (GaaS) and could potentially lead to steady and more-predictable recurring subscription revenues similar to the monthly fees that Netflix and Spotify collect for video and music services. However, there are unique challenges to streaming games. Unlike movies and music, games are interactive and can involve sophisticated real-time rendering of images and latency issues. If successful, cloud gaming could lead to more engagement and competition for consumers’ time, diverting more hours away from movies, music and other media. With a convergence of technologies and new business models ahead, Ken Moss, Electronic Art’s Chief Technology Officer predicts, “There’s going to be more change in video games in the next five years than there has been in the past generation.”





## Digital Detox

How much screen time have you had today? American adults now spend over 11 hours per day watching, reading, listening, and/or interacting with media. Some people are seeking ways to cut the amount of time they spend using electronics. This is a tidy follow-on to our “Mend the Mind” trend from last year, where anxiety & depression were cited as rising global concerns. A digital detox is an admission that people need a break from their technology. This detox is considered to be a way to reduce stress and refocus on relationships, nature, and the physical world.

In 2018, we saw increased pressure on companies such as Apple to build tools for users to monitor the amount of time they are on their products.

Apple now includes screen time monitoring tools, giving users a detailed account of how much and in what ways they are using their iPhone. Research indicates that smartphones are addictive – when people hear the ding from a text, email, or Facebook post, cells in our brains are likely to release dopamine, providing pleasure. As a matter of fact, according to a 2017 Deloitte study, the average American checks their phone 47 times a day (86 times for those between ages 18-24).

Signs are emerging that people think the pendulum has swung too far – devices are frowned upon in meetings, some restaurants ban them, and a digital detox is a common New Year’s resolution. Some surveys indicate 69% of adults agree that we should have mandatory timeouts from our devices. We will soon find out if people actually cutback their digital engagements, or if the need for a digital detox is simply evidence of how entrenched technology is in modern life.



## Drones

Commercial drones are quickly moving from a niche hobby to a revolutionary tool in many industries, including precision agriculture, construction, transportation, insurance, and real estate. They can also impact the world negatively, as witnessed during recent airport shutdowns and in the dire warnings from U.N. officials concerned about terrorism. Highly agile drones with advanced sensing technology effectively bypass the mobility issues posed when designing robots. These lightning fast machines are now able to self-stabilize, balance awkward loads, carry heavy weights, use facial recognition and environment mapping technology, and combine other cutting-edge technologies to introduce automation to real world problems.

Precision agriculture drones firing individually-tailored weed killer or pesticide at specific weeds and bugs in fields of crops promises to reduce the need for spraying chemicals across entire fields. This will result in savings for farmers, increased yields, and will appease the growing appetite of consumers for organically raised crops. In construction, engineers are investigating ways to lift heavy loads using large format drones that could effectively eliminate cranes. Boeing recently introduced the world’s largest octocopter,

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a behemoth weighing in at 747 pounds that can lift up to 500 pounds and carry it hundreds of feet in the air at 70 miles per hour. Drones can also go where humans can't; this summer, drones were used to survey wildfires in California and help fire crews dispatch more effectively.

A recent McKinsey study estimates the U.S. drone industry at about \$1 billion dollars heading towards \$31 billion by 2026 with substantial investments from General Electric, Lockheed Martin, and Northrop Grumman. Bill Gates has said, "Drones overall will be more impactful than I think people recognize." While many companies are focusing on autonomous cars with billions of dollars of investment, autonomous drone transport may arrive sooner and be more disruptive at lower costs. The age of the flying car may finally be upon us.



## Deep Fakes

In an era of "fake news," who can you trust? Unfortunately, the answer no longer includes your own eyes. Deep Fakes are an artificial intelligence-based synthesis of a video superimposed on a real video, usually of a famous person, presenting the speaker as saying or doing something in the video that they have not actually said or done in reality. The simulated videos are stunningly realistic, with lip movements and voice modulation of the target being synched to the speech of the perpetrator in real-time, allowing the deep fake creator to impersonate presidents, celebrities, or business executives for interviews or speeches.

Deep fakes have been used to spoof President Trump speaking about climate change in a commercial in Belgium that fooled many viewers. Actor Jordan Peele worked with BuzzFeed to create a viral President Obama deep fake to demonstrate the power of the technology. A deep fake hobbyist used images of Carrie Fisher to create a more convincing version of her younger self in a recent Star Wars film than Hollywood was able to produce using the resources of Disney. Numerous Hollywood stars have been the victims of a deep fake sub-genre that creates pornographic content using their faces. Now, deep fakes have gone mainstream, with apps available to every smart phone owner to create their own content, similar to face swapping technologies or adding "dog ears" as an Instagram filter. With a big enough data set of images, the app can create a deep fake of anyone.

Deep fakes pose real-world risks, as the technology can be weaponized to violate privacy, norms, and to influence behavior. Imagine seeing a video of a President declaring war on North Korea that later turned out to be fabricated. Or a political ad that comes out just before an election, of a candidate "saying" something deeply racist. There are no libel or defamation laws that comfortably address deep fakes, and it will be up to the courts and lawmakers to confront this new un-reality.





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