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The biggest ideas that are changing everything

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Amazon's Secret Weapon: Being Anticipatory

By Daniel Burrus, CEO of Burrus Research

In many ways it seems impossible that Amazon has been in business for more than 20 years. Time does fly! During that time, Amazon has been – and continues to be – the largest and most innovative leader in the e-commerce market. You may be surprised to discover the other markets Amazon has not only entered, but is also in the process of redefining and reinventing.

Amazon Grows While Others Struggle

Amazon recently reported a 28 percent jump in sales with a profit of $513 million in its first quarter.

The first three months of the year saw a phenomenal $29.1 billion in sales thanks in part to the success of Amazon's own Kindle and Fire tablet computers as well as the Amazon Echo. And while Amazon grows and begins to open brick-and-mortar retail stores, large retail competitors like Walmart, Macy's and Sears announce large layoffs and are closing stores.

After the lackluster earnings from Apple and Microsoft recently, it appears that Amazon is bucking the current trend by surging ahead of the competition and many technology giants. However, many of the media outlets reporting on Amazon's success across the globe fail to understand exactly how and why the company not only achieves continuous growth but also seems to select the best new areas to jump into.

Leaders within the retail industry desperately want to learn the secret to Amazon's success, but all too often they repeat the same old mistake of paying more attention to the competition than to the forces that are shaping the future.

> ***Amazon is the most innovative leader in the e-commerce market.***

When leaders do take the time to think about the future, they quickly discover that there is no shortage of trends to review. Let's face it, there is a long list of companies as well as individuals who either publish their trend list or write a blog stating their top five – and they just keep piling them on. Trends are like ideas – there has never been a shortage. The problem is figuring out which ones to act on. The risk of being wrong can be enormous. And as we have all seen in recent years, not acting can be even worse!

As you can tell from the title of this article, Amazon's secret success strategy has been to be anticipatory by identifying the Hard Trends that will happen and using them to innovate with the confidence certainty provides. Before going into this powerful strategy in more detail, let's look at what Amazon is doing that's invisible to most. I'll bet it is far more than you realized.

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TECHNOLOGY NEWS HIGHLIGHTS

Virtual Reality Brain Monitor

A new mobile system utilizes a virtual reality (VR) platform to diagnose concussions quickly and accurately. Called EYE-SYNC®, the device analyzes the wearer's eye movements to provide an objective assessment of visual attention, which can be linked to cognitive or motor difficulties following injury.

Brain "whiplash" from a blow to the head impairs connections in the frontal cortex which control the attention pathways and are linked to eye movement.

EYE-SYNC tracks eye movements in response to a repetitive circular stimulus and measures the subject's ability to predict the spatial and temporal path over a 15-second period.

The results can be compared to a standardized metric or a person's own baseline measurement, making the device useful for screening as well as for tracking recovery over the course of several days or weeks, depending on the severity of the injury.

The system has been tested on athletes to screen for concussions on the playing field, and far exceeds other methods with a test/retest reliability factor of 0.8.

The Department of Defense is also evaluating EYE-SYNC to provide real time functional assessments on the battlefield.

For information: SyncThink, 54 Canal Street, Boston, MA 02114; phone: 617-221-3521; email: info@syncthink.com; Web site: http://syncthink.com/

The Future of Contact Lenses

Recent advances in materials and technologies have led to some pretty amazing developments in the field of contacts including lenses for diabetics that monitor glucose levels in tears, lens-mounted biosensors that measure intraocular pressure in patients at risk for glaucoma, and drug-eluting contacts that deliver medications directly to the eye over a period of days or weeks.

But according to researchers, there's a lot more on the horizon when it comes to next-generation contact lenses.

The latest focus is on slowing and/or preventing the progression of vision defects. For example, at least two studies have shown that specially designed lenses could be effective at reducing the severity of nearsightedness (myopia) – a condition that is on the rise in children worldwide.

Other designs are aimed at lessening the impact of age-related vision loss like degenerative retinal disease and extreme light sensitivity (photophobia) with the use of centrally red-tinted lenses.

And, although still in the early stages of development, contacts with built-in "photonic modulation" are being evaluated for the treatment of seasonal affective disorder.

Clearly, the future of contact lenses is destined to go well beyond enabling people to simply see better.

For information: Lyndon Jones, University of Waterloo, Centre for Contact Lens Research, 200 University Avenue West, Waterloo, Ontario, Canada N2L 3G1; phone: 519-888-4742; fax: 519-888-4303; email: lwjones@uwaterloo.ca; Web site: http://cclr.uwaterloo.ca/

Digital DNA

In recent years, advancements in storage technology seem to have slowed down, making some experts wonder if Moore's Law has reached its limits with regard to data storage density.

But if we've learned anything in this age of accelerated change, it should be that technology will find a way, and the new solutions may be very different than traditional ones.

So it appears that storage media of the future will not rely on disks, drives or chips, but on customized strands of organic material.

Microsoft has already begun testing the use of synthetic DNA (also known as long oligonucleotides) as a long term, high density, no-power data storage solution. Why DNA?

DNA strands can remain intact and readable for literally thousands of years. It's estimated that a

single cubic millimeter can store one exabyte (that's one million gigabytes) of data.

It's also reliable and repeatable; in initial testing, 100 percent of the data encoded could be retrieved.

The technology is based on etching methods similar to those used in computer chip manufacturing. The next step is to scale up production through automation, but Microsoft is betting that won't be a problem, since they've already bought 10 million strands.

For information: Twist Bioscience, 455 Mission Bay Blvd. South, San Francisco, CA 94158; email: customersupport@twistbioscience.com; Web site: https://www.twistbioscience.com/

Armed Robot?

Occasionally, technological advances come along that lead us to say, "Just because we can doesn't mean we should."

Such may be the case with an intelligent security robot that was recently unveiled in China. Known as the AnBot, it was developed to patrol areas where frequent civil unrest and violence is an issue.

The five foot (1.5 meter) tall, 170 pound (78 kg) droid can navigate autonomously at a top speed of about 11 miles per hour (18 kilometers per hour).

It uses on-board sensors coupled with intelligent video analysis to patrol, identify and avoid obstacles, as well as recharge on its own. An SOS button also allows members of the public to notify authorities in the event of an emergency.

But here's the questionable part: AnBot is equipped with weapons that can be deployed by remote control to "prevent and control violence."

Although these weapons are reportedly nothing more than electrically-charged riot control tools (stun guns), and can only be activated under the control of a human operator, it leads us to question whether this is the best use of robotics technology.

For information: National Defense University, Republic of China; Web site: http://www.defensetech.org/2016/04/27/at-tech-fair-china-unveils-armed-robot/

Charging On-the-Go

When we last reported on the subject of inductive wireless charging platforms for electric vehicles, the technology was still in the relatively early stages of development.

But researchers at Oak Ridge National Laboratory (ORNL) have made significant strides, bringing us closer than ever to electrified roadways capable of continuously

charging electric vehicles on the go.

In a recent demonstration, a 20-kilowatt, single-converter charging system was tested on an electric Toyota RAV4 that was equipped with an additional 10-kilowatt hour battery.

A transmitting plate in the ground sends energy to a receiving plate in the vehicle front end, which is then transferred to the battery via a controller. The system is capable of operating at up to 90 percent efficiency, and charges the battery three times as fast as traditional plug-in systems.

The next step will be to increase the power output to 50-kilowatts required to meet the needs of larger vehicles such as buses and trucks.

For information: Madhu Chinthavali, Oak Ridge National Laboratory, P.O. Box 2008, Oak Ridge, TN 37831; phone: 865-946-1411; email: chinthavalim@ornl.gov; Web site: https://www.ornl.gov/

Pain Relief Without Pills

According to recent estimates, 100 million Americans suffer from chronic pain.

Pain management costs upward of $600 billion annually, not including the toll it takes on the emotional – and even financial – well-being of sufferers and their families. In addition, the overuse of prescription pain medications has become an ever-growing problem in the U.S. As a result, a great deal of research is centered on the development of treatments that reduce the need for opiates.

Electrical stimulation is one technology that has delivered some promising results.

For example, transcutaneous electrical nerve stimulation (TENS) which delivers electrical impulses directly to the nerves has been explored for some time as an alternative to drugs for certain types of pain.

However, a new technique is currently being developed that moves the stimulation site from the nerves to the brain.

A recent study showed that stimulating the ventral tegmental area of the brain blocks the pain signals in the spinal cord.

It also triggers the release of dopamine, a neurotransmitter that controls the reward and pleasure centers of the brain. This has an analgesic effect and also helps regulate movement which is essential for recovering function.

Since people who experience chronic pain often become depressed because they can't do the things they used to do, this new approach could offer much-needed, long-term relief without the side effects of medications.

For information: J.C. Chiao, University of Texas at Arlington, Nedderman Hall 538, Box 19016, Arlington, TX 76019; email: jcchiao@uta.edu; Web site: http://www.uta.edu/uta/

Rain Power

While solar cells are on the rise, the fact that they can't produce energy while it's raining is a big drawback in many areas that could benefit from a clean, renewable energy source. But a recently published article out of China may change all that with a new approach that allows solar cells to generate electricity from rainwater as well as sunshine.

The researchers coated a solar cell with graphene – a two-dimensional form of carbon in which the atoms are arranged like a honeycomb. Graphene is rich in electrons that can move freely across its surface, enabling it to conduct electricity when bound with positively charged ions. Coincidentally, rainwater is not pure, but contains compounds like calcium, sodium and ammonium, which become ions when they are dissolved in solution. As a result, when they sit on the graphene layer, they create a "pseudo-capacitor" which captures an unbalanced charge (voltage) that can be converted to electricity.

Although the new cell is only about 6.5 percent efficient, and the voltages generated by the raindrops are only in the microvolt range, the concept is a sound one for making solar a more versatile source of power.

For information: Ocean University of China,5 Yushan Road, Chinan, Qingdao, Shandong, China; phone: +86-532-8203-2666; Web site: http://eweb.ouc.edu.cn/

Embroidered Antenna

Wouldn't it be nice to be able to boost your smartphone reception through the clothes you're wearing? That's just one of the potential applications for a new generation of e-textiles that embroider circuits into fabric with conductive threads.

The key is ultrathin thread that consists of seven copper and silver filaments, yet measures only 0.1 millimeters in diameter. Researchers have developed a way to embroider it into fabric to create circuits, integrating electronic components – like sensors and memory devices – right into clothing, with accuracy that's comparable to traditional printed circuit boards.

The method uses a standard tabletop sewing machine, and the shape of the design controls the operating frequency of the antenna or circuit. For example, by combining different sized, interlocking, geometric shapes, a broad spectrum antenna can be embroidered in about 15 minutes using approximately 10 feet (30 cents worth) of thread. In testing, an embroidered antenna was demonstrated to transmit 1 to 5 Giga-hertz frequency signals with nearly perfect efficiency.

The ultimate applications for wearable electronics range from enhancing communication to monitoring your brain activity. The researchers intend to license the technology for further development.

For information: John Volakis, Ohio State University, ElectroScience Laboratory, 1330 Kinnear Road, Columbus, OH 43212; phone: 614-292-5846; fax: 614-292-7297; email: volakis.1@osu.edu; Web site: https://www.osu.edu/

Amazon's Secret Weapon: Being Anticipatory

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Redefining E-commerce

There are around 50 million online shoppers who are choosing to pay $99 a year for the Amazon Prime service. In addition to offering free, super-fast delivery of items, Prime also serves as an alternative to Netflix with a growing catalog of movies and TV shows. The service is becoming increasingly attractive to those who want to, or already have, cut the cord to cable TV.

Many fail to realize that 74 percent of Prime members also purchase items on a regular basis from Amazon. When delving deeper into these stats, you are hit with two that are quite staggering:

1. Forty-four percent of all online shopping takes place on Amazon.
2. Over the 2015 holiday season, 51 cents of every dollar spent online went to Amazon.

While many retailers continue chasing customers and bombarding their email inboxes with generic and irrelevant marketing messages, Amazon uses data analytics to provide shoppers with what they are interested in, when they are most likely to want it. And the level of personalization increases for Prime members.

That's one of many reasons why 60 percent of Amazon shoppers are Prime members who love the benefits of membership, making it easy for Amazon to keep its best customers coming back for more.

Capturing customers and bombarding them with value creates an elite club in which friends, neighbors, and families share stories of how Amazon keeps finding new ways to exceed expectations, such as an ever-growing list of items that can be delivered within a few hours. Amazon CEO Jeff Bezos famously said, "We want Prime to be such a good value, you'd be irresponsible not to be a member."

Creating Its Own Private-Label Brands

Amazon's available inventory contains over 50

million different products, with 75,000 new items added every day. But the big news to many is the introduction of private-label brands such

as AmazonBasics (electronics accessories), Pinzon (kitchen gadgets) and Elements (health and beauty products). The list of private-label categories is expanding fast, and by creating its own brands, Amazon is once again growing and strengthening its offering without most people noticing.

A Growing Logistics Company

With 138 warehouse facilities offering 68 million square feet of space, nobody can accuse Amazon of not thinking big enough. And 93 additional facilities were built in 2015, and even more are expected in 2016. With over a thousand branded trailers, and leasing twenty 767 jets, the company is indeed on the move in many ways and could easily be labeled as a logistics company.

From the beginning, Amazon has used an anticipatory strategy rather than a reactive or agile strategy, unlike most of its competitors. By learning to separate the Hard Trends that will happen from the Soft Trends that might happen, Amazon arms itself with a powerful choice: to take action and become the disruptor, or wait and become the disrupted.

By using Hard Trends to select the areas it would disrupt, Amazon went beyond focusing on the profitability of the quarter and used the methodology to bring a high level of strategic clarity to its planning. By separating future facts from possibilities and assumptions, Amazon used that knowledge to anticipate disruptions, problems, customer needs and game-changing opportunities.

With an all-consuming focus on its value proposition of selection, price and customer experience, and raising the bar on them continuously, should we be surprised by Amazon's success? The biggest lesson to learn from the company's inspirational success story is how it understood the strategic importance of being anticipatory rather than reactionary.

Cloud Services

For example, when it became apparent that cloud computing was becoming a Hard Trend, did Amazon look around to see what everyone else was doing? Of course not. Instead, it focused on the creation of Amazon Web Services (AWS) to obtain a sustainable advantage in the future. It's this anticipatory mindset that delivers great things. AWS sales have rocketed to $2.57 billion, which is up 64 percent from last year, smashing analyst predictions. Despite Microsoft Azure making a few waves in the industry with $560 million in revenue, this remains considerably behind the $2.46 billion lead AWS has.

Amazon Doesn't Compete

Amazon does not compete or imitate its competition. Copying Walmart would merely result in becoming Walmart. Companies in every industry should be following their own path by lowering risk and taking action by using Hard Trends to shape the future. The time has come to replace competing with initiating and creating; it is that simple.

Manufacturing as a Service

I believe that Amazon's next move will be to purchase industrial-grade 3-D printers that smaller companies and individuals won't be able to afford. This will enable the launch of yet another virtualized service, Manufacturing as a Service (MaaS), that will allow any user to be a manufacturer of custom products to deliver anywhere, anytime and to anyone.

This represents a fantastic opportunity for anyone with an idea for a product to upload a CAD drawing to Amazon, which will make and dispatch items to clients. Even if you don't know how to turn an idea into a comprehensive design,

there will be a wealth of people to help you, from sites such as Fiverr or Upwork, as the so-called gig economy gathers steam.

Many in the corporate world spend too much time scratching their heads and wondering what the future holds, clinging to their reactionary past. Amazon, with its anticipatory mindset, can see beyond the fog on the horizon to know that in the very near future, anyone will be able to be a manufacturer or turn an idea into a business using a set of virtual tools.

Failing Fast to Learn Faster

When a new product or service is not working, end the pain, share the lessons learned and move on. Rather than rushing in and protecting and defending the product or service that's not working, develop a metric to evaluate when it's time to cut your losses and move on.

In a letter to shareholders, Jeff Bezos proudly called Amazon "the best place in the world to fail." If you're not making mistakes and experiencing some failures, you're not innovating. Failing is not the problem – failing slowly is. And when you do fail, instead of hiding it, licking your wounds and moving on, as most do, share the lessons learned.

Growing B2B E-commerce

While some organizations still purchase their equipment from catalogs, most are unaware that the Amazon Business marketplace site hit over $1 billion in sales in less than a year. Quietly modernizing the market by encouraging its users to bring their shopping habits into the workplace will further cement Amazon's "everything under one roof" ethos.

A Major Grocery

Amazon's expansion into the grocery sector initially raised a few eyebrows, but it is also experiencing tremendous growth. While traditional big-box grocery stores such as Walmart and Target are seeing their sales decrease by 4 to 5 percent, once again it's Amazon that is riding the wave, with an increase of 18 percent in the first quarter alone this year.

Whatever your needs or requirements, you can be sure that Amazon will be working on providing a new service that anticipates your future needs, and it does so by identifying the Hard Trends shaping the future.

On the surface, it's easy to see why people jump to the conclusion that the key to Amazon's success is being agile, responding to change faster than anyone else. But when you look at the level of Amazon's ability to place big bets on where the future is heading – and win! – it's clear that agility would not provide that capability.

Amazon's secret weapon from the beginning has been having an anticipatory mindset and using Hard Trends to shape its future rather than relying on reacting quickly as a way of competing with others.

The time has come to stop looking at the future with yesterday's eyes. We are doing things today that were impossible just a few years ago. And, in just a few years we will be doing things that are impossible today.

Ask yourself if you would rather react faster than your slowest competitors or learn to use the Hard Trends that will happen to anticipate disruption, problems, customer needs and game-changing opportunities. The choice is up to you.

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