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Daniel Burrus'

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TECHNOTRENDS[®] NEWSLETTER

*The biggest ideas that are
changing everything*

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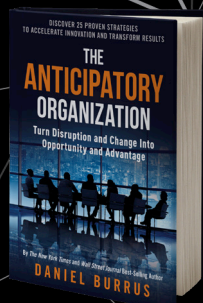
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Both/And Thinking: The Best of Both Worlds

By Daniel Burrus, CEO of Burrus Research

There is a long-standing trend in the global marketplace when it comes to the qualities of top executives. They are often rewarded for their willingness to definitively say yes or no to big financial and technological decisions. This is a quality that may have served you well in your career as well. However, when it comes to new technology, there may be more than one answer.

How many times have you greeted a new innovation with an either/or assumption?

Although executives, managers and boards of directors often assume that the purpose of the new technology is to replace the old, that's not the way it works.

The hottest new breakthrough technologies do not necessarily replace older ones. Instead, they often coexist side by side because the old technology has its own unique profile of functional strengths that the new technology never fully replaces.

How many times have you greeted a new innovation with an either/or assumption? Either you use the old or the new. But this is not an either/or world we live in; it's a both/and world. It's a world of paper and paperless, online and in-person, old media and new media.

Yes, No, or Some of Both

In my latest book, *The Anticipatory Organization: Turn Disruption and Change*

into Opportunity and Advantage, I reinforce the major competitive edge that comes from the ability to accurately anticipate the future. This is a skill that can be learned, and I'd like to introduce you to the Both/And Principle, which will help your forecasts be more accurate.

First, a bit of history. In the mid-1980s, I began to notice that top executives, managers, business publications, and the media were all making the same false assumptions about the future of technological change. Every time a new product category was introduced, they assumed that the older category would quickly vanish. This is a sign of Either/Or Thinking.

Either/Or Assumption #1:

Thanks to digital communications, all offices will be 100 percent paperless.

For example, in the late 1980s, when email and other electronic communications were introduced, many futurists predicted that, by the late 1990s, offices would be completely paperless. It's now 2018, and we are still talking about that possibility, but in most organizations, it hasn't actually happened.

Paper is inexpensive and portable and can be folded and tucked in a pocket or purse. It is an inexpensive display medium that does not need power. So instead of asking, "How can I eliminate all paper?" a better question has been, "What is the best use for paper and the best use for digital?"

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TECHNOLOGY NEWS HIGHLIGHTS

Robotic Eye Surgeon

Robotic surgery has become fairly commonplace since the introduction of DaVinci over a decade ago. An estimated 3 million procedures – mainly hysterectomies, prostate removals, and, more recently, heart valve repair and/or replacement – have since been performed using the interactive, human-controlled robot. However, currently available surgical robots are too bulky to perform more delicate procedures, such as eye surgery.

A new surgical robot, dubbed R2D2 (Robotic Retinal Dissection Device), was recently tested in limited clinical trial of 12 patients requiring membrane removal from their retina.

Half of the surgeries were performed manually, and half utilized the robotic system. Although all of the surgeries were successful, in patients who received the robot surgery, there appeared to be less blood vessel damage at the back of the eye. The results indicate that it may be possible to

refine robotic systems to perform surgeries that are impossible to perform manually.

Human surgeons – even the best of them – can't hold their hands completely steady. At best, the vibrations induced at the tip of a surgical instrument are on the order of a tenth of a millimeter. But many of the structures in the eye are only one-fifth that size, so manually positioning a needle without damaging other structures is virtually impossible.

On the other hand, robots such as R2D2 can be controlled in increments of one-hundredth of a millimeter, making it possible to avoid injury to tiny membranes.

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Power-Generating Windows

A new solar cell material could dramatically reduce utility bills by turning windows into solar panels. In initial testing, the transparent polymer film converted up to 9 percent the energy received from sunlight into electricity, while allowing 25 percent of visible light to come through.

The film was constructed using polymer solar cells, a type of organic photovoltaic cell. Although they're not as efficient as silicon-based devices, organic solar cells are lighter, less expensive to produce, and potentially disposable.

Their optical absorption is also higher, so it takes very little material (on the order of hundreds of a nanometer) to absorb a lot of light, enabling them to be made transparent to some extent.

On the downside, the developers acknowledge that, in addition to lower efficiency, instability due to photo-degradation is an issue with organic solar cells.

The current useful life is about 10 years. But as research continues, we may someday see homes, greenhouses, and even cars harvesting sunlight to cut power costs.

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Melanoma Blood Test

A blood test has been developed that may diagnose melanoma (skin cancer) before it becomes malignant.

A three-year clinical trial is being planned in Australia and New Zealand, where skin cancer rates are high due to elevated sun exposure in fair-skinned individuals.

The test is designed to detect antibodies produced by the immune system shortly after the cancer begins growing. A previous, limited study of 200 patients (half of whom had early-stage melanoma and half of whom did not) showed that the new blood test demonstrated an accuracy of 82 percent in identifying the cancer.

Current methods for diagnosing melanoma rely on visual examination and cutting out suspect moles for testing, however, many cases are not spotted until it has advanced.

The ability to screen for the disease in its early

stages, when five-year survival rates are up to 99 percent, would make this a useful screening tool for high-risk patients, including those with a fair complexion or a family history of skin cancer.

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As a fiber heats up, the hydrogel releases the appropriate drug, providing precise control of dosing and scheduling of medications.

The researchers have also embedded sensors into the bandage that monitor temperature, pH, and other indicators of inflammation or infection. The goal is to develop a bandage that autonomously delivers whatever therapy is needed.

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Smartphone-Controlled Bandage

A high-tech bandage that can sense infection and deliver medications has been shown to regenerate skin tissue in mice three times faster than a standard dressing.

The device could someday be used to heal chronic skin sores (such as those caused by diabetes) or to treat wounds sustained in combat.

The new bandage is made up of electrically conductive fibers coated with a hydrogel, which can be loaded with a variety of medications, including antibiotics, growth factors, and painkillers. Unlike existing “smart” bandages that passively release medications over time, the new bandage contains a microcontroller that can be triggered by a smartphone to send a small current through specific fibers.



On-the-Spot Brain Scan

Diagnosis of traumatic brain injury (TBI) typically requires the use of expensive medical imaging like computerized tomography (CT) and magnetic resonance imaging (MRI). But in situations where such equipment isn't available or practical, a new mobile brain scanner can provide clinicians with a reliable indicator that's up to 98 percent accurate in detecting the presence or absence of TBI.

BrainScope One consists of a disposable electrode headpiece and smartphone software that records an electroencephalogram and

analyzes it in about five minutes. By comparing the signals to a database of healthy brain patterns, the device can determine the likelihood of structural damage or functional impairment, both of which are key to diagnosing TBI.

There are currently about 150 systems in use across the United States at a cost of \$15,000 each. But a new model, which may become available as early as next year, is planned to have additional capabilities (such as diagnosing Parkinson's and stroke) and cost even less. Applications for the device extend from emergency and urgent care clinics to sports teams and military units.

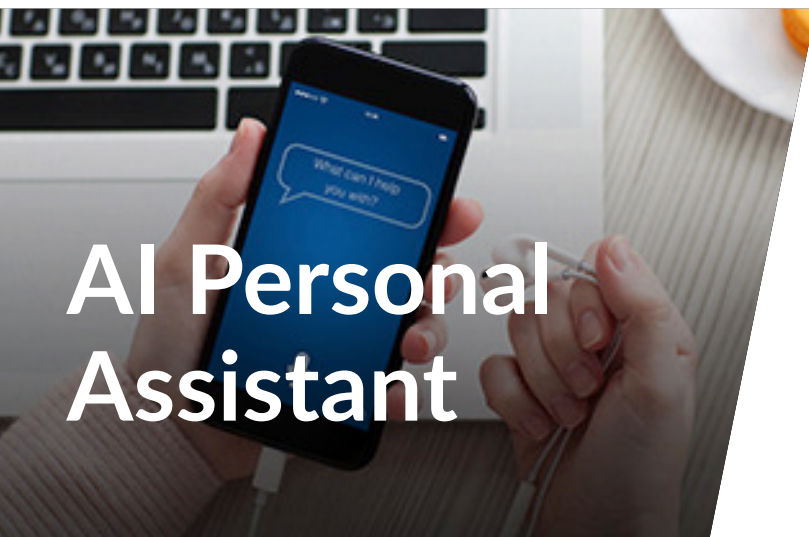
For information: BrainScope, 4350 East-West Highway, Suite 1050, Bethesda, MD 20814; phone: 1-855-927-2461; email: info@brainscope.com; Website: <http://brainscope.com/>

hesitations, and a few “ums” thrown in for good measure. In fact, during a demo at its recent developers conference, the human at the other end of the line had no idea they were talking to an AI.

The response was understandably mixed. The first reaction to a new technology is often fear. But Google believes those fears are unfounded and is already looking at ways to let the other party know, first of all, that they are talking to a Google AI, and secondly, that the call is being recorded (which is required by law in some states). It also pointed out that Duplex is only designed for restaurants and hair salons, so it cannot be hacked by scammers and robo callers for more sinister purposes.

Duplex addresses a niche that is currently unfilled by offering more people access to a personal assistant. Eventually, even small businesses will enjoy the time-saving convenience of having an AI make routine phone calls, freeing up humans for more complex tasks. Only time will tell how long it takes for us to embrace this new technology.

For information: Google LLC, 1600 Amphitheatre Parkway, Mountain View, CA 94043; Website: <https://ai.googleblog.com/2018/05/duplex-ai-system-for-natural-conversation.html>



AI Personal Assistant

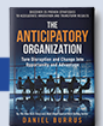
Google recently launched a new artificial intelligence (AI) product that acts as a personal assistant to book restaurant reservations and hair salon appointments. Known as Duplex, the new assistant can impersonate a human voice nearly perfectly, including realistic inflections,

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—Alan M. Webber Co-founder, Fast Company Magazine

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Prosthetic Limb Control

A common challenge for amputees wearing prosthetic limbs is the inability to sense the limb position. That's because the muscles and nerves which enable proprioception – the dynamic relationship that provides feedback between your body and your brain – are typically tied to bone when a portion of a limb is removed. But a new technique was recently described in which new muscle pairs were grafted onto the amputation site in a below-the-knee amputation. Electrodes applied to the skin monitor the muscle activity and control the motors in the prosthetic, while sensors in the foot of the prosthetic transmit information back to the muscles. The result is a system of artificial proprioceptive feedback that can restore near-normal gait control to the wearer.

The patient experienced some reflexive behaviors that have never before been observed with a prosthetic device, such as unconsciously flexing the foot when climbing stairs and being able to interpret the sensations of position, speed, and force to control how hard to push a pedal. The new technique could someday help many amputees better navigate difficult terrains and alleviate sensations associated with phantom limb.

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Self-Defrosting Windshield

Researchers in Switzerland have discovered a way to make windows that defrost themselves using an ultra-thin coating made from gold and titanium dioxide.

The transparent material can be used to coat glass or other surfaces, and because it requires no other chemicals, it should be more eco-friendly than de-icing solutions.

Gold particles are excellent absorbers of sunlight, and when they are tightly embedded in titanium dioxide, they are even more efficient at soaking up solar energy. The innovative material works by concentrating that energy into a small volume, which raises the surface temperature and causes the ice to melt.

Additional advantages of the material over other defrosting techniques include the fact that it does not require the application of electricity or mechanical scrapers. The researchers anticipate that the product will become commercially available in about five years.

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Both/And Thinking: The Best of Both Worlds

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Either/Or Assumption #2:

Web-based stores will render retail stores completely obsolete.

In the mid-1990s, around the time that Netscape, Yahoo!, e-Bay, and many other web-based businesses started rapidly growing, many futurists and the media predicted that bookstores, auto dealerships, shopping malls, and retail stores in general would soon be obsolete.

The logic was that a physical store can only hold a few hundred thousand items, while a virtual store gives you access to millions of items or titles 24/7.

So why do retail stores continue to survive, and why are many even thriving? The answer is that physical shopping is experiential, not just transactional.

Brick-and-mortar stores and malls are social gathering places that create a sense of community, which technology can't fully replace. In addition, many products are difficult to buy without physically seeing them and trying them out. Others require a knowledgeable person to help you make a decision. Why did Apple open an Apple Store? If you have been there, you know why.

Either/Or Assumption #3:

Smartphones Will Replace Computers

Not that long ago, business publications were having a debate about the future of computing. They asked the question: With our smartphones and tablets becoming our main personal

computers, won't this make desktops and laptops obsolete? The answer is still "no."

The reality is we still have the equivalent of mainframe computers, we just use them differently than 20 - or even 5 - years ago. If you have a smartphone and/or tablet, you are already using your laptop differently, and perhaps much less, but you are still using both.

Introducing Both/And Thinking

While others were predicting the end of desktop computers, printed paper, and retail stores, I did not fall into the trap of those bad predictions because I had developed a series of research-based guiding principles that would help avoid such mistakes. One of the most powerful I call the Both/And Principle.

The premise is simple: Your technology works well for you, but you discover a new app, gadget, or thought process that could significantly transform business. You don't want to part with what's been working for you, but you also don't want to be left behind.

The Both/And Principle lets you keep your legacy systems and try the new technology or processes. Integrating them this way is one of the best ways to approach change and transformation.

It is a powerful corrective measure to either/or thinking, meaning that the future will only be either one way or the other. Both/And recognizes the folly of assuming that the "new" will totally supplant the old. Both/And recognizes that they can be integrated. Once you try it, you will see Both/And can accelerate your team's performance because you haven't settled for one or the other.

Powerful Both/And Duos

Digital has its powerful strengths; it's here to

stay, but so is paper. Imagine your work or home life without one or the other of these duos:

- Brick-and-mortar retailers and Internet retailers
- Office phones on your desk and cell phones
- Paper mail and email
- Nautical charts and GPS-based e-charts
- Full service and self-service
- Copper and fiber optics
- Traditional media and the web
- Gasoline engines and hybrid engines
- Digital music playlists and live concerts
- Social media and face-to-face meetings

A key success strategy is to integrate the old and the new based on the strengths of each. In fact, the hottest breakthrough technologies tend to coexist and integrate to create new value with their predecessors rather than completely co-opting them. Why? The old tech has its own unique profile of functional strengths.

In the case of paper, it's inexpensive, portable, erasable, foldable, and readable, and, best of all, it doesn't disappear if the computer goes down! In the case of retail stores, it's partly experiential; online ordering only taps into one of our five senses (seeing).

Case Study: Amazon.com and Kohl's

In August of 2017, Kohl's announced it would sell Amazon products in its retail stores. But that was just the beginning of this Both/And business maneuver.

Kohl's department stores and Amazon.com have been piloting a retail model that even more perfectly demonstrates an integration of the old and new.

Since September of 2017, the two have been running a pilot program where Amazon.com



purchases can be “sent back” by returning them to a Kohl's Customer Service Desk.

Customers who bought a product online can now skip the post office and instead return items at select Kohl's stores in Chicago and Los Angeles and, more recently, at Kohl's stores in its home state of Wisconsin.

Consumers enjoy the convenience, and, according to Business Insider, total visits to Kohl's stores with Amazon's return program have outperformed other stores by about 8.5 percent. It has also reported an increase in new visitors.

Both/And and You

What are some examples of Both/And thinking that could benefit you? What are some technology capabilities you feel your business cannot live without? What are some of the newest technologies that you believe will disrupt and transform your business? What would happen if you combined the two?

The first step is to anticipate changes and move into position to use them to your advantage. Start with my newest book, [The Anticipatory Organization: Turn Disruption and Change into Opportunity and Advantage](#), now available at [Amazon.com](#).

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