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TECHNOTRENDS[®]

NEWSLETTER

*The biggest ideas that are
changing everything*

IN THIS ISSUE

In Uncertain Times, You Have
More Control Than You Realize

3D Printing with Cooking Oil

Night Time Solar Cell

Lab Grown Breast Milk

Flexible Touchscreen

Handheld Skin Printer

Heartprint

Wearable Gas Sensor

Smart Tires

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In Uncertain Times, You Have More Control Than You Realize

By Daniel Burrus, CEO of Burrus Research

Traditionally, when an individual or organization fears change, it has something to do with digital technology disrupting their status quo. Will something autonomous replace my job? What if something is created that puts me completely out of business? Aside from digital transformation, another wave of fear comes from new, fast-moving competition and the threat of loss of relevance and market share.

I myself have discussed at length these fears and many more, and how to become more anticipatory, paying attention to the Hard Trends that are shaping the future both inside and outside of your industry, and how to see disruption and change before they strike, and most importantly identify and act on the opportunities they represent.

Few would have thought that in the early stages of 2020, our economy would be in a downturn, we would be instantly converted to remote work or unfortunately for some, laid off, and we would be quarantined to our homes due to a global pandemic.

This "hope for the best but expect the worst" can be a useful attitude, but it can also be dangerous

Real-World Dystopia

It seems as though, whether you're in business or not, the majority of individuals will not admit to their tendency to sleep with one eye open on the economy ever since the Great Recession about a decade ago. This "hope for the best but expect the worst" can be a

useful attitude, but it can also be dangerous, both for your health and well-being, and your entrepreneurial ability to see and act on the many new opportunities disruptive change presents.

Unfortunately, the COVID-19 pandemic has to a great extent suppressed our positive, innovative mentality as a species, and has sent many of us into a primordial tailspin of trying to get back to the way things were; the status quo. Due to fear, we are finding ourselves in a real-world dystopian society, where individuals buy in bulk unnecessarily, prepping for the end of the world. The pandemic will end and we will recover to another new version of normal. What if we made the new post-pandemic normal much better than what we had before? Is that possible? It sure is if we get past fear and reacting to the next disruptive problem and become anticipatory, using the power of disruptive change to create a better tomorrow for all.

I'm here to remind you to keep in mind that while times are highly uncertain in an all-encompassing way, this global disruption on a massive scale is also creating new ways to have a positive, significant impact on the present and the future.

Going Remote, No Matter Who

A global pandemic, shutdown and quarantine is very similar to what I've said about digital disruption for decades: It knows no boundaries

continued on page 8

TECHNOLOGY NEWS HIGHLIGHTS

3D Printing with Cooking Oil

Scientists have found a way to turn a major global environmental challenge into a useful material by transforming used cooking oil into a high-quality resin for 3D printing. Because it's made from natural products, the new material is biodegradable. It's also cheaper and easier to make than resins derived from fossil fuels.

In spite of the fact that many restaurants have to pay to dispose of it, only a local McDonald's responded to the team's request for waste cooking oil needed to test their new method in the lab.

Using a one-step process, one liter of oil yielded 420 milliliters of resin that was capable of printing features as small as 100 micrometers (about four thousandths of

an inch). In addition, they demonstrated that the structure – a plastic butterfly – was structurally and thermally stable, and that the new material cures to a solid when exposed to sunlight, making it a viable building material.

While other uses for waste cooking oil have been investigated, the new process produces a high value commodity that is also inexpensive to recycle, since microbes can break it down relatively quickly. After simply being buried in soil for approximately two weeks, a sample object lost 20 percent of its weight.

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Night Time Solar Cell

Researchers may have found a way to balance availability of solar power over the day-night cycle using a specially designed solar cell that can generate power at night.

A conventional solar cell absorbs energy in the form of sunlight because it is cool in comparison to the sun. This energy generates a voltage across the cell through which current can flow.

Another type of device – known as a thermoradiative cell – works just the opposite. When pointed toward the night sky, it will radiate energy in the form of heat because it is cooler than space. This flow of energy creates a voltage and current in the opposite direction, but still generates power.

The recently developed photovoltaic cell can generate up to 50 watts per square meter, which is about one-fourth of the power that is generated by a solar panel during the day. The principal can also be applied to drawing heat away from buildings during the hot summer months or to capture waste heat from engines.

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Lab Grown Breast Milk

A number of companies are working on finding a more natural alternative to baby formula, and one recently announced that it has successfully grown two key components of breast milk – lactose and casein – in a laboratory setting.

Devices known as bioreactors are often used to grow cultures of mammary cells for research. These cells are capable of producing milk; however, they are usually cultivated in a liquid medium, making it necessary to filter out the milk and distill it.

The company's breakthrough is a patent-pending process that eliminates the need for a media bath.

The product is still in the early stages of development and samples are currently being tested to confirm the nutritional profile.

While lab grown breast milk will not contain antibodies that come from the mother, it would be nutritionally superior to traditional formula and easier for babies to digest.

For information: Biomilq; Web site: <https://www.biomilq.com/>



Flexible Touchscreen

An ultra-thin electronic material has been developed that could revolutionize the touchscreen industry. The new conductive sheet was created by taking a well-known material and making it two-dimensional using liquid metal chemistry.

Widely used in touchscreen technologies, indium tin oxide (ITO) is transparent and conductive but extremely brittle.

When heated to 200 degrees Centigrade it becomes a liquid, at which point the researchers were able to use it like a liquid metal ink to print sheets only one atom thick. The sheets have the same chemical makeup as ITO but a very different crystal structure with new optical and mechanical properties.

The result is a material 100 times thinner than typical touchscreens and pliable enough to be manufactured like a newspaper through roll-to-roll processing.

It's also more transparent, absorbing only 0.7 percent of light as compared to 5 to 10 percent with standard conductive glass. More light translates into less power and longer battery life.

Best of all, the sheets are compatible with existing electronic technologies.

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Handheld Skin Printer

A 3-D printer that deposits “bioink” directly onto a wound has been shown to promote skin regeneration in patients with severe burns.

Traditional methods of treating large burns involve grafting healthy skin from other parts of the body. But damage to the innermost layers of tissue often prevents grafts from remaining viable.

The new 3-D printer covers a wound with a sheet of biomaterial using a microfluidic print head.

The “bioink” contains stem cells known as mesenchymal stroma cells (MSCs), which are capable of differentiating into

various specialized cells depending on the environment.

Successful trials have been reported and the researchers believe that the device could be ready for clinical use within five years.

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Heartprint

The Pentagon has developed a device that can identify a person by their heartbeat using lasers. Dubbed Jetson, it measures small vibrations induced by heart movement at distances up to 200 meters (over 600 feet) even through light clothing.

According to reports, the system was requested by U.S. Special Forces to augment other biometric techniques used to identify terrorists.

Facial recognition is dependent on having a good frontal view of a face and can be obscured by beards or glasses. Gait analysis can also be easily deceived. But the Jetson algorithm used to identify unique cardiac


signatures is claimed to be over 95 percent accurate under the right conditions.

It uses a technique called laser vibrometry, which focuses an invisible laser spot about the size of a quarter on the target. A special gimbal mechanism corrects for vibrations; however, the subject must be sitting or standing relatively still in order for the device to be effective.

Noninvasive systems for cardiac signature recognition could have many other applications.

A wrist pulse sensor is already being tested as an alternative to fingerprint identification in Canada, and the technology may someday enable physicians to scan for cardiac conditions without the need for electrodes and leadwires.

For information: Combatting Terrorism Technical Support Office.; Web site: <https://www.cttso.gov/>



Wearable Gas Sensor

GAS SENSOR

Researchers have developed a wearable sensor patch that can be used to monitor environmental or human health hazards continuously.

The sensors incorporate nanomaterials that are already widely used for gas sensing, but in order to make them flexible they are deposited by a CO2 laser in a highly porous pattern. Electrical current is applied to a separate series of serpentine lines coated with silver to generate the heat required for the detectors to function. Each sensor is selective for a specific molecule; however, hundreds of sensors can be combined to decode complex mixtures of compounds.

In addition to environmental detection of pollutants or toxins, devices like these could be used to measure gaseous biomarkers from the human body (such as those in exhaled air) or to enhance safety by monitoring exposure to harmful gases in an industrial setting.

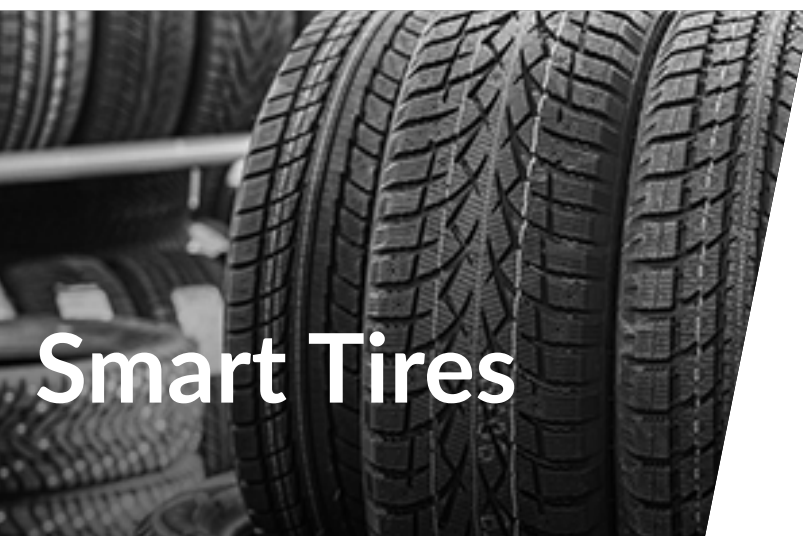
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to the driver if it's skidding on ice or losing pressure. More than that, this next generation of high tech tires is being designed to communicate directly with the car's control unit to automatically make corrections such as engine speed, traction control or even steering to avoid obstacles.

An advanced sensor about the size of a quarter contains the processor, radio and wireless 5G communication. It will complement other systems like lidar, sonar, radar and cameras to enhance safety in autonomous vehicles. Eventually, the system will also be able to communicate with other drivers in vehicles equipped with receivers.

The manufacturer is also planning to offer an aftermarket cockpit-mounted system for performance car owners that can be paired with their high end track tires.

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Smart Tires

The tire of the future will be far more sophisticated than the simple rubber donuts of yesteryear. Take for example the Cyber Tire, which can radio information


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In Uncertain Times, You Have More Control Than You Realize

continued from page 1

and will disrupt every industry there is. However, what this pandemic disruption is showing us is that many organizations are quickly shifting to reposition their workforce to new roles or remote roles by digitally banding together and working efficiently from a distance.

It is easy to consider going remote when you have a desk job or a career that is already rooted in flex-time industries; however, what about those that don't have it as easy?

Virtual reality and augmented reality (VR and AR) are two technologies that have started gaining traction in recent years given the exponential changes of the Three Digital Accelerators of bandwidth, computing power, and processing power that I have discussed since the early eighties. Now more than ever, we can see industries ordinarily unable to go remote because they were based on the need for a customer to be physically present figure out ways to provide a remote customer experience.

An incredibly outside of the box example can be found by way of museums, zoos, and even theme parks going remote, as discussed in this Insider article where Monterey Bay Aquarium and even Walt Disney World have gone remote using live streaming video and a form of virtual reality applications like Google Street View, so guests having to cancel their vacation can still "walk through" Disney World with their families for something to do. If Walt Disney World, an in-person entertainment giant with visceral experiences, can find a way to go remote, imagine the remote possibilities in several

other industries around the world.

Innovation Is Needed More Than Ever

While our worlds may seem to be in a period of indefinite stasis, the world and peoples' needs don't stop. A Hard Trend most people take for granted is that there are over 500 cycles that continue, such as the sun setting tonight and rising tomorrow, the stock market going down and going up, and the pandemic beginning and ending.

If you have followed my writings, you know that I want us all to become positive disruptors, creating the disruptions that need to happen in order to make the world a better place for all. Being a disruptor during times like these might sound contrary to what people want; however, when you're a positive disruptor, you choose significance over success, focusing much less on you and what you have done, and more on what you can do for others in a significant way. When you look for ways to elevate your significance in times like these, you can find new ways to change your community, your state, your nation and, if you think big enough, even the world for the better. I can't think of a more needed time than right now. Ask yourself: What can you and your organization do now that would have a significant impact on others?

Stop looking at this economic and social slowdown as a time to wallow in the disruption of your status quo; it is also a free pass to innovate as much as you can! An identifiable Hard Trend based on the science of cycles is that the pandemic will end and the market and economy will bounce back. So, in the meantime, focus on the positive difference you can make and what you can disrupt in a positive way – what you can do now to make a difference by helping others. The needs are massive and so are the opportunities to make a significant difference!

Looking for Opportunity in Helping Others

Consider this: Perhaps your organization has

shifted to remote work with ease, whereas a customer of yours in a similar industry is struggling and falling behind. Is there a way to help them now? What if, in this unusual time of need, you didn't charge them for the help? Would they remember that generosity in the future?

This pandemic has inadvertently leveled the playing field; therefore, no one is safe from disruption, and this global disruption is happening a lot faster than digital disruption. We're all in the same boat, so one major way to innovate is to find ways to help your customers through this in ways that you haven't thought of before. You're thinking too small if you are thinking of offering them a discount on your product or service. It's better to look at their desperate needs now and ways that help them stay afloat, which in turn might help you stay afloat.

This concept isn't solely constrained to business and customer relationships; this touches on the topic of thinking about your employees who rely on you. You may be in business as a unified organization, but an employee now working remotely with kids at home and having to now think in terms of profits and losses in their personal life has unmet needs as well that you need to think about and act on. As you work to keep the doors open, what are you doing to take care of your own?

Let's return to the entertainment industry with an example of the NBA shutting down during this crisis. While it is no secret that owners, players, and team affiliates will be financially okay during this situation, the workers at the snack bars, restaurants, and merchandise stores will feel a major financial impact if they can survive at all. However, many teams have stepped up and donated portions of their salaries to cover the losses the service employees will feel while out of work, which in turn incentivizes them to continue to work

for the stadiums and gives them a sense of belonging to the organization.

That has already created a positive change throughout the rest of the NBA, as other teams follow suit and help their fellow man and woman when in need. This positive disruption is spreading to other sports faster than any virus!

Anticipation Will Get You Through This

Hard times will pass, but the Hard Trend in times of complete uncertainty is that a new day will dawn with new opportunities to make a significant difference unfolding with it. There will be a tomorrow, so what are you doing to anticipate, innovate, and seize the opportunity it brings with it? Are you using this pandemic to be a positive disruptor, or will COVID-19 close your business's doors for good? It doesn't have to.

As my good friend W. Mitchell, who has been through several major accidents, says; "It's not what happens to you, it's what you do about it." The way I see it, COVID-19 isn't our biggest problem, it's what we are doing, or not doing about it. Those of you who have read my latest book, *The Anticipatory Organization*, know one of my principles is: *Take Your Biggest Problem and Skip It*. The real problem for your business isn't the virus, it's how you are reacting to it. Don't panic; focus on defining the real problem both you and your customers are having and use the certainties found in *Hard Trends* to reveal a solution.

There will be a future after the pandemic, and if you are anticipatory, pre-solving predictable problems before you have them and becoming a positive disruptor creating the transformations that need to happen, you will find the future is bright.

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