



# TECHNO

THE BIG IDEAS THAT  
ARE CHANGING EVERYTHING

# TRENDS

## 7 FAILURES OF BUSINESS GROWTH (PART I)

BY DANIEL BURRUS, CEO OF BURRUS RESEARCH



If you want to truly stand out in today's marketplace and lead your company to new heights of success, you have to work smarter and not

harder. For many leaders and managers, that's easier said than done.

Despite their best intentions, they get snarled in the glaring failures that derail business growth and stagnate profits.

In order for you to avoid the most common traps that stifle business growth, you have to be aware of the top failures and know the strategies to combat them. The following will help you turn failure into success and enable your company to exceed growth projections.

### #1 FAILURE TO ANTICIPATE

Most companies react to the changes that are taking place right now. They react to customers, react to the economy, and react to government legislation. Instead of merely reacting, you need to anticipate future changes and plan for them. The fact is that you can anticipate a great deal in your industry. For example, are cell phones of the future going to have a high definition screen with high definition video? Most people think so.

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## 7 FAILURES OF GROWTH *(continued from page 1)*

In the future, will we have better bandwidth for both wireless and wired Internet connections? You'd be hard-pressed to find someone who says "no." In the future, will we have more storage in our computers? Of course! Apparently you're certain about quite a few future events. Therefore, instead of being a crisis manager and reacting to change, anticipate changes so you can drive growth from the inside out. To do that you have to spend one hour a week not thinking about the crisis of the moment, but rather thinking about the predictable opportunities that are waiting for you. Make a list of all the things you're completely certain about. Then look at your strategies and base them around that list. Only then will you become more of an opportunity management organization.

### 2. FAILURE TO COMMUNICATE

There is a big difference between informing and communicating. Informing is one-way, static and seldom leads to action. Communicating is two-way, dynamic and usually leads to action. Ironically, we have all these fantastic communication age tools, but we're using them in an information age way. Realize that the information age is not our friend; it's our enemy in disguise. Ask yourself, "In our organization, are we better at informing than communicating?" For most people, the answer is "yes". And if you can't communicate internally with your staff, how can you communicate externally to customers and shareholders? This is not to say that you should stop informing people. However, you do need to tap into the true power of communication. When you focus on maximizing two-way communications, you can create a communication-age organization and accelerate positive change.

### JUMP-START YOUR COMPANY'S SUCCESS

As the word "recession" appears more frequently on the news, avoiding costly strategic mistakes is becoming more crucial to long term growth. Next month, I will share additional failures to avoid and the strategies to combat them that will pay off for years to come.

## TECHNOLOGY NEWS HIGHLIGHTS

### PRINTING LIVING CELLS

The same technology that has made rapid prototyping of plastic and electronic parts possible is now being used to create structures out of living cells. Several research teams are using inkjet printers to build three-dimensional tissues by suspending living cells in biocompatible "ink" and depositing them on a collagen substrate, however, the structures are typically very fragile. In a recent breakthrough, at least one group successfully formulated ink that is liquid inside the printer, but solidifies once it's released. This creates a protective layer around each cell to mimic the flexibility and rigidity of living tissue. Researchers still have several hurdles to overcome before we can expect them to begin turning out replacement organs including understanding how cells communicate with each other once they are part of such a structure. In addition, they are looking for ways to integrate a network of vessels to provide needed nutrients at the cellular level. In the meantime, inkjet-printed tissues will very likely find applications as test materials for drugs, living sensors, and even cell-driven batteries.

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### CANCER-KILLING VIRUS

A new drug called Reolysin® is currently being tested as a treatment for certain types of cancer. It works by introducing a virus (Reovirus) into a cancerous cell where it reproduces, causing the cell to burst and releasing more viral particles to infect other cancer cells. The virus itself is a benign bug that is generally found in water supplies and the digestive systems of adults. The treatment is most effective in tumors with an active Ras pathway – a means of signal transduction that becomes hyper-activated during cancer development and causes cells to proliferate. These pathways are estimated to be active in about 30% of all cancers. Reolysin is currently the subject of six Phase I and Phase II clinical trials in the U.S. and U.K.

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## MECHANICAL MEMORY

Cambridge researchers have come up with an alternative to silicon-based RAM chips that could translate into more energy efficient data storage. The new technology consists of pairs of nanotubes, one of which is coated with an insulator and covered with a metallic layer. The second is charged with a positive voltage so that, when an electrode adjacent to it also receives a positive charge, the uncoated nanotube is pushed into its coated twin by electrostatic repulsion. When the voltage is removed, the uncoated nanotube springs back, leaving a positive charge on the coated nanotube. This is essentially equivalent to switching its data bit from 0 (negative) to 1(positive). Because the microscopic switches physically break contact, there is no "leakage" of electrons as with silicon transistors. The result is less wasted energy in the form of heat.

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## HOMEMADE SPY ROBOT

Question: What do you get when you combine WowWee's Roboquad robot with Skype's videophone service? Answer: A remote viewing system that lets you spy on your own home from anywhere on the Web. Developed by the founder of Robodance.com, the hack works like this: A remote laptop running Skype places a free call to a home computer. The home computer, which is running Robodance, converts the callers voice commands to robot commands and transmits them to Roboquad via an infrared transmitter. Roboquad executes those commands and begins transmitting audio and video back to the laptop. The user can now control the remote spy robot using only their voice.

*For information: Android Technologies, Inc., Web site: [www.androidtech.com](http://www.androidtech.com), [www.robodance.com](http://www.robodance.com)*

## "GREEN" JET

A 39-year old, Czech-built training jet made history as it completed the first jet flight to be fueled by nothing but biodiesel. The L-29 craft was airborne for 37 minutes and reached an altitude of 17,000 feet running on recycled restaurant vegetable oil (although the single stage turbojet can run on anything from pump gas to home heating oil too). The next step is an eight-leg transcontinental trip from Leesburg, FL to Reno, NV early this year. The team also plans to modify a Learjet 25 for a round-the-world flight in 2009.

*For information: Green Flight International, 1321 Apopka Airport Road, Hangar #36, Apopka, FL 32712; phone: 727-415-7253; Web site: [www.greenflightinternational.com](http://www.greenflightinternational.com)*

## SYNTHETIC MICROBE

Scientists recently succeeded in replicating the genetic structure of a bacterium using only lab chemicals, bringing science one step closer to creating "artificial life." Once the genome was mapped, the genetic blueprint was divided into 101 segments, and the genes that would allow the bacterium to infest other organisms were disabled. The individual pieces were synthesized by a variety of biotech companies and then assembled in stages to create a genome that contains 580,000 base pairs. Prior to this, the largest synthesized DNA on record contained only 32,000 base pairs. Stringing together DNA does not constitute a living organism however. The researchers have yet to "boot up" the artificially created genome by transplanting it into a living microbe, but they hope to accomplish this step by the end of 2008.

*For information: Hamilton O. Smith, J. Craig Venter Institute, 9704 Medical Center Drive, Rockville, MD 20850; phone: 301-795-7000; Web site: [www.jcvi.org](http://www.jcvi.org)*

## TECHNO TOILET

A new "smart" toilet is due to hit the market soon that can automatically diagnose urinary system disorders. Built-in sensors measure the total amount of urine as well as the force of flow to detect problems like enlarged prostate or overactive bladder. The data can be stored or transmitted over a network for review. The device is intended for use in

hospitals and other medical facilities and will carry an estimate price tag of 2 million yen (about \$19,000US).

*For information: Toto Ltd., 1-1 Nakashima 2-chome, Kokurakita-ku, Kitakyushu, Fukuoka 802-8601, Japan; Web site: [www.toto.co.jp/en](http://www.toto.co.jp/en)*

## STEM CELLS FROM SKIN

In two separate studies, researchers from Japan and the University of Wisconsin have reported success in cultivating stem cells from skin cells. The breakthrough could remove a major hurdle in the stem cell debate by avoiding the religious and ethical concerns associated with the use of embryonic stem cells. Induced pluripotent stem (iPS) cells were cultivated by adding four genes to human skin cells. After approximately one month, the cells had turned into ten different types including nerve, muscle, bone, liver and pancreas. The process is still too costly and time-consuming to be put to practical use for growing transplant tissues. Safety is also an issue since one of the retroviruses used to insert the genes into the skin cells has been linked to cancer. In addition, comparative studies are needed to determine whether the reprogrammed skin cells will differ significantly in function from embryonic stem cells.

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## SELF-TUNING GUITAR

As any guitar player can tell you, the need to continuously tune and retune is one of those “necessary evils” made inevitable by temperature changes and stretched strings. In addition, the fact that different songs use different tunings requires performers to keep multiple instruments on hand, or subject their audience to the atonal droning of retuning on stage. Until now. The Gibson Robot Guitar puts an end to manual tuning by using microprocessors to detect which strings need adjusting. Tiny servomotors on each tuning peg automatically rotate until the string is in pitch. And it can be programmed with up to six different tuning choices. First run limited editions hit stores in December.

*For information: Gibson Corporate, phone: 615-871-4500; fax: 615-889-5509; Web site: [www.gibson.com](http://www.gibson.com)*

## ROCKET ARM

A new mechanical arm is currently being developed that is powered by a small rocket. The radical new design is closer in function, size and power to a human arm than previous prosthetics, and functions more naturally. The parts are powered by an elbow-mounted cartridge containing 200 milliliters of concentrated hydrogen peroxide. When a small amount is squirted into an iridium catalyst, the liquid vaporizes, driving small pistons that move the elbow, wrist, and hand. The small canister will power the device for 18 hours of normal activity. Conventional artificial arms have only two joints – an elbow and a claw – and are capable of lifting five to six pounds. The rocket arm, on the other hand, has twenty-one joints, five fingers that open and close independently, and can curl 20-25 pounds. It should be ready for human trials in 2009.

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## BIOPLASTICS GO COMMERCIAL

After years of research, the first commercial-scale bioplastics plant is gearing up for production. The product – called Mirel™ – is a biodegradable and sustainable polyester made from corn sugar that has been fermented by genetically engineered bacteria. In comparison to petroleum-based plastics, the process will reduce greenhouse-gas emissions by two-thirds and use 80% less petroleum. The plant, located in Clinton, IA, is expected to generate 110 million pounds of the plastic annually.

*For information: Metabolix, 21 Erie Street, Cambridge, MA 02139; phone: 617-583-1700; fax: 617-583-1768; Web site: [www.metabolix.com](http://www.metabolix.com); Archer Daniels Midland Company, phone: 800-637-5843; Web site: [www.admworld.com](http://www.admworld.com)*

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