Dawson Church:

Leapfrogging:

How Species, Companies, and Nations Jump Over Their Contemporaries

Duke Wilhelm-Ernst of Sachsen-Weimar, one of the most cultured and distinguished nobles of his era, sat in state on Palm Sunday, March 25, 1714, in his Castle Chapel. Enthralled, he and his courtiers listened to the new cantata, "King of Heaven, Be Thou Welcome," composed by his genius Concertmaster, Johann Sebastian Bach.

Bach wrote most of his music for the wealthy nobles—temporal and spiritual—of his day. Even in the nineteenth century, orchestral music, which required performers and composers, was so expensive that it could be afforded only by the nobility, or by the wealthiest members of the middle class. All that changed when recorded music came along. Suddenly, anyone who could afford a Victrola and some disks had access, on demand, to the music that previously was available only to the wealthiest, and only on certain occasions.

Today it's not just individual songs that can be summoned on demand. Teenagers load entire libraries, thousands of numbers, from each other's iPods at whim,

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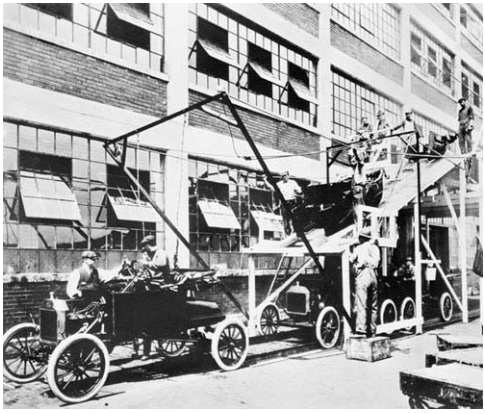
usually without payment. The recorded music to which any global villager today has access for free dwarfs the entire listening career of the Duke of Weimar. Today's teenager, with a minimum wage job, moody gaze, pierced lips, black ZZ tattoos, and baggy pants, has exponentially greater resources than even the wealthiest baroque-period patron of the arts.

I call this idea *leapfrogging*. A species, nation, or business that leaps over the heads of its neighbors, making their best adaptations or behaviors obsolete in a comparatively brief instant, enjoys a huge advantage for a prolonged period of time.

The history of automotive engineering is replete with ideas that leapfrogged the competition. Henry Ford is famous for putting production of the Model T Ford onto a production line. As each car moved down the line, specialized workers installed just one component onto the unit, till it rolled off the line fully assembled. Yet an even more startling innovation was required in order for assembly lines to function. What truly allowed Ford to leapfrog the competition was the idea of interchangeable parts.



Before then, each part of a car was machined individually. Perhaps a magneto was bolted onto the engine block with three bolts. During assembly, an engineer would drill the holes individually, and that particular magneto would fit that particular car. But because each part was custom drilled, the bolt pattern would be slightly different on each car—which meant that you couldn't take the magneto off one car and bolt it to another. This seemed like the obvious way to do things until the assembly line came along. Suddenly, every magneto had to fit any Model T Ford, and interchangeable parts were essential. The idea was one of several that allowed Ford to leapfrog the competition and profitably build a low-cost, mass-market automobile.

What does leapfrogging look like? What conditions encourage and support leapfrogging? How can you leapfrog over the problems that present intractable obstacles to your contemporaries, in life and in business? How can you turn leapfrogging from an occasional lucky accident into a routine event?

The Comfortable Illusion of Linear Change

Human beings are comfortable with linear change. Chemists measure the rate at which the temperature of a substance rises as heat is applied. Economists measure the annual growth rate of economies. Social scientists track the growth or shrinkage of populations, and of subgroups within those populations. Atmospheric scientists measure global warming.

Linear, incremental change is present in nature. We witness our houseplants growing gradually if we water and feed them, and declining gradually if we neglect them. Our bodies grow incrementally through the end of our teen years. We progress, grade by grade, through school.

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"Everything that can be invented has been invented "

–Charles Duell
U S commissioner of Patents

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The problem with this linear mindset is that much change is sudden and discontinuous. When water reaches 100 degrees centigrade, it *boils,* and when a balloon being filled with air at a regular rate becomes too big, it *pops*—these are sudden, discontinuous changes of state. Every year thousands of medical patients report sudden miraculous cures, after the medical establishment has given up on their recovery. The dinosaurs became extinct suddenly, after they had dominated the biological spectrum for 165 million years—three times as long as primates have been around. Some kids from the ghetto work hard to become attorneys or surgeons, leapfrogging the living standards of their contemporaries in a single decade.

It's comforting to think of a world in which we can predict the future with some certainty. Yet if we take the rate of change of yesteryears and extrapolate it into the future, there is only one thing of which we can be certain: We will be wrong.

Sometimes societies leapfrog over other societies, just as the kid from the ghetto can quickly attain a much better life than her peers. In the mid 1850s, people in Latin America had a higher per capita income than their contemporaries in the United States.[1] Border cities such as El Paso/Juarez, and San Diego/Tijuana are today's living evidence of the importance that social, financial and political institutions can make.

Consider the European Union countries: With a growth rate of around 3 percent, the population doubles its wealth every 35 years.[2]

Consider China: With a 12 percent growth rate, the population doubles its wealth every six years.

Consider Zimbabwe: With a negative growth rate and terrible governance, its population is about twice as poor today as it was 20 years ago.

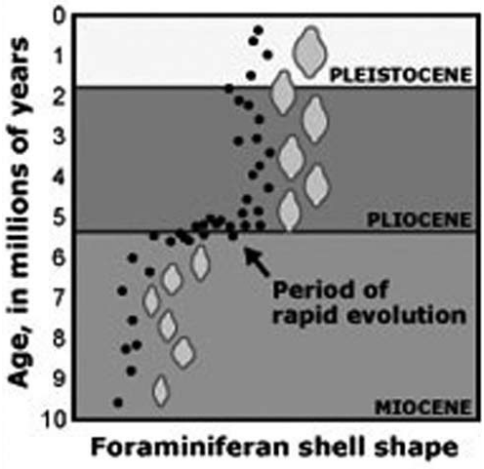
Every day, societies are making choices that either create or destroy wealth for their citizens. Certain choices can lead to a country leapfrogging over its neighbors in a time span less than single generation. In 2005, the Gross Domestic Product (measured by purchasing power parity) of emerging economies exceeded that of developed countries for the first time.[3]

Yet raw unbridled economic growth is unsustainable. If China's and India's current growth continues, for instance, they will gobble up the world's entire paper supply in 50 years. So as countries leapfrog ahead in economic growth, they must stimulate innovations that leapfrog current materials and technologies as well.

Species Leapfrogging

Evolutionary scientists used to perceive natural selection as a long, slow process by which Mother Nature selected certain traits over hundreds of generations whilst weeding out others. But the fossil record and modern dating techniques have shoved that linear model aside for more dramatic leaps. "Punctuated Equilibrium," or "punk eek" in the trade, reveals that species and ecosystems appear to go through long periods of stability, perhaps millions of years long, punctuated by periods of rapid, discontinuous change.

The opposable thumb is a prime example of a single anatomical change that enabled one species, *Homo sapiens sapiens,* to leapfrog over all the other lines of primates then competing for space in that ecological stratum. Having a thumb that rotated out and around allowed early humans to grasp and manipulate items in new ways. They could thus use tools, and with those tools construct other tools, to the point where they began to dominate whole ecosystems in a way that was not possible for primates without opposable thumbs.



Going back to the other end of the evolutionary scale, one particular variety of micro-organisms did a good job of surviving the planetary catastrophe of the late Cretaceous period that made the dinosaurs extinct. At that time there were many varieties of single-celled plankton, but just one of them survived in

large numbers. This lucky variety was the diatoms. Scientists have speculated that the reason that diatoms survived the calamity that claimed so many other species is that they are able to form a protective cyst around themselves. They do this whenever the water they live in dries up.

This adaptation has nothing to do with surviving a catastrophic planetary event. Yet it allowed them to leapfrog over all the other varieties, like radiolaria and coccoliths, by going dormant while the mass extinction went on around them. Once conditions returned to normal, they broke out of their cysts and got on with living their diatomaceous lives; their increased numbers allowed them to rapidly re-inhabit their environmental niche.[4]

Science itself is subject to punk eek. It goes through sudden, disorienting spurts of discovery, with prescient disruptive insights followed by long periods of incremental development in which theories are tested and extended.

Social Leapfrogging

The separation of powers is a recent, and remarkable, social innovation, one that has enabled societies where it exists to leapfrog over those in which the bad decision of one leader can drag the whole nation into decline. Today's Africa is a laboratory of experiments in governance; those in which functioning democracies have separate power centers have generally prospered, while those countries ruled by the *Monoikos,* or "strong man," have fared well or ill according to his mix of talents.

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"Airplanes are interesting toys but of no military value"
–Marshall Foch
WWI French Commander

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Another example of a social innovation that allows societies and individuals to prosper is the land title. Countries which give clear title to land encourage landowners to put the land to productive use. By comparison, experiments in abolishing land titles, such as Vladimir Lenin's declaration in October 1917 that, in Bolshevik Russia, "Private ownership of land shall be abolished forever," are usually a great leap backward; the collective farms of the Soviet era were notoriously inefficient. Other ill-judged attempts to undermine land title, most recently in Zimbabwe, and in the 1980s in some South and Central American countries, have backfired, as occupants without title to the land have little incentive to improve it or use it productively.

The separation of church and state is a principle that allows societies to progress. Public policymaking is a difficult and error-prone business, in which populist sentiments are all too likely to hold

more sway than farsighted judgment. But when religious imperatives that are completely extraneous to the policy goals are added to the mix, the chances of sound decision-making diminish even further. Societies that have a separation of church and state can leapfrog those that remain bound in a theocratic straightjacket. So can those that observe the rule of law.

Commodities Leapfrogging

One of the most passionate public arguments of the current decade is the discussion of whether or not we are at (or past) "Peak Oil"—the point at which the world's oil production has reached its peak. Some say that we already reached this point in the late 1980s, others say that Peak Oil is still a long way off.

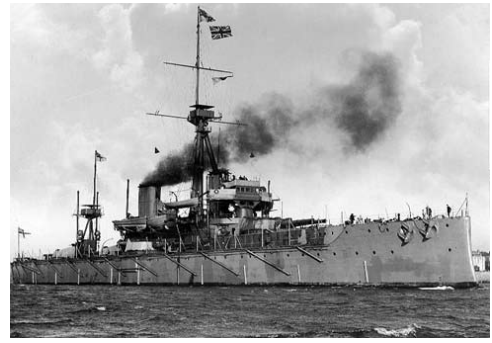
While this lively discussion provides bags of entertainment, history is likely to throw the whole topic into its uncaring shredder long before the controversy is resolved. Why? Sheik Zaki Yamani, Oil Minister of Saudi Arabia, the world's largest oil producer, said in the 1970s, "The Stone Age did not end for lack of stone, and the Oil Age will end long before the world runs out of oil." What he wanted to impress upon his contemporaries was that every technology has its run—and that run comes to an end. From plasma conversion of industrial waste, to cheap ethanol from junk biomass, to hydrogen conversion, to breakthroughs in solar power, history is knocking on oil's door. A new technology will come along and leapfrog oil, as surely and as quickly as steamships put the windjammer into the scrap yard.

Technological Leapfrogging

Apple Computer has been able to leapfrog its competition not once, but twice. The first time was with the Macintosh computer in 1984. In a world accustomed to the incremental improvement of PCs, Apple suddenly found itself with a 10-year technological lead. It squandered that lead by pricing its products uncompetitively, and with a host of other blunders—but that's another story. And almost two decades later, it again leapfrogged the competition with the iPod digital personal music player.

The Soviet Union leapfrogged over the United States by putting Yuri Gagarin into orbit in 1961. At the time, many in the East and the West—including U.S. President Dwight Eisenhower—believed that the central planning model of the Soviet Union was so efficient that it would lead to greater economic growth than its competitors. Eisenhower warned his contemporaries not to succumb to the greater material prosperity offered by communism. The two countries then proceeded with furious attempts to leapfrog each other in arms and global prestige, until the social fabric of the Soviet Union, and the country itself, fell apart.

In 1906, Great Britain launched a new battleship, HMS Dreadnought. Faster than any other large ship on the seas, with a heavier weight of ordnance, with all her guns housed in rotating turrets, she made every other battleship in the world obsolete at a stroke.



Fifty years after the Dreadnought was launched, Malcom McLean, the boss of a trucking company, had an idea that produced a similar discontinuous change in maritime transportation. McLean's brainwave was to load a collection of goods that would normally have traveled in the hold of a freighter, pack them into 58 metal containers, and strap them onto the deck of the Ideal-X, a World War II surplus oil tanker. The invention of the shipping container leapfrogged other methods of transportation at a stroke.

Businesses rise and fall with remarkable speed. Google celebrates its tenth birthday in 2008, but it has around *10 times* the market capitalization (the combined value of all its stock) of General Motors, which celebrates its *centenary* in 2008. The Dow Jones Industrial Average indexed the stock value of 30 companies, which are added or dropped from the Dow periodically. Remember Corn Products Refining? Remember Woolworth? Both of these companies were components of the Dow in 1950. Like so many others, these companies that comprised the Dow in earlier decades have been surpassed and gone belly-up, or been so chopped and diced into pieces that they are no longer recognizable.

Consciousness Leapfrogging

Consciousness is a defining trait of human beings and many other animals. The society that first learns to harness the power of consciousness to produce change will leapfrog every other.

As consciousness changes, the world changes. For most of human history, and as late as the 19th century, few people objected to slavery, aside from the slaves themselves. Today it is difficult to find an individual in Western societies who does not believe slavery to be wrong. In the space of just two centuries, there has been a 180-degree change in consciousness. Societies who are at the leading edge of consciousness change can accomplish things that other societies cannot. Examples include:

The Hunger Project. Though this bold social initiative of the 1970s did not eradicate hunger, it was the first large-scale attempt to collectively imagine a world without hunger, a project of consciousness inconceivable just a century earlier.

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Computers in the future may only weigh tons
–Popular Mechanics
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Quantum Physics. The world of quantum physics, in which every possibility exists in the quantum field, while just one result precipitates out of the range of possibilities, leapfrogged the sense of empirical certainty that characterized the world of Newtonian mechanics. Quantum physics points to the importance of attention as a key factor determining the shape of the world around us.

Today, string theory postulates that atomic particles are simply vibrating strings of energy. Echoing Einstein's famous equation with mass on one side and energy on the other, when you increase the energy of a string (the rate of vibration) it shows up as increased mass. Heavy particles like protons have a higher vibrational frequency than "light" particles like electrons. And in a spectacular display of quantum leapfrogging, electrons themselves can jump out of phase in our universe, perhaps, and into phase in another, without any time elapsing between the events.

Globalization. Those countries that embrace the reality of a global economy will leapfrog those that resist it. The Chinese Emperor Quinlong was approached by England in 1793 with a request to open a trading relationship. At the time, China's income per head was much greater than that of Europe. Yet Lord George Macartney, the emissary to the Chinese court, returned to King George III with this rebuke from the Chinese emperor: "We have not the slightest need of your country's manufactures." The result was two centuries of economic stagnation for China as the West leapfrogged ahead. In

the years up to 1950, Chinese incomes fell by a quarter, while those of Britons rose fivefold.[5] Acknowledging the global economy as a reality, and maintaining a consciousness that seeks ways to function in that context, primes individuals, organizations, and countries for success.

Human Rights. In the late 1970s, when U.S. President Jimmy Carter pronounced respect for human rights to be a component of the country's relationship with other countries, he was widely mocked for elevating an intangible moral value to the level of the gold, guns, and glory of the world of *realpolitik.* Yet this was a moral watershed for humanity, as no world leader had ever made such values into policy before, and few other leaders could even wrap their minds around such a concept. This consciousness has grown to the point that today, even though the world may have little practical leverage over genocidal regimes, their actions are universally censured—a moral leapfrogging over previous eras, which turned a blind eye toward atrocities.

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"You can no more win a war than you can win an earthquake"
–Jeannette Rankin

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Around the world, one thousand innocent people die each day through gun violence.[6] Another expression of moral leapfrogging is arms embargoes, gun control, and other government actions that limit the proliferation of firearms.

Britain is famous as a relatively civil society, football hooligans aside. One reason for its low murder rate is the almost-complete unavailability of firearms. If you want to own a gun, you can—as long as it's locked in the gun cabinet of a registered hunting association. In Agatha Christie's mid-century murder mysteries, the premature departure of the deceased was accomplished by ingenious devices that took a long time to think up and stage, like poison and fake accidents. Britons can't just walk into a store, purchase a gun, and keep it in the glove compartment of their car.

The founding fathers of America declared that its citizens have "the right to bear arms." Congress interprets the definition of arms as meaning everything up to and including semi-automatic assault rifles. As a result, when road rage escalates, there are plenty of pistols in glove compartments to stoke the social danger. Societies that ban firearms, as Britain has done, may one day be regarded as having morally leapfrogged over those that have not.

Success. The definition of "success" to Paleolithic humans meant simply physical survival. Success to 20th-century suburbanites meant something different: the accumulation of financial wealth. A leapfrogged definition of success for the 21st century and beyond

includes happiness, environmental beauty, economic sustainability rather than unchecked growth, caring relationships, and attention to spiritual and emotional needs.

Spirituality. The old model believed that consciousness was an epiphenomenon of matter. Scientists held the idea that life progressed from simple forms to more complex forms, and eventually the most complex forms evolved consciousness in order to help them understand and organize their environments.

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"If you want to awaken all of humanity then awaken all of yourself If you want to eliminate the suffering in the world then eliminate all that is dark and negative in yourself Truly the great est gift you have to give is that of your own self transformation "

–Lao Tzu

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The most recent research turns this order on its head. Scientists have observed consciousness affecting matter, such as the rate of decay of beryllium atoms. A recent study of AIDS patients showed that a single belief held in particpants' consciousness provided the most striking correlation with the rate of progress of the disease. In those who believed in a punishing God, biomarkers of the disease advanced four times faster than in those who believed in a benevolent Deity.[7] Beliefs held in consciousness can literally kill or heal.

Societies and organizations that feed the spiritual well-being of their people can leapfrog those that do not. Spirituality and a rich social network have been shown to reduce hospital stays,[8] increase general health,[9] and boost longevity by several years.[10] A healthy society is a more productive and innovative society, and a society that honors the spirituality of individuals is a healthier society.

Some Frogs to Watch

Some fascinating examples of potential leapfrogging are evident today:

1. **African Telecommunications and Energy.** A century and a half after first message was sent across an underwater telegraph cable between Britain and America ("Glory to God in the highest, and on earth, peace, good will to men"—August 16, 1858), Africa is leapfrogging over the telecommunications revolution by adopting cell phones. While it took a hundred years of capital-intensive investment for Western countries to wire themselves up, Subsaharan Africa, though a collection of the world's poorest countries, has leapfrogged this entire telecommunications infrastructure. In China, India, and Africa, the number of cellular handsets now exceeds the number of land-line handsets. Next, it is likely that Africa will

leapfrog the electrical grid of Western nations by harnessing its abundant solar energy to power efficient LED devices. This could contribute to rapid rates of growth in some African countries, despite their lack of transparent governance, development infrastructure, and technological skill base.

2. **Nanotechnology.** Nanotechnology provides the promise of changing, by huge orders of magnitude, some of our core assumptions about the efficiencies of common processes.

Conventional computers store every bit of information as either a one or a zero on magnetic media such as a hard drive, using the laws of Newtonian physics. Quantum computers store information as an atomic particle with a known spin. Theoretically, they can process information at a speed many orders of magnitude greater than a conventional computer. Your laptop today still follows the basic design of the ENIAC computer of 1945, though fortunately it doesn't weigh 30 tons and have 19,000 vacuum tubes, as the first electronic digital computer did. Nanotech quantum computers can be made small enough to fit into a single thread in a garment; in the coming century computers will likely shrink to the point where they are invisibly implanted into many of the common artifacts of everyday life, rather than being bulky specialized machines.

Nanotechnology will leapfrog contemporary medical treatments by combining technology with biology. Simple artificial red blood cells, which are now being tested, store oxygen and then release it, just like the red cells in your blood—but with enormously greater efficiency. Modeling shows that if you were to replace 10 percent of your red blood cells with their nanotechnological equivalents, you could "do an Olympic sprint for 15 minutes without taking a breath, or sit at the bottom of your pool for four hours."[11] Societies and organizations with a lead in nanotechnology will leapfrog those that neglect it.

3. **Energy Psychology.** Energy medicine and Energy Psychology, which treat the electromagnetic field of a patient rather than directly manipulating organs with drugs and surgery, are demonstrating the ability to produce rapid, discontinuous, and sometimes immediate psychological and physical healing. The electrical charge of a healthy human cell is stable at about 90 millivolts. The charge of an inflamed

cell rises to 120 millivolts, then drops to 30 millivolts as the cell degenerates.[12]

Our bodies are sensitive to extremely small fluctuations in the electrical and magnetic fields that surround us. Making minute changes in these fields can stimulate our cells to behave in different ways.

Pulsed Electromagnetic Fields are showing themselves effective in treating depressed patients who have proved resistant to drugs and psychotherapy.[13] Low-intensity currents have been shown to promote the healing of broken bones, and are a growing feature of orthopedic medicine. Tiny piezoelectric charges generated by simply rubbing or tapping certain points on the skin with our fingertips appear to travel through our body's connective tissue, which is a semiconductor, and when administered by a skilled practitioner, can reduce anxiety, depression, and stress. The low-tech methods of Energy Psychology have had astounding results even when dealing with the stress of conflict and war, in places such as Kosovo and Rwanda.

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"We are in a school for gods wherein in slow motion we learn the consequences of thought "
–Brugh Joy
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Energy Psychology and energy medicine have leapfrogged drugs and surgery for many individual patients. They are safe and noninvasive, and early research shows that they may have far greater healing effects for many conditions than conventional medical alternatives. As a result, they may become the front line of treatment, leapfrogging risky and invasive procedures that are the standard of care today.

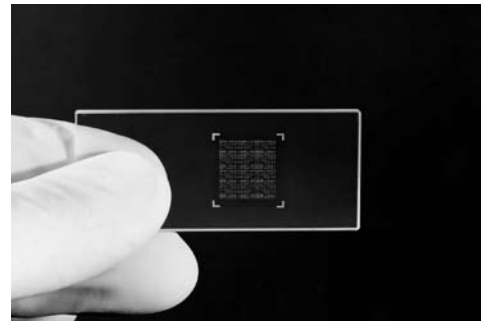
4. **Gene Chip Consciousness Experiments.** DNA was once thought to be an unalterable blueprint governing every aspect of human structure and function. The new science of epigenetics is now highlighting the reality that genes must be *read* by the cell (or *expressed,* in the lingo), in order to have an effect, and that the signals that govern gene expression—telling the cell to read the gene blueprint and use it to build proteins—come from outside the cell.

One of the places in which these epigenetic signals originate is human consciousness. With proper funding and well-designed experiments, within a decade we will begin to map which aspects of consciousness affect particular patterns of gene expression.

Gene chips put hundreds of strands of DNA on a single chip, and allow researchers to determine which genes are being expressed during the course of an experiment. Staggering though it may sound, science is jus a few experiments away from linking particular

thoughts, emotions, and beliefs with changes in the genes expressed, as determined by DNA chips.

Every one of us is already changing our gene expression by our thoughts, feelings, and beliefs every day—a form of unconscious genetic engineering. Proper experiments will allow us to understand the cause and effect links between them, and start to do *conscious* genetic engineering, creating health and longevity interventions that are safe, noninvasive, and that work in harmony with every system of our unique body. These interventions will leapfrog many of the medical interventions common today, making invasive and risky treatments like drugs and surgery look like the crude instruments of medieval barber-surgeons.



5. **The Long Tail.** Companies with a large number of products for which there is small demand can compete via the Internet with companies that have a small number of products for which there is large demand. The publisher of a book in a niche subject that will sell just 100 copies a year will, if that publisher has 1,000 titles, realize the same income as a publisher with a bestseller that moves 100,000 units a year. Books today stay in print, as print-on-demand products or ebooks, at much lower sales thresholds than publishers used to require to maintain a book in print using conventional techniques. In this way, the internet, with its endless virtual shelf space, gives such producers an advantage over limited brick-and-mortar retailers, and promotes the availability of specialized niche information. Blockbuster hits now share the limelight with niche products riding the long tail of an extended virtual market, shifting the balance away from a preponderance of bestsellers toward a variety of information and allowing specialist providers to leapfrog into a market position that was the former exclusive domain of well-heeled market leaders.

6. **Societies that Empower Women.** Women first gained the right to vote in national elections in New Zealand in 1893, with Britain following in 1918. Barriers to women's entry into the workforce began to crumble wholesale during the civilian labor crunch of World War II. In a century, the participation of women in the workforce has changed. This is one reason why the societies in which men and women work as equals have leapfrogged those who keep half of their creative capacity online by denying women economic or

political rights. Giving women the vote, and moving toward full participation of women in the workforce, is an immensely potent social innovation. Societies that deny women full participation in effect cut off the creative resources of half their population, allowing those that empower women's involvement to leap ahead.

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"The world is dangerous not because of those who do harm but because of those who look at it without doing anything "
–Albert Einstein

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7. **Societies that Utilize Seniors.** In the United States in 1950, 46 percent of men over the age of 65 were in the workforce; today, just 19 percent are.[14] This means that a huge percentage of human beings full of rich experience and creativity have gone offline. This century, the societies that engage their seniors have a staggeringly large resource they can use in leapfrogging ahead.

The Cultivation of Champion Frogs

Leapfrogging is sometimes pure accident, like the encysted diatoms. Sometimes, though, it can be induced. We have all heard of organizations like Apple, and people like Einstein, who find the leading edge more reliably than their contemporaries. How can you turn leapfrogging from an occasional fortuitous accident to a source of ongoing creativity in your life and your organization? Nurturing an emotional, spiritual, and intellectual environment that creates the conditions for leapfrogging takes a focused consciousness, but it can be done. Here are some suggestions for setting up such a creative environment:

§ Be acutely awake to signs of leapfrogging in the news and the people around you.

§ Expose yourself to ideas outside your field of expertise.

§ Allow mistakes in yourself and your organization.

§ Nurture a culture that rewards novelty and creativity.

§ Brainstorm every problem.

§ Meditate, reflect, contemplate, pray, and find your favorite way of tuning into higher sources of wisdom.

§ Cultivate emotional calmness and a healthy emotional climate.

§ Nourish whole human beings, not just parts.

§ Be open to the unexpected and unexplained.

§ See the opportunities lurking in the disguise of a crisis.

§ Use expansive language and avoid limited language.

§ Notice when you're approaching a situation the same old way.

§ Give yourself quiet, unstructured time.

§ Investigate best practices other organizations use to nurture creativity.

§ Stay close to nature.

§ Nourish spiritual values in yourself and others.

§ Fill your life with kindness, philanthropy, and altruism.

Leapfrogging will lead to discontinuous (and sometimes disorienting) change throughout the next couple of centuries. In a few decades, we will read today's arguments over peak oil, gun control, global warming, globalization, public education, corporate governance, and the distribution of wealth with the same fascination as we now read the archaic arguments of phrenologists, anti-suffragettes, anti-abolitionists, Marxists, and antisublapsarianists.

Large changes don't take a majority of people, or even a large number. The Renaissance took about 25 years, and engaged a very small number of individuals—around 1,000 people. Yet it completely altered the shape of Western civilization. Afterwards, science, art, education, mathematics, science, literature, and social values were quite different from what they had been before. We are in the midst of another such large-scale, discontinuous jump today. The balloon is about to pop. Those who turn their faces to the bracing winds of change will leapfrog ahead of those who cling to yesterday's linear certainties.

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