MATRIZes

Communicating Change

The Promise of Human Evolution

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More than one-third of the entire population of England, some six million people, paid one shilling each to attend "The Great Exhibition of the Works of Industry of All Nations" in London's Hyde Park during the summer of 1851. Charles Darwin was among them. Like all visitors, Darwin was surely impressed by the sparkling structure that housed the exhibition—the majestic Crystal Palace. Once inside, he strolled up and down the aisles admiring more than a thousand booths that celebrated the growing achievements of 19th Century science and technology in chemistry, metallurgy, manufacturing, horticulture, commerce, glasswork, machinery, architecture, agriculture, and many other fields. The young field of technical communications was represented with displays of advances in printing, telegraphy, and photography. Even a prototype of the fax machine was on display. The stereoscope—which for the first time permitted realistic three-dimensional viewing of an object—was a particularly sensational exhibit with research applications that certainly must have intrigued Darwin.

The Great Exhibition served as the cultural coronation of the Industrial Revolution. The fair represented a tremendous source of wealth and prosperity and a rosy future for Britons. Great Britain was becoming the economic leader of the newly industrialized nations, a pioneer in the development of science and technology, and the world's most successful imperial power. This was evident by the range of impressive industrial output shown that originated in British colonies—especially India, Australia, and New Zealand. Technology—especially communications technology that could move information quickly around the globe—was crucial to England's imperialist exploits and its domestic economic growth.

Darwin attended The Great Exhibition eight years before he published *The Origin of Species*. Much of what he observed around him during the book's gestation period, including his experience attending the international fair, confirmed the line of scientific reasoning he had been developing since the *Beagle* voyage. Nature and industry were proving *not* to be at odds with each other; both discredited any static view of life. A spirit of inventiveness appeared everywhere. Technological breakthroughs were taking place by virtue of the ingenuity and hard work of tinkerers and craftsmen who had no conventional schooling in hierarchical

Britain. Patents for inventions grew at a phenomenal rate.[i] Practical knowledge mattered like never before.

It would be a mistake, however, to interpret the significance of the Industrial Revolution mainly in terms of practical applications of technology to commercial production. Innovativeness and openness were developing into cultural values to the point where the very basis of traditional society was being questioned. The quantity and quality of scientific and technological evidence and power on display at The Great Exhibit severely contradicted the Victorian cultural veneer constructed on Christian teachings. The material world was exploding productively at the hand of man, not God. A feeling of religious doubt and moral uncertainty was emerging.

There is no discernible beginning or end date for British industrialization and the advances proceeded incrementally. No radical break from evolutionary patterns had occurred; everything was just speeding up in response to new man-made environmental conditions. Steady industrial growth—and by extension a creeping universality—emerged as hallmarks of the period. Great Britain had become the driving force of 19th Century modernity and globalization.

The Nature of Industry

The way economic and cultural globalization spread its influence in the 19th Century has its parallel, and its roots, in organic evolution. A positive correspondence between biological evolution and technological development was becoming clear. Evolutionary principles that underpin heredity and hybridity could be found in the openness, complexity, and transformability of culture. Just as nature diversifies so magnificently from a common origin, technological development spins a web of complexity from more simple ways of life. By the mid 19th Century industrial technology was becoming the new nature, machines the symbol of procreation. The fruits of the Enlightenment were maturing in material form. Even God was being refashioned into a master craftsman—a celestial watchmaker who would have to compete with earthly industrialists for the soul of humanity.[ii] Capitalism, science, technology, and democratic thinking were all chipping away at the fabricated certainties of Western Christian society.

Galloping industrial production established new economic priorities and practices in Great Britain and the rest of the modernizing world. European industrialists were giddy over

their prospects. To critics, however, the consequences seemed ominous. Upstart industries live on the brink of financial disaster. Greater and greater amounts of capital would have to be invested in machinery, factories, and transportation. In order to pay for this, wages would have to be depressed, putting unskilled and unorganized workers at high risk. Low pay also meant the pool of consumers would likely stagnate or shrink. Production could outpace consumption. If so, overproduction of unsold goods might lead to a recession or depression that could destroy the economic strength of the industrial barons and their backers—including the investment-savvy Charles Darwin.

The solution to this potential crisis was to grow the market globally. Colonial expansion was encouraged by industry and government. People responded in droves. Between 1846 and 1890 the number of people leaving Europe rose to 377,000 yearly, increasing to 911,000 emigrants annually from 1891 to 1910.[iii] During the Industrial Revolution some 35% of Britain's manufactured goods were sent overseas. British exports climbed to 46% of the world's textile production.[iv] Offshore industrial production was initiated. Laws that restricted the export of machinery to the colonies were suspended.[v] Large-scale patterns of emigration even defused Thomas Malthus's grim prediction that unmitigated population growth would bring social disaster to Britain.[vi]

The way forward had been paved by the European's "discovery" of other continents, its colonization of new lands, exploitation of foreign resources and laborers, and the massive export of human capital to every corner of the Earth. Foreign markets developed on the heels of the migrations. The dream of creating a world market for industrial products from Great Britain and northern Europe was becoming a reality. Consumer activity was boosted by international trade. A global economic system favorable to British and other European manufacturers had been set in motion. The imperialist legacy in economics and culture endures around the world today, of course, and not just in negative ways. Interest in modern technology and the willing pursuit of novelty, change, and improvement continue to grow almost everywhere.[vii]

Nineteenth century capitalists formed the first ruling class in history to identify with the irreverent idea of a dynamic, forward-looking, secular society driven by unceasing technological change.[viii] Exactly what technological development and industrialization would amount to in social and cultural terms, however, was not clear. Implicit evolutionary explanations were offered. Karl Marx, for example, granted that although the industrializing

world would assuredly bring negative consequences for the working class, the vitality of industrial production emerges innately from the need to survive. A parallel between biological and industrial processes was clear to Marx. He saw a close connection between the "living" and "made" worlds"—between the physical organs biological beings need to live and the tools and other artifacts humans create to ensure and improve their lives. The body transforms nature for its purposes just as labor turns natural resources into material objects. Natural and sexual selection produce tangible results in the same way human labor does. The dependence of the body on nature explains at core why man is driven to expand the field of cultural possibilities by creating increasingly diverse and sophisticated technology.[ix]

Together with Friedrich Engels, Karl Marx also forecast cultural changes on the horizon and anticipated the unparalleled importance of expanded communications. Consciousness was being transformed in the globalizing world. "National one-sidedness and narrow-mindedness become more and more impossible," they wrote, "and from the numerous national and local literatures, there arises a world literature."[x] What they meant by "world literature" has developed into what we now call "global media." In this crucial respect, Marx and Engels were correct. The period of early industrialization brought with it "immensely facilitated means of communication" originally used by European economic power brokers to exploit the growing global market.[xi] The Industrial Age was proving to be the precursor to the technological and cultural prowess that defines today's Communication Age.

In many respects the assumptions underlying Karl Marx's economic and social theory paralleled the basic principles of evolutionary theory that Darwin was conjecturing at roughly the same time. But so too did the opposing theories of Adam Smith, with which Darwin was well acquainted.[xii] Smith's foundational economic concepts—specialization, free trade, entrepreneurship, and the power of a vibrant, competitive market—also have their analogues in nature. The division of labor and market mechanisms that curb unrestrained greed—ideas championed by Smith—could be seen to operate even among lower life forms. Despite their profound differences, Marx and Smith both agreed with Darwin on the most important point: fundamentally, life is sheer competition among self-interested beings.

Diversity

Rampant industrial growth helped Darwin understand the natural world. Janet Browne points out that when Darwin wrote *The Origin of Species* he "drew on industrialized England for a metaphor. Natural selection probably favored those animals and plants that diversify just as if

nature were a factory bench in which production was more efficient if workers performed different tasks."[xiii] Biological organisms that diversify—mutate into variations that adapt well to their environments—survive. Institutions that diversify—employ people with varying cultural backgrounds and create products and organizational structures that reflect changing market conditions—prosper.[xiv] Diversity of biological species results from random variation in nature; the process is undetermined and self-sustaining. Diversity of ideational and material products results from entrepreneurial efforts in the technological, industrial, and cultural arenas; the process is goal-oriented and driven by human agents.

If the presence of diversity demonstrates successful evolutionary outcomes in nature, what are *biological diversity's* necessary antecedents? An abundance of random mutations, adaptations worked on by natural selection, and the production of an array of consequent variations. And if *artifactual diversity* produced by technological advances serves human societies well, what conditions must be present to fulfill that potential? Curiosity, a spirit of innovation and entrepreneurship, and the freedom to make choices. Technological innovation creates superior material forms while destroying outmoded industries and products just as new biological species form in response to changing environments while stagnating species recede or disappear.[xv] Like the adaptive mechanisms of biological evolution, technological development affirms the human potential. As George Basalla describes it, the history of technology "is a testimony to the fertility of the contriving mind and to the multitudinous ways that the peoples of the Earth have chosen to live. Seen in this light, artifactual diversity is one of the highest expressions of human existence."[xvi]

Darwin realized that nature's tremendous diversity could only be explained by the gradual dissemination of animals and plants across the Earth's broad surface. Arriving in new geographical territory spurs physical modifications in life forms over time, eventually leading to the creation of new varieties and species. Biological beings, including early humans, were driven to expand their geographical horizons in order to survive. Even the unconscious "occasional transport" of seedlings caught in the feet, legs, and feces of migrating birds would give rise to the multiplication and modification of countless species of plants around the world.[xvii] The spread of technology and industry around the world follows essentially the same pattern. From the biological beginning to the technological present, evolution is a thoroughly globalized phenomenon.

Shaping Evolution

Nature is a random tinkerer. Selection acts on random mutations in ways that reflect conditions presented by diverse environments. The mutations which survive and flourish are the ones which adapt well to these situations—a process that unfolds without fixed plans or intentions and do not necessarily lead to superior solutions.

Things change, however, when humans intervene. Humans can influence the course of nature's production by controlling the biological or cultural environment where production takes place. Desired outcomes can be created through experimental trials, documenting results, accumulating information, and applying knowledge. But despite differences in method, random and non-random tinkering both represent the essential process that underlies all of nature's manifold production—organic evolution.

In order to gently convince skeptical readers of this discomforting fact, Darwin began *The Origin of Species* by describing a kind of biological production with which the layperson was already familiar—the way domestic breeders vary their species' offspring by controlling their mating patterns. He detailed how purposeful domestic breeding—or artificial selection—proceeds in a manner very similar to the blind and dumb tinkering that goes on in the natural world at large, except that it is humanly guided. The technological innovations and industrial production that blossomed so spectacularly during Darwin's day extended the principles of biological evolution to the production of material artifacts.

Humans regularly reflect upon and positively tinker with their own development too, even their genetic inheritance. Nazi Germany's horrific experiment in social engineering and the breeding of slave populations almost always serve as the archetypal examples. But the idea of human control over genetic or cultural destiny need not be conflated with racism or ethnic cleansing, though both still occur. Adults everywhere attempt to engineer their own social worlds by commending or arranging marriages, for example, by ostracizing undesirable mates, aborting unwanted births (sometimes according to gender or race), bullying ethnic, sexual, and religious minorities while embracing other groups, shunning disabled persons, and so on.

Exercising significant control over the human environment, however, need not lead to acts of exclusion. Inclusive, positive cultural development can be humanly guided at the personal and collective levels. Darwin himself allowed that people can take "some pride" in evolution because of "man's powers of sympathy, benevolence, and intellect."[xviii] Civility can be learned. Conflict can be reduced and cooperation increased because humans have the

capacity to reason and choose wisely among competing courses of action. It's to their advantage to do so and they've generally followed that course over the millennia of human existence.

Technological development and industrial growth since the 19th Century have greatly increased the power of destructive weaponry. Yet human societies have gradually become much less violent than pre-modern groups were. Many primitive societies were constantly at war and cannibalism was widespread. The "peaceful past" is a popular but misleading myth.[xix] The steep reduction in hostility between human tribes began when the shape of the human skull started to thin about 40,000 years ago.[xx] General moral development followed. During just the past two centuries we've seen far fewer wars, a dramatic reduction in casualties caused by the wars that have been fought, less genocide (even counting Rwanda, Bosnia, Darfur, and other recent atrocities), the formal recognition of basic human rights, eradication of deadly diseases, vast improvements in literacy and education, the acknowledgement of differing sexual orientations, and many other beneficial accomplishments.

In many respects we have gone from being tribal members to citizens. The "psychology of everyday life" has made it possible for people today "to step out of the front door of a suburban house and disappear into a city of ten million strangers," as economist Paul Seabright points out.[xxi] Yet evolution should not unproblematically be equated with progress. A history of moral achievements does not negate an equally long list of abhorrent moral transgressions. Right along with gains in the reduction of violence and the promotion of human rights our species has also created the means with which to blast each other off the planet and completely destroy the Earth's eco-system. People empathize with and behave kindly toward each other but they also act violently and cruelly toward others—individually and collectively.

This reality is primordial. Aggression and kindness both have deep evolutionary roots that show up in the behavior of other primates too, especially bonobos and chimpanzees.[xxii] Natural selection rewards both tendencies. The aggressive side of human behavior, including fear of others' aggressive actions, derives from survival instincts that were instilled in the primate brain during the earliest evolutionary stages. Individual and organized violence can still give reproductive advantage to their perpetrators. Domestic abusers, tribes, gangs, terrorists, and nation states enforce their identities and agendas with violence. Cruelty to animals, even for pure entertainment purposes, takes place. Fascination with media violence

surfaces in genres ranging from the hand-to-hand combat of Xtreme fighting on television to anonymous bombing and shelling presented in war documentaries. When the ratings for the American television wildlife channel *Animal Planet* started to slip in 2008, programmers at the cable outlet decided to greatly emphasize "predation programming"—animal death action shows.

Kindness also evolved as a trait that contributes to the need for identity and belongingness. In-group and out-group distinctions that have emerged from the evolutionary past originally predisposed the positive activity inward. During ancestral times communities were small and contact with outside groups was rare. Acts of altruism, generosity, empathy, and pity were directed toward individuals who could advance the genetic interests of the altruist—close kin and potential replicators.[xxiii] Those limitations started to loosen, however, when tribes came into more frequent contact with each other.

Cultural groups gradually found they could benefit more by trading with rather than slaughtering each other. Trade enabled strangers to treat each other as kin.[xxiv]

Simple barter and exchange constituted the first forms of intercultural communication and established the platform for development of civilized societies. In the process, a preference for negotiation over annihilation may have been injected into the human genome, progressively dulling the sharp edge of violent cultural confrontation.[xxv]

Human kindness thus evolved from genetic advantages bestowed by biological reciprocity and then developed through a history of economic transactions that were facilitated by symbolic exchange. We see the same combination of positive forces at work today in the globalization of good economic ideas like the granting of micro loans in developing countries, which resulted in a Nobel Peace Prize given to Bangladeshi Muhammad Yunus, or cause marketing campaigns such as Bono's Project Red and Oprah Winfrey's Global Fund.

There's another encouraging side to the complex and contradictory nature of human evolution. Because we have been innately conditioned to care for persons who are close to us, the psyche instinctually predisposes us to empathize even with individuals with whom we are not directly related. We feel sad when we see animals, even insects, suffer. The transference of this positive human quality is one of evolution's happy accidents. It carries extraordinary implications for life in the global communication age. Kindness today is often directed toward persons outside the community, sometimes even to enemies, and frequently toward individuals who aren't physically present. We respond compassionately to mediated images of persons

who are unable to return the feelings or favors—destitute children in poor countries, for example, or the victims of natural disasters. People recoil when they see video or photographs of people suffering. They respond emotionally when hearing stories of pain and misery, even if the stories are fictional. Novel reading in the 18th Century, for example, helped people develop emotional connections with each other, confirm the universality of their inner feelings, and prepare the ground for raising global consciousness about human rights.[xxvi] The advent of cable television news in the late 20th Century brought a flood of evocative images to global awareness. But it was cable television's coverage of the famine in Ethiopia in the 1980s that first "created a new kind of electronic internationalism linking the consciences of the rich and the needs of the poor."[xxvii] The degree of emotional reactivity often reflects the physical or emotional distance of the suffering being to us, but the general instinct to empathize runs deep.

The biological principles of symbiosis and reciprocity provide the evolutionary substratum that supports and encourages such constructive human behavior. As Darwin wrote, "social instincts lead an animal to take pleasure in the society of its fellows, feel a certain amount of sympathy with them and to perform various services for them."[xxviii]

Our superior and constantly improving communication skills build on that foundation. Communication creates opportunities for exposure to new ideas, reflection, negotiation, and compromise that develop from an evolutionary base where reciprocity is valued.

Modern communication is composed of three orders of signification: the presence of an original text or utterance, mediated messages that carry ideas to a wide, increasingly global audience, and the interpersonal discussions those mediated messages stimulate. Communication alleviates ignorance and breaks down differences between strangers—"mutual incomprehension" in Salman Rushdie's words—by putting people in contact with each other.[xxix] Only then can a conversation begin so that we can start to get used to one another.[xxx] For the immediate future, that may be the most we can realistically expect.

The Information Equation

Just as Marx and Engels feared when they wrote *The Communist Manifesto*, capitalism roared into economic and cultural domination during the past two centuries. In corporate form, its predatory power seemed unstoppable.[xxxi] By the middle of last century Adam Smith's celebrated market economy—a system thought to be capable of checking the overzealousness and outright abuse wrought by industrial producers and to protect consumers' interests—

seemed utterly obsolete. In a world of demanding shareholders, pitiless bosses, and low-paid laborers, "the invisible hand of the market" had lost its grip and deftness. Consumers suffered too. The self-interest they expect to exercise had been undercut by sprawling corporate conglomerates that manipulated the economic marketplace to their advantage.

Timely access to relevant information biases any social transaction. In business, the ability to gather, protect, and quickly move information around is crucial. Relational power emerges from information control; whoever knows more benefits in the exchange. This fact became readily apparent as corporate domination followed in the wake of European and North American industrialization. Big business had found ways to control access to information about the cost and availability of raw materials, market fluctuations, competitors' activities, and broad economic trends. Corporations began to influence economic activity through commercial advertising, lobbying, financial contributions and payoffs, and backstage political maneuvering. A decided information asymmetry had emerged.

Without question, access to information that distinctly favors one party over another often serves the short-term interests of the controlling entity. But any substantial informational imbalance carries huge long-term risks for all parties. Manipulating information to exclusive advantage is bullying behavior, and bullies don't survive long in nature. Species do better when competing individuals find ways for each to win rather than fight outright to the death. The same basic principle applies to any kind of lasting human negotiation. Solutions where everyone takes something significant away from the experience last longer than outcomes achieved by utter destruction of the opponent.

The American economist George Akerlof won the Nobel Prize for Economics for his article, "The Market for Lemons," a classic example of why information asymmetries must be corrected in order to find the best solution for all parties in any transaction.[xxxii] Akerlof analyzed competing interests at play in the selling of used cars. His argument goes like this: An automobile dealership can only sell new cars by enticing potential buyers to trade in their old vehicles. But what can the dealership do with a parking lot full of used, often unwanted, cars of every description? Sell them, of course. This situation produces an inevitable asymmetry of information. The buyer—who has no contact with the previous owner and likely has scant mechanical expertise in general—knows little of the used car's actual condition. The seller could even rig the car to make it look much better than it is. In an immediate sense, the seller has the upper hand.

For the long term, however, both parties lose if they act within conditions of this information asymmetry. Neither wants to be stuck with a "lemon." For the transaction to be successful, sellers must actually reduce their information advantage. Thus they provide compensation. The buyer is offered a warranty for a certain period of time thereby reducing the seeming advantage of disproportional information favoring the seller. The transaction flows from competition to cooperation—from exploitation to reciprocity. Both sides gain something meaningful.

The advantages of information equilibrium that govern this kind of business transaction mimic the way evolution operates generally. Cooperation ultimately serves everyone's self-interest, especially when the stakes are high. In the ultimate case, the continual exchange of threats and information between nuclear powers during the Cold War avoided nuclear disaster for years.[xxxiii] Software open sourcing and the development of websites like the multilingual Wikipedia make collaborative information systems useful to one and all. Organizations that require or encourage their divisions to share "best practices" techniques rather than squander good ideas flourish. The American health insurance industry strikes a power balance with clients by not requiring applicants under a certain age to reveal their actual health conditions. In a particularly dangerous counter example, America's unwillingness to talk to Iran, Syria, and North Korea during the George W. Bush administration sustained an informational and diplomatic imbalance that kept the world on edge and encouraged people everywhere to detest American foreign policy more than ever. Mutual distrust between striking Hollywood writers and studio executives—where the writers suspected that the studios make more money than they claim and the studios thought the writers were bluffing—greatly diminished one of America's most lucrative industries for months. Social systems of all types work best when access to information distributes evenly. Greater openness provides more information resources that people can work with. One way a more balanced state of information equilibrium can be achieved is by reducing the sway of institutional power. Effective transparency can help make that happen.

Transparency

While those who control hard power resources in the West today could obliterate their competitors over cultural and religious differences or in competition for resources, they don't do so. This reluctance seems to conflict with a general principle expressed by Darwin in *The*

Origin of Species where he observes that "each species tries to...take advantage of the weaker bodily structure of others."[xxxiv] Fortunately the evolved instinct for acting morally enters the picture too. The decision *not* to use tools of mass destruction today results in part because the global moral consciousness of human beings has developed to the point where doing so would not be considered acceptable. Electronic and digital media have created a revealing hall of mirrors. The informational landscape has been flattened considerably. Isolated cultural groups have been forced to internationalize and relativize their worldviews. Moral judgments are rendered today in an expanded state of transparency, reflexivity, and accountability.

Transparency is systematic examination—an ongoing and penetrating condition of openness, surveillance, and vigilance that makes the actions of powerful persons and institutions visible and holds them publicly accountable.[xxxv] We live in an era of global public scrutiny. Media and information technology monitor the actions of the political, economic, religious, and cultural forces that surround us. Disinfecting sunlight radiates from mainstream media outlets like CNN, the BBC, and the *Washington Post* and from alternative news sources such as The Drudge Report, The Daily Show with Jon Stewart, and countless independent blogs of every political persuasion around the world. The media, internet, and personal communications technology form a massive yet increasingly decentralized global information system.

The repulsive images from Abu Ghurayb prison demonstrate how the information-expanding process of global transparency works. An anonymous person on the other side of the world surreptitiously uses a camera phone to snap photos of the prisoners and abusive guards. The digital images are sent via the internet to a friend in the United States who releases them to a commercial television station. That station transmits them to its local market. The captivating photos are picked up by news outlets throughout the world that circulate them globally. Practically everyone on Earth sees the abuse. The exposure negatively influences global public perceptions of the Iraq War and American foreign policy generally. Moral judgments are rendered by people everywhere. Global distaste for the war intensifies. Public opinion in the United States takes a sharp turn against the war and the Bush administration. The oppositional Democratic Party scores a huge victory in the subsequent mid-term election, Barack Obama emerges as a political superstar with a promise of change, and liberals become favored to win the presidential election.

George W. Bush is by no means the only politician to have suffered from transparency and the information explosion it creates. On his way out as Great Britain's Prime Minister Tony Blair called investigative journalism a "feral beast that hunts in a pack tearing people and reputations to bits." George Allen's bid for the 2008 Republican presidential nomination got derailed when he was caught calling a person of color by a racist name—"macaca"—an incident that can still be viewed on YouTube. All public figures are vulnerable. Comedian Michael Richards' racist rant at a nightclub—also posted forever on YouTube—led to fierce scrutiny and condemnation, for example.

But it's not just individuals who are being exposed. The crackdown by the military government in Myanmar in 2007, for instance, was met by fierce technology-based resistance that provoked harsh international criticism. Anti-government groups used text messages, email, blogs, e-cards, posts on Facebook, and regular updates on Wikipedia among other tactics to expose the systemic abuse. Transparency also shines light on broad cultural values and practices. This has been especially true of media coverage of the Muslim world in recent years. The reality of female genital mutilation, revenge rapes, honor killings, beheadings, intolerance of gays, apostasy trials, suicide bombings, religious and tribal warfare, and the oppression of women in general have all been exposed to the global public and received moral condemnation.

The cultural isolation of the Middle East best exemplifies why transparency is so necessary and how effective it can be. Foreign and alternative communication media, even classical literature, have long been resisted by religious and political authorities in the Muslim Middle East in order to protect their traditions and privileges.[xxxvi] But as communications technology advanced so spectacularly around the globe in recent years, the tide began to turn in the Arab-Islamic world like everywhere else. The relative openness of Qatar's Al Jazeera and other regional satellite systems during the past decade has changed the region. To compete for viewers, state media systems were forced to respond. Television dramas that focus women's rights in Saudi Arabia and Egypt encourage viewers to literally visualize a different world with respect to gender relations, for example. Journalism, media, and the internet have become increasingly free in Morocco. Syrian television broke from tradition to critically cover a particularly disturbing honor killing of a young girl by her brother, a powerful symbolic departure from the past. Two-thirds of the television audience in the Arab world is under 30 with an appetite for global genres like music videos, movies, and sports. In Turkey, laws that forbid writers and other public figures to "insult Turkishness" have been greatly weakened.

Internet use in the Middle East has increased at least four fold over the past six years with more than 20 million users logging on every day by 2007.[xxxvii] Increasing numbers of persons visit websites that offer critical views of their cultural and political systems.

Technological developments like these spread quickly in today's globalized environment. As the Turkish novelist Elif Shafak told the *New York Times*, "We are learning...to live in more harmony with difference—religious difference, sexual difference." Ahmad Humeid, one of the founders of Ikbis.com, the Arab world's version of YouTube, repeats a familiar mantra: "Every camera-phone carrying citizen can be a contributor. Globally we're just starting to understand the power of these digital tools."[xxxviii] The radical first step—breaking the taboo of not even talking about inflammatory issues—has been taken. Sometimes the necessary exposure almost has to be required—like the Dutch government compelling immigrants to watch a video that shows topless women sunbathing and men kissing—in order to cultivate greater tolerance and appreciation for cultural freedom and difference. But even against tradition, powerful leaders, and the will of the majority, cultures everywhere are being massaged by media and information technology to accept more modern ways of thinking and living.

In a classic argument about how power operates in modern Western societies, Michel Foucault warned of the Panopticon—the ability of power holders in society to constantly observe ("pan-optic") and monitor the actions of their citizen-subjects.[xxxix] The Panopticon functions literally as a surveillance system but it also plays a deeply symbolic role. Maximum control over the lower classes is maintained by establishing and enforcing a top-down structure of authority within all the primary social institutions—prisons, schools, hospitals, and other large systems of containment.

No doubt powerful forces inside and outside government continue to keep tabs on us; the Orwellian nightmare is not just a fiction. Political and corporate elites will always struggle mightily to maintain positions of power, whether they are corporate lobbyists in the United States or Communist Party bosses in China. But proliferating channels of cultural contact and connectivity are dismantling the assumptions that guided Foucault's sobering but incomplete and now outdated vision. Intense competition among mass media outlets and the widespread use of information and communication technologies by ordinary citizens means that the panoptical lens now points directly back at the powerful too—no matter what the culture or

political system. The reverse Panopticon is immediate, global, cheap, and, for the most part, uncensored.

Just as it occurs in the biological world, cultural change takes place from the bottom up. Greater information equilibrium generates unprecedented opportunities for expanding human consciousness and fostering positive growth. Contemporary media and the internet have pried open spaces for social and cultural negotiations that will transform the world. The global transparency that helps make this possible, however, often comes with a heavy cost. Journalists are being killed in record numbers today covering war, politics, corruption, human rights abuses, and crime.[xl]

The Transformative Role of Communication

Biological evolution spreads unevenly across the natural world because it is driven by the ceaseless production of random mutations that must compete in diverse environments to survive. That grand insight dates back to Darwin's discoveries on the voyage of the *Beagle* nearly 200 years ago. But human evolution does not proceed exactly the same way, especially not now. What happens in the future certainly won't just be a matter of adapting to external conditions that are out of our control. Humans are not just simple machines of genetic reproduction. Evolution is modifiable by innovation and moral determination. No other species subordinates its genetic interests to other more lofty concerns.

The environments we inhabit—and the futures we experience inside those environments—will be shaped by the choices we make. As Nicholas Wade describes it, "human choice has imposed a direction on the blind forces that hitherto have shaped evolution's random walk."[xli] Those choices will always be motivated and guided by selection pressure: personal cultural performance indicates the degree of reproductive fitness. But making decisions that change things for the better happens only when moral clarity and purpose meet the challenge. It wasn't just technical skills learned during the Industrial Revolution, for example, that brought agrarian societies out of feudalism and poverty. The cultural values and everyday behavior of the era—working hard, saving money, becoming literate, reducing violence—were changing in positive and productive ways too.[xlii]

Reducing conflict, increasing tolerance, and fostering greater social cooperation can only be achieved by further increasing the stock and reach of communication practices. The flow of texts and the network of cultural discourses spreading rapidly around the world today

are creating a baseline of shared awareness on moral questions. Much of the consciousness raising brought on by global communication seems to be headed in the right direction. In Richard Dawkins' view, the changes have come about because mass media, the culture industries, and information and communications technology perform as the transmitters of big ideas:

> "We need to explain why the changing moral zeitgeist is so widely synchronized across large numbers of people...It spreads itself from mind to mind through conversations in bars and at dinner parties, through books and book reviews, through newspapers and broadcasting, and nowadays through the internet. Changes in the moral climate are signaled in editorials, on radio talk shows, in political speeches, in the patter of stand-up comedians and the scripts of soap operas..."[xliii]

We must be careful, however, not to assign supernatural or hierarchical power to the zeitgeist. The very idea of the zeitgeist—literally, the spirit of an age—can be misleading, especially when discussing a feeling said to be of global proportions. Spirits are always multiple and contradictory. The dominant themes and underlying trends that characterize any historical moment will always reflect a precarious and evolving order that surfaces provisionally from countless ongoing interactions among individual actors and cultural groups. No transcendent universal ethos drives human behavior any more than a natural or celestial plan predetermines organic evolution.

Moreover, the question of how communication interacts with morality cuts at least two ways. Modern weaponry, global connectivity, and the symbolic power of the media combine to fuel religious fanaticism and spark terrorist acts. Religious fundamentalism is one of the toxic ideas spread by media and the culture industries. But communications technology circulates good ideas that catch on too. Everything finally comes down to choices made by human beings. As Dawkins writes, "We have the power to defy the selfish genes of our birth and, if necessary, the selfish memes of our indoctrination. We can even discuss ways of deliberately nurturing pure, disinterested altruism—something that has no place in nature, something that has never existed before in the whole history of the world."[xliv]

Memes are signs, not hammers. They replicate ideas, not people, and only provisionally. To the extent we can agree they even exist, memes and memeplexes function as

discursive spaces—semiotic zones of negotiation that are imperfectly represented and variably interpreted by human beings. The abundance and complexity of symbolic forms circulating today render any idea of ideological and cultural dominance far less viable than ever before. How we confront the challenges we face as individuals and societies will make all the difference in the world.

The Great Chain Circles the Globe

Early *Homo sapiens* inverted their position in the evolutionary hierarchy by learning how to effectively exchange complex messages and coordinate social action. Our entire social history since then has revolved around the production and reception of messages and the discourses and effects those communicative interactions produce. Language, technological knowledge, and cooperative sociality develop together as mutually-reinforcing systems.[xlv] Today, with greatly enhanced access to information and powered-up levels of connectivity, we are reversing a predatory relationship once again—the exploitation of ordinary citizens as a negative consequence of labor practices introduced during the Industrial Revolution.

Cultural traditions in even the most remote corners of the world today are being challenged, relativized, modified, and enhanced by information arriving from a broad range of sources suddenly and often without notice. Cultures are being transformed from comprehensive systems of values and practices into more individualized, fluid, and tentative personal experiences. Even the most powerful cultural authorities have been unable to effectively stop the trend toward greater individualization.

Individualization and Cultural Programming

Individualization is surging worldwide because it corresponds with a basic evolutionary principle—biological and cultural change always begins with the single organism. The individual acts on opportunity whether it's a mutant gene that eventually alters a physical or cognitive characteristic of a species or an act of personal entrepreneurship that leads to a cultural nuance. In both cases "rugged individualism" powers the organism's struggle to survive. The independent, adaptive, imaginative, innovative spirit of the individual permeates modern Western culture. That's a model for evolutionary success and a major reason why the West leads the world in economic, political, and cultural development. Western ways have set global norms to the point where they are often conflated with modernity itself.

Modernity generates global cultural abundance—much of it in symbolic form—that gushes from the mass media, the internet, and the culture industries worldwide. Communications technology provides attractive and highly effective channels through which individuals can perform culturally. Personal communications technology extends the range and frequency of cultural exposure and social contact. All these resources converge to create an expanded array of cultural fields for modern individuals. The modern individual integrates himself into various communities of choice. The old "helpless consumer" has become an "information user" who increasingly drives the global communication system.

Much like programmers of radio and television outlets who compose the content of their stations according to the textures of particular formats, individual persons today draw from an enormous range of resources to create their own unique cultural profiles, activities, and identities. Think of the mind as an iPod that scrolls from one cultural option to the next. We've become active programmers of our cultural lives. The cognitive manifestation of individual cultural programming is the personal superculture—the totality of cultural elements that make up an individual's cultural self at any point in time.[xlvi] The multicultural self exists in a condition of constant construction—a creative project that transcends traditional boundaries of cultural experience and identity.[xlvii]

Communicating in the Village

Describing the emergence of an imagined "global village" some fifty years ago, Marshal McLuhan believed that the oral nature of electronic media of his day—radio and television—had "retribalized" human groups.[xlviii] The private modes of encoding and decoding that defined mediated communication in the earlier print era—writing and reading—were being superseded by the social modes of media performance and audience reception in the Golden Age of electronic media. Radio and television recaptured the tribal roots of human communication by emphasizing orality, spontaneity, popular appeal, emotion, storytelling, tradition, and cultural rituals.[xlix]

No technology arrives completely fresh in any historical period, especially not the communications media. Though he distinguished usefully between distinct stages of communication development—from oral to print to electronic—McLuhan was actually arguing the case for continuous technological development. He insisted that the success of each new communications medium builds from the technological and cultural platforms of previous

media. Just as electronic media retribalized the nature of cultural experience, print media had transformed life in the previous era by detribalizing everyday life. By whisking cultures away from their tribal origins, print media instilled an appreciation for human progress and carved out the foundation for modern life—secularization, industrialization, the rise of science, the birth of journalism, the spread of literacy and education, and the establishment of libraries and archives among many other contributions. Political culture changed forever. The ability to print and distribute information precipitated the Protestant revolt against the authority of the Roman Catholic Church that led to the Reformation and the Enlightenment.[1] What could have been more revolutionary than that?

The village has changed yet again, and so have the lives of the village dwellers. McLuhan's 20th Century world of radio and terrestrial television barely resembles the decentralized, connectivity-driven, global communications environment we live in today. Differences between senders and receivers in mediated communication seemed clear in the days when the mass communication model dominated. Senders were the owners of broadcast outlets and the professional employees they hired to churn out programming. Receivers were faceless audience members at home, at work, and in their cars. Those fixed roles and identities began to crumble in the United States with the advent of local access programming on cable television and the arrival of electronic consumer technology, especially the video camera, in the 1970s. What has happened since then is truly astonishing but completely understandable from an evolutionary perspective.

The old media framework functioned as an unnatural and unbalanced state of human communication. Mass communication systems existed as huge but ultimately untenable information asymmetries. In truth, audience members have never conformed to the stereotype of passive receivers, not even in highly-managed political states like China.[li] But today the lopsided character of the previous era is being irreversibly counterbalanced by the diverse nature of communications media, especially the amorphous and unruly internet, and by the enthusiastic way the new technologies have been embraced by people nearly everywhere. This should be expected, though it is certainly ironic. As technology becomes more advanced it leads us back to the evolutionary principles of our prehistoric past. Today's technology works to restore nature's equilibrium by allowing the individual to climb back onto center stage in the theater of symbolic exchange.

Beginning with body painting and scarring, simple jewelry, bodily and oral signaling, and cave painting, healthy human beings everywhere have developed the ability to express themselves and communicate with others. Their very survival, ability to find sexual partners, and capacity to pass along their genes depends on it. Now, like early cultures, online interaction encourages involvement, expression, community building, and focuses on the here and now. Social networking sites mimic the rituals and social practices of the past. Humans are wired to connect. As Alex Wright points out, "In tribal societies people routinely give jewelry, weapons and ritual objects to cement their social ties. On Facebook, people accomplish the same thing by trading symbolic sock monkeys, disco balls, and hula girls." The sheer popularity of social networking suggests that "these environments strike a deep, perhaps even a primal cord."[lii] Media and the internet provide attractive spaces for social and cultural negotiation at every level. The range of communicative interaction expands immeasurably while, in certain key respects, intimacy also grows.

All human populations differ from other animals by their ability to use fire, create and refine tools, and transmit accumulated technical knowledge to their offspring. Unlike other animals that possess but a limited spectrum of communication alternatives, human cultures invent, transform, and expand what comes from other groups and historical moments. All human groups critically modify their repertoire of possibilities. Despite this commonality, the rate of technological evolution—including improvement of the modern technologies of human expression—has *not* developed evenly across cultural groups. Even the basic idea of progress itself is not an equally shared idea. Every cultural group shows the potential for invention and value novelty to some degree. But technological change is not always much appreciated and is sometimes actively resisted.[liii] How, then, can widespread cultural change be brought about?

The Chain to Change

Having spent a lifetime studying the morphological characteristics of all manner of living things, Charles Darwin recognized the existence of a basic biological "unity of type." Organic beings of the same class exhibit a "fundamental agreement in structure," Darwin said, "which is quite independent of their habits of life." He described the reproduction of these structural similarities as nature's "unity of descent."[liv] Since Darwin's time scientists have discovered something else that Darwin suspected—bodily structure isn't the only human characteristic that

descended from a common origin. Ethnicity, language, and basic emotions all appear to have started the same way and present corresponding genealogies.

Because living organisms must adapt to new environments in order to survive, physical and behavioral differences of all kinds inevitably appear over time. Moving from unity to diversity is the destiny of all living things. The modifications are not just biological. Racial, ethnic, and cultural differences—including key markers such as the music that regional groups make and the wide diversity of languages—all indicate the process of common descent with modification. Technological evolution and the resulting artifactual diversity reflect the same principle.

Charles Darwin's brilliant work brought the seemingly incompatible ideas of unity and diversity together in a truly comprehensive way. "Nothing in biology makes sense except in light of evolution," wrote the geneticist and evolutionary biologist Theodosius Dobzhansky nearly forty years ago.[lv] What he succinctly and beautifully expressed about biological change explains the dynamics of social relationships and cultural life too. Change drives the whole cloth of biological, social, and cultural reality. Everything changes, but in what direction? The great challenge that faces us today is fashioning the means by which the power of cultural diversity can be made to work for the common good. Will positive evolutionary forces ultimately override the cultural differences that keep us apart, even killing each other? Can today's global communication system act as a self-correcting evolutionary mechanism that directs us toward the moral potential we also inherit from our biological and cultural instincts?

In the biological world, as Darwin noted, "habits generally change first and structure afterwards."[lvi] Non-human organisms alter their habits by reacting unconsciously and out of necessity. Migrations, climate change, and disease create conditions that keep the world in constant flux. Environmental challenges force living organisms to adapt to stressful, potentially fatal conditions that are out of their control,
a process that eventually brings about structural-organic modifications in the organisms themselves.

Humans also face challenges brought on by changing environments. But humans have the unique capacity to do much more than adapt successfully to the physical worlds they encounter. Medical science makes it possible to increase or eliminate sexual fertility, defeat diseases, extend the lifespan, share vital organs, and control obesity. Modern transportation overcomes limitations on personal mobility. Natural resources are turned into energy sources.

DNA and the human genome unlock inner mysteries while satellites and space stations fly overhead. Indeed, humans not only have the ability to modify their own physical conditions but to change the environments they inhabit—sometimes in grand proportion. Popular discourses about reversing the ravages of global warming reveal the degree of power many people think human race ultimately has over its physical environment.

Charles Darwin marveled at what was developing at the height of the Industrial Revolution. He could see how the correspondence between biological evolution and technological progress pointed toward positive future developments. Change was becoming a cherished value—an unceasing, productive condition whose absence represents stagnation, even death. An advanced world culture founded on technological innovation was starting to emerge. What was happening culturally demonstrated a proven evolutionary fact: the old and the new inevitably intertwine to produce new solutions. Evolution always unfolds less as a desperate search for the new as a fiddling with prior solutions from a new perspective.[lvii]

Knowledge alters evolutionary limits. The *Homo sapien* is, after all, the "wise species." But it isn't just the species—the biologically-constituted human subject—who evolves. *Changing the contexts in which we live and the ways we relate to those new worlds creates ways of being that transcend genetic predispositions and cultural traditions.* In the 2008 presidential campaign Barack Obama tried to do just that. He spoke of changing not only the cast of characters who control American politics, but to alter the framework—the "mindset"—of destructive foreign policy and divisive domestic politics. What happened during that milestone election campaign has implications that extend way beyond the political landscape.

The Audacity of Hope: An Evolutionary Principle

Barack Obama gazed out at more than 18,000 diverse souls who had gathered in the athletic field house on the University of Wisconsin campus following an impressive set of victories during America's presidential primary elections in early 2008. "This is what change looks like," he said, "when it happens from the bottom up." One week later he climbed back onto the big stage, this time in Houston, Texas, to thank followers after another primary election victory. At the very moment Obama took the stage in Houston, Hillary Clinton was already on television trying to spin her string of stinging defeats. ABC, NBC, CBS, Fox News, CNN, and MSNBC were carrying her speech live to a national audience. The public appearances of the two candidates unpredictably overlapped causing a media crisis. Television news directors tried to cover all the action by accommodating both candidates. They called for split screens—

Clinton on the right, Obama on the left, or vice versa. Audio stayed with Clinton. The other screen showed Obama bouncing up the stairs, shaking hands with locals, and surveying the joyful scene as he prepared to give another victory speech.

Ensconced in their darkened booths, TV directors were faced with a monumental decision. Do they keep the live shot of Hillary Clinton up until she finishes her speech following the usual protocol for such a powerful person? Or do they knock her off in favor of Barack Obama when he begins to talk? When the crucial moment arrived, the directors all made the same decision. Hillary disappeared mid-sentence. Obama's smiling countenance prevailed and his voice rung out. Obama was proving to be the superior candidate. He certainly was better television.

Barack Obama's meteoric rise in American politics is a textbook case study in how communication functions as the predominant evolutionary force. Just as biological organisms mutate and adapt to changing environmental conditions, Obama's ascent was fueled by a grass-roots ability to attract an unprecedented number of small campaign contributions and appeal to a wide range of voters, many of whom had never before participated in politics. The internet was central to his success. At the pinnacle of the primary election season Obama's web site attracted twice the traffic of Clinton's site and five times that of Republican rival John McCain, who drew only eight percent of all the visits to candidates' web sites. Nearly 90% of the money raised in Obama's campaign came from online contributions. The bottom-up power of social networking sites and personal communications technologies—especially the "Friends of Obama" community on Facebook, the "Yes We Can" video on YouTube, chatter by thousands of MySpace supporters, and the campaign's ability to use online resources to organize offline events—including text messages reminding voters to go to the polls—was creating a cultural buzz and getting unprecedented political results.[lviii]

By contrast Clinton was the "top-down" candidate. She had been anointed by the Democratic Party leadership and favored by many media analysts long before the primary election season began. She tried desperately to reach the middle and working classes with populist pleas focused on policy. But Obama's inspirational message—that decency and optimism forms a natural basis of the human condition and gives everyone real reason to hope for a better future—resonated with Americans who had grown weary of an unnecessary war and politics as usual.

Obama's ability to create political and cultural excitement derives from the greatest advantage we have as a species—superior communication skill. His mastery as a communicator was not just technological. Obama proved to be an extraordinary public speaker too. His appeal for unity had tapped into a deep well of evolutionary potential—tolerance and inclusion.

Human evolution has accelerated rapidly over the last 40,000 years. Expanding population groups produced a much greater number of mutations which led to more and more chances for beneficial genetic adaptations to occur.[lix] Genetic change remains a very slow process. But the status of human development cannot be assessed strictly in terms of genetic modification. Human development proceeds on three other levels too, all of which are much more dynamic and modifiable.

Early human cultures invented the first technologies—simple hand tools—more than two million years ago. Those primitive artifacts transformed the cultures from which they sprung. In turn, developing cultures produced more advances in technology which led to further changes in culture *ad infinitum*. Alterations in genetic structures later reflected the technological and cultural adaptations. The tempo of change picked up strikingly in recent millennia. Then, in the blink of an eye, the Industrial Revolution turned technological and cultural development into a global phenomenon spearheaded by modern communications. That fourth factor—communication—has always driven technological, cultural, and genetic evolution.

The evolutionary spiral has shifted gradually over the years from an emphasis on blind self-interest to social cooperation. Propelled by the combinatory power of information and communication, even wider nets of cooperation will develop across the biological universe to the point where the idea of competition and cooperation as opposing social forces will be rendered meaningless. The overall picture, of course, is complex. The most sophisticated of our social abilities, communication is also our most primal skill. Unceasing rivalries over sexual conquest and genetic reproduction remind us that competition and conflict reside deep in our biological nature and cultural traditions and that communication skill will continue to determine winners and losers in contests for genetic reproduction. But our extraordinary ability as communicators also makes it possible to live in harmony with others. Social cooperation works to everyone's advantage and as a species we've developed the capacity to make the right moral decisions.

Evolutionary currents flow from the simple to the complex while never fully leaving their origins. All living things descend from the same seed. Each and every one of us carries something of every other living thing as part of our biological essence.

Yet change is inevitable and eternal; human evolution is not determined and it is not random. It is precisely in the unmapped space between determination and randomness where our ancient and unique talents as highly-evolved communicators will shape the conditions of our collective future.

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[i] In 1750 Great Britain granted ten patents for new inventions. The number of patents grew steadily so that by 1851 some 455 patents were given annually. See H.I. Dutton, *The Patent System and Inventive Activity During the Industrial Revolution 1750-1852* (Manchester: Manchester University Press, 1882), p. 2.

[ii] Paolo Rossi, *Os Filósofos e as Máquinas* (São Paulo: Companhia das Letras, 1989), p. 19.

[iii] Paul Kennedy, *Preparing for the Twenty-first Century* (New York: Random House, 1993), p. 42.

[iv] N.F.R. Crafts, *The Economic Growth During the Industrial Revolution* (Oxford: Clarendon Press, 1985), p. 144.

[v] T.S. Ashton, *The Industrial Revolution: 1760-1830* (London: Oxford University Press, 1962), p. 25.

[vi] Thomas R. Malthus, *An Essay on Population, or a View of its Past and Present Effects on Human Happiness* (London, John Murray, 1798).

[vii] George Basalla, *The Evolution of Technology* (Cambridge: Cambridge University Press, 1988), p. 81.

[viii] Basalla, p. 110.

[ix] Basalla, pp. 207-08. Marx of course insisted that we aren't just *what* we make. We are also defined by *how* we produce goods. The Industrial Revolution was still gathering momentum when Marx and Friedrich Engels wrote *The Communist Manifesto*. It is part of Marx's genius that what he glimpsed was not yet a tidal wave. Looking at *The Manifesto*—a masterpiece of political agitation, theoretical concision, and persuasive bravado—one can see that Marx posited technological transformations as the forces that would remake economic life and change society as a whole.

[x] Karl Marx and Friedrich Engels, *The Communist Manifesto* (New York: The Monthly Review Press, 1848 /1964), p. 39.

[xi] Marx and Engels, p. 39.

[xii] Adam Smith, *The Wealth of Nations* (New York: Bantam, 1776/2003).

[xiii] Janet Browne, *Darwin's Origin of Species: A Biography* (New York: Atlantic Books, 2006), p. 54.

[xiv] Scott Page, *The Difference: How the Power of Diversity Creates Better Groups, Firms, Schools and Societies* (Princeton, NJ: Princeton University Press, 2007); Greg Zachary, *The Global Me* (New York: Public Affairs).

[xv] Joseph Schumpeter, *Capitalism, Socialism, and Democracy* (New York: Routledge, 1942/2006).

[xvi] Basalla, p. 208.

[xvii] Charles Darwin, *The Origin of Species, 2nd Ed.* (New York: Random House, 1858/1979), p. 393.

[xviii] Nicholas Wade, *Before the Dawn* (New York: Penguin, 2006), p. 267.

[xix] Steven LeBlanc, *Constant Battles* (New York: St Martins Press, 2003), p. 8.

[xx] Wade, p. 175.

[xxi] Paul Seabright, *The Company of Strangers* (Princeton, NJ: Princeton University Press, 2004), p. 28.

[xxii] Frans de Waal, *Our Inner Ape* (New York: Riverhead Books, 2005).

[xxiii] Richard Dawkins, *The God Delusion* (New York: Houghton Mifflin, 2006), p. 221.

[xxiv] Wade, p. 234.

[xxv] Wade, pp. 140, 180.

[xxvi] Lynn Hunt, *Inventing Human Rights* (New York: Norton, 2007).

[xxvii] Michael Ignatieff, "Is nothing sacred? The ethics of television." *Daedalus* 114 (1985), p. 58.

[xxviii] Charles Darwin, *The Descent of Man* (Princeton, NJ: Princeton University Press, 1871/1981), p. 101.

[xxix] Salman Rushdie, comment on "Bill Moyers on Faith and Reason." Public Broadcasting System, June 23, 2006.

[xxx] Kwame Appiah, *Cosmopolitanism* (New York: Norton, 2006).

[xxxi] John Kenneth Galbraith, *The New Industrial State* (Harmondsworth: Penguin/Hamish Hamilton, 1967).

[xxxii] George A. Akerlof, "The market for 'lemons': Quality uncertainty and the market mechanism." *The Quarterly Journal of Economics* 84 (1970), pp. 488-500.

[xxxiii] Thomas C. Schelling, *The Strategy of Conflict* (Cambridge, MA: Harvard University Press, 1960).

[xxxiv] Darwin, *The Origin of Species*, p. 237.

[xxxv] James Lull, *Culture-on-Demand* (Oxford: Blackwell, 2007).

[xxxvi] Bernard Lewis, *What Went Wrong?* (London: Weidenfeld & Nicolson, 2002).

[xxxvii] *Newsweek*, "Viral video: A YouTube is born for the Arab world." Jan. 22, 2007, p. 8.

[xxxviii] *Newsweek*, p. 8.

[xxxix] Michel Foucault, *Discipline and Punish: The Birth of the Prison* (Harmondsworth: Penguin, 1977).

[xl] Committee to Protect Journalists, 2008, www.cpj.org/deadly/index.html

[xli] Wade, p. 180.

[xlii] Gregory Clark, *A Farewell to Alms: A Brief Economic History of the World* (Princeton, NJ: Princeton University Press, 2007).

[xliii] Dawkins, *The God Delusion*, p. 270.

[xliv] Richard Dawkins, *The Selfish Gene*, 2nd Ed. (Oxford: Oxford University Press, 1989), pp. 200-201.

[xlv] Steven Pinker, Interview: City Arts and Lectures. San Francisco, Sept. 24, 2007.

[xlvi] Lull, *Culture-on-Demand*; James Lull, *Media, Communication, Culture* (Cambridge, UK: Polity Press, 2000).

[xlvii] Of course cultural opportunities do not distribute equally within nation states or around the world. Lack of access to everything from basic education to sophisticated communications technology curtails the potential of those who must watch what's going on from the sidelines. Still, an expanding variety of information and cultural forms reaches all but the very poorest or most isolated individuals today.

[xlviii] Marshall McLuhan, *The Gutenberg Galaxy* (Toronto: Toronto University Press, 1962); Marshal McLuhan, *Understanding Media* (New York: New American Library, 1964).

[xlix] Lull, 2000, p. 38.

[l] Basalla, p. 170.

[li] James Lull, *China Turned On: Television, Reform, and Resistance* (London: Routledge, 1991).

[lii] Alex Wright, "Friending, ancient or otherwise." *The New York Times*, Dec. 2, 2007, p. 4.

[liii] Basalla, pp. 13, 64-5.

[liv] Darwin, *The Descent of Man*, p. 233.

[lv] Theodosius Dobzhansky, *Genetic Diversity and Human Equality* (New York: Basic Books, 1973).

[lvi] Darwin, *The Origin of Species*, p. 215.

[lvii] David Edgerton, *The Shock of the Old: Technology and Global History Since 1900* (Oxford: Oxford University Press, 2007).

[lviii] Frank Davies, "The race online." *San Jose Mercury News*, Feb. 24, 2008, pp. 1A, 19A.

[lix] J. Hawks, E.T. Wang, G.M. Cochran, H.C. Harpending, and R.K. Moyzis, "Recent acceleration of human adaptive evolution," *Proceedings of the National Academy of Sciences* 104: 52 (Dec 26, 2007), pp. 20753-20758.