

It has been said that when Adam and Eve were expelled from the Garden of Eden, Adam took Eve's hand and said: "Eve, my dear, we live in an age of transition." This is a common perception by people in any age who are upset by change. In the last few months we have been bombarded by people talking about change when what they often mean is a return to the so-called good old days. But we can't go back to a world that no longer exists. The industrial age in which we all grew up is slowly fading into the information age. And in this new world, intellectual capital is becoming relatively more important than physical capital and the new source of wealth is not material, it is information applied to work to create value. William J. Perry

summed it up neatly when he said "that in the 19th century the wealth of California came from the gold in our mountains. Today it comes from the silicon in our valleys."

The pursuit of wealth is now largely the pursuit of information and its application to the means of production. This shift of perception of what constitutes an asset poses huge problems in maintaining the power of government. The competition for the best information is very different from the competition for the best bottom land. The nature of information - how it is traded and produced, the scope, shape, and protocols of information markets will impact government policy, set limits of government power, and redefine the concept of sovereignty.

The information revolution has been often announced by futurists, but many of the innovations that have been predicted have never arrived. No one has yet seen the paperless society, nor a helicopter in every back yard. What we have seen instead is that information technology has demolished time and distance, but instead of validating Orwell's vision of Big Brother watching us, we have all wound up watching Big Brother. No one who has lived through the last few years and watched on live television as the Berlin wall came down or the first protesters in Prague in 1988 chanting at the riot police: "The world sees you." can fail to understand that information technology is changing the way we think about the power of sovereignty, about the way the world works,

the way we work, and indeed the nature of work itself. The foreign minister of the former Soviet Union, Eduard A.

Shevardnadze, during the Yeltsin coup put it this way "Praise be information technology! Praise be CNN....Anyone who owned a parabolic antenna able to see this network's transmissions had a complete picture of what was happening." ¹ And this from a senior officer of what used to be a closed and secretive society.

While historians rarely identify these sea changes when they are living through them, I would argue that the signs are unmistakable that we are now in the midst of a new revolution at least as dramatic and far

¹Eduard Shevardnadze, *The Future Belongs to Freedom*, New York: The Free Press, 1991, pg 207

reaching as that which occurred in what the great historian Paul Johnson describes as the birth of the modern world society in the beginning of the 19th century. Different people see different talismans, each constructs his or her own scenario, as we are all the product of the velocity of our own experience. Social analysts observe political and social change, while scientist tend to emphasis their own specialties. Peter Drucker has described how he sees the situation as follows; 'We passed out of creeds, commitment, and alignments that have shaped politics for a century or two. We are in political *terra incognita* with few familiar landmarks to guide us.'² While agreeing that we have passed some milestone

²Peter F. Drucker, *The New Realities*, Harper & Row, 1989, pg 4

of history, other perceptive observers concentrate on what they believe are dramatic advances in technology which are driving this revolution. George Gilder has written that; "The central event of the twentieth century is the overthrow of matter. In technology, economics, and the politics of nations, wealth in the form of physical resources is steadily declining in value and significance. The powers of the mind are everywhere ascendant over the brute force of things."³ All of these forces, each interacting with the other with incredible speed is changing how individuals and nation states live, work and deal with each other.

³George Gilder, *Microcosm*, Simon & Schuster, 1989, pg 17

The start of this revolution may perhaps be dated in this country from the passage of the G.I. Bill which made it possible for so many returning service men and women to get a college education and begin to build the base of knowledge workers. Today the proliferation of information technology ranging from the telephone and fax machine to fiber optic cables has flooded the world with data and information moving at near the speed of light to all corners of the world. It is a well established principle that a change of degree - if carried far enough - may eventually become a difference in kind. In biology this is how new species are created and old ones die out. Speed is what transforms a harmless lump of lead into a deadly rifle bullet. This explosion of

information and the speed at which it can be transmitted has created a situation which is different in kind and not just in degree from any former age. For thousands of years news could travel only as fast as a horse could run or a ship could sail. Military power was similarly impeded. Indeed Napoleon's armies could move no faster than those of Julius Caesar. Great national leaders were almost anonymous to all but those who had seen them in person. Today the minicam is omnipresent, but in the late 18th century there were no photographs of Washington or Jefferson, and the Tsar of Russia traveled unrecognized throughout Europe. The ability of the sovereign to keep information secret and thus a tight grip on power, began to erode with the invention of the paved road,

the optical telegraph, and the newspaper. Richard Brown has observed that when "the diffusion of public information moved from face-to-face to the newspaper page, public life and the society in which politics operated shifted from a communal discipline to a market-oriented competitive regimen in which the foundation of influence changed."⁴

Government viewed all of these developments with a wary eye. In 1835 Emperor Francis I of Austria turned down a request for permission to build a steam railroad lest it carry revolution to his throne. He was more right than he knew. Years later with the advent of the telephone

⁴Richard D. Brown, *Knowledge is Power*, Oxford University Press, 1989, pg 279

another sovereign saw danger in a new technology." Leon Trotsky reportedly proposed to Stalin that a modern telephone system be built in the new Soviet State. Stalin brushed off the idea, saying I can imagine no greater instrument of counter-revolution in our time." What would he have thought if he has lived to see the Yeltsin coup which utilized an independent computer network called Relcom that links Moscow with 80 other soviet cities and can and was plugged into similar networks in Europe and the United States to spread the news of coup. Even more ironic was the fact that Yeltsin communicated with his greatest ally, Mayor Sobchak in Saint Petersburg via the government's own telephone network. The speed of such modern networks and its

ability to carry massive amounts of data to the far corners of the world is hard to overestimate, but perhaps can be set in context this way: The library of Congress aspires to contain all that was published in the United States in the last hundred years. If the contents of all these books and papers were to be transmitted over ordinary copper phone wires it would take about 500 years. Today they could all be sent over fiber optic cable in a total of eight hours. And doubtless this is only the beginning. But what has such speed and volume done to the way the world works?

Barbara Ward has written that revolutions do not occur until people learn that there is an alternative to their way of

life. Since the whole world is now tied together by an electronic infrastructure we now have what amounts to a continuous global conversation. The implications of the global conversation are about the same as the implications of a village conversation, which is to say enormous. In a village there is a rough sorting out of ideas, customs and practices over time. A village will quickly share news of any advantageous innovation. If anyone gets a raise or a favorable adjustment of his or her rights, everyone else will soon be pressing for the same treatment. The global conversation prompts people to ask the same questions on a global scale. To deny people human rights or democratic freedoms is no longer to deny them an abstraction articulated by the educated elite, but rather

customs they have seen on their TV monitors. Once people are convinced that these things are possible in the village, an enormous burden of proof falls on those who would deny them.

Today village and indeed national borders have ceased to be boundaries. Data of all kinds move over and through them as if they did not exist. Arthur C. Clarke who first postulated the viability of a geosynchronous satellite put it this way. "Radio waves have never respected frontiers, and from an altitude of 36,000 kilometers, national boundaries are singularly inconspicuous" Satellites now peer down into every corner of a nation state, data and news are received by people within national

borders on every device ranging from a hand-held transistor radio to personal computers at home and work tied into huge data network. In short, the sovereign has totally lost control of what people can see and hear, and can no longer maintain the fiction that there are no alternate types of political structures.

Not only does the information revolution make the assertion of territorial control impossible with regard to what people can see and hear, but also less relevant in other ways. The physical control of territory has always been one of the most important elements of sovereignty, ^{THE IMPORTANCE of} but this control in many important respects is fading away. Not long ago armies fought and men died for the

control of the iron and steel in the Ruhr basin, because the ownership of these assets conferred real economic and political power. Today these once fought over assets may be a liability. To the extent that new technology replaces once essential commodities with plastics or other synthetic materials the relative importance of these areas to the vital interest of nations is bound to change. Even control of the so-called geographic "choke points" have less significance than they once had. A few years ago the conventional wisdom told us that all the lights would go out all over the world if the Suez Canal were ever closed. The power of a sovereign state, in this case Egypt, to block the flow of oil from the middle east was believed to be absolute. The conventional wisdom did not

take into account the technology that would allow the building of super tankers that could carry oil; around the Cape of Good Hope economically.. Similarly advances in military technology are vitiating the relevance of other geographic strategic positions. This velocity of change is shifting the tectonic plates of national sovereignty and power in ways that are still unfolding.

What ever facet of sovereignty people discuss, in the end the central concept is that the actions of the sovereign are not subject to contradiction by any other power. Indeed the *Dictionary of International Law* defines it as : "The supreme individual authority possessed by the state to enact and enforce its law with respect to all persons,

property and events within its borders."

The development of sovereignty as a political theory has a long history dating back at least to Roman Law, moving through the absolutism of Bodin in the 17th and 18th centuries, to Hobbes and then John Locke and Rousseau.

While the ruler, in whatever era, could always find a political philosopher to validate his or her assertion of power, the information revolution has now given history a new reverse twist which stands conventional wisdom on its head. So great is the desire of some nations for the approval of the world that they call in outsiders to validate their own national elections. This is an extraordinary development far removed from the assertion of absolute power in conducting a nation's internal affairs..

Consider the Council of Freely Elected Heads of State who Noriega called in in Panama to observe the election. Former President Jimmy Carter and some European counterparts told the world in no uncertain terms that the Panama election in 1989 was dishonest and in a sense paved the way for the American military action which followed. The same group was asked to witness the Nicaraguan elections in 1990 and gave their seal of approval which started that country along the road toward a fragile democratic government. In addition to monitoring elections, the whole field of human rights is rapidly becoming a world concern transcending national sovereignty. Today, as the chanters in Prague told the police, the world sees what is going on. The cold print

in the newspaper now has a human face in living color and in real time. It makes all the difference. The Kurds, for example, have suffered from subjugation by others on and off since the Arabs conquered them in the 7th century. But it was the images of horror on CNN last year that awoke the world to their plight in Iraq. Incredible as it may seem, an international conference on human rights which was held in, of all places, Moscow in 1991 saw the Russian representative declare that "national guarantees are not sufficient so we have to review the principle of non-interference in the affairs of other governments."⁵ Indeed the history of the last few years has seen the growing popular support for the rights of

⁵The New York Times, September 10, 1991

individuals in all nations against the prerogatives of sovereigns, wherever located.

Another traditional aspect of sovereignty that is fading away is the power to issue currency and control its value. From the earliest times governments have wished to monopolize this powerful medium and control its value in the world markets. Of course the claims kings made about the worth of their currency did not always square with the facts. In the 17th century Amsterdam bankers made themselves unpopular in the royal chambers by weighing coins and announcing their true metallic value. But these bankers spoke to a small audience and their voices were not heard much beyond the city limits. Until recently governments

retained substantial power to manipulate the value of their currencies, but as the information revolution has rendered borders porous to huge volumes of high speed information, the task has become difficult if not impossible. The control of currency has always given the sovereign great leverage over the most crucial material endeavors of his citizens. The regulation of money markets is the regulation of a society's resources in their most convenient and fungible form. In ancient Sparta the government forbade citizens any medium of exchange other than heavy bars of iron of little worth. The sons of Lycurgus correctly surmised that with such an inconvenient currency, complex commerce would be nearly

impossible, and the citizens could concentrate on the manly art of war.

The more usual temptation, however, has been for governments to make currency lighter, not heavier. Clipping coins or mixing silver or gold with dross metals is an ancient tradition. And when governments learned the wonders that could be worked by printing money a whole new era opened up. Since paper money has no intrinsic value, only scarcity value, it was both easier (or so it seemed) and more imperative for governments to control its value. Since China first issued paper money in the eleventh century, almost every sovereign in the world has experimented with fiat money, often with disastrous results.

Until recently what we call money, be it a piece of paper or a bookkeeping entry, or a physical object has been linked to a physical commodity which put some limit on a sovereign's ability to inflate the currency. The nature of the commodity varied with the interests of the people using it. American colonists used tobacco money. American Indians favored the cowrie shells or wampum and of course the more familiar copper, gold, and silver still circulate in the world. The link between commodities and money became slowly attenuated over time. On March 6, 1933 President Franklin D. Roosevelt issued a proclamation prohibiting American citizens from holding gold. The Congress followed on June 5 that year by passing a joint resolution repudiating the gold clause

in all private and public contracts. While various other actions were taken to weaken the tie to gold, the final blow was administered on August 15, 1971 when President Nixon terminated the convertibility of the dollar into gold and the era of floating exchange rates began.

In today's world, the value of a currency is determined by the price that the market will pay for it in exchange for some other currency. Indeed the market is no longer a geographic location, instead it is more than 200,000 computer screens in hundreds of trading rooms all over the world all linked together by an electronic infrastructure. The latest political joke, the newly released GDP figures or the statement of some world

leaders appears instantly on all screens and the traders vote by buying and selling currency. The market is a harsh disciplinarian. When Francois Mitterrand became President of France in 1981, he was elected as a committed Socialist, and almost immediately money began to flow out of the country, foreign exchange reserves were rapidly depleted, and within six months Mitterrand had to reverse course and become pro-capitalist. This is not to say that governments can no longer influence the value of their currencies. They can and do, but their ability and those of their central banks readily to manipulate that value in world markets is declining. Increasingly currency values will be experienced less as a power and privilege of sovereignty than as a

discipline on the economic policies of imprudent sovereigns.

This new discipline is being administered by a completely new system of international finance. Unlike all prior arrangements, the new system was not built by politicians, economists, central bankers or finance ministers. No high level international conference produced a master plan. The new system was built by technology. The system is partly the accidental by-product of communication satellites and engineers learning how to use the electromagnetic spectrum up to 500 gigahertz. Just as Edison failed to foresee that his phonograph would have any commercial value, the men and women who

tied the world together did not fully realize they were building an electronic infrastructure that would change the world. Yet the money traders understood immediately and drove their trades over the network.

The convergence of computers and telecommunications has created a new international monetary system, and even a new monetary standard by which the value of currencies is determined. The Information Standard has replaced the Gold Standard. We sit at home and watch a live broadcast of riots in a country on the other side of the earth, and a currency falls, in minutes. We hear by satellite that a leadership crisis has been resolved and a currency rises. Ten

minutes after the news of the disaster at Chernobyl was received, market data showed that stocks of agricultural companies began to move up in all world markets. For the first time in history, countless investors, merchants and ordinary citizens can know almost instantly of breaking events all over the earth. And depending on how they interpret these events, their desire to hold more or less of a given currency will be inescapably translated into a rise or fall of the exchange value.

The natural first response to this claim is, it has ever been so. The pressure of events has always been a major factor in determining the value of currencies. But the speed and volume of this new global market

makes it something different in kind and not just in degree. Cherished political, regulatory, and economic levers routinely used by sovereigns in the past are losing some of their power because the new Information Standard is not subject to effective political tinkering. It used to be that political and economic follies played to a local audience and their results could be in part contained. A relatively small club of central bankers and politicians representing their sovereign governments believed it could control the value of a given currency. This is no longer true, the global market makes and publishes judgments about each currency in the world every minute and every hour of the day. The forces are so

powerful that government intervention can only result in expensive failure over time.

When the volume of trading in anything is small, prices can be influenced dramatically by placing relatively large buy or sell orders. As the size of a market grows, the amount of orders that have to be placed to move the price either up or down becomes correspondingly larger. In the relatively small postwar money markets, central banks had enough resources to place orders large enough to influence the price of a currency. Today, with almost two trillion dollars changing hands in New York alone, there is not enough money in the reserves of the world's central banks to significantly

influence exchange rates on more than a momentary basis.

Technology has made us a global community in the literal sense of the word. Capital will go where it is wanted and stay where it is well treated. It will flee from manipulation or onerous regulation of its value or use and no sovereign power can restrain it for long.

Governments do not welcome this Information Standard any more than absolute monarchs embraced universal suffrage. Politicians who wish to evade responsibility for imprudent fiscal and monetary policies correctly perceive that the Information Standard will punish them. Moreover, in

contrast to former international monetary systems, there is no way for a sovereign to resign from the Information Standard. No matter what political leaders do or say, the screens will continue to light up, traders will trade, and currency values will continue to be set not by sovereign governments but by global plebiscite on the soundness of their fiscal and monetary policies.

The new global market is not limited to trade in financial instruments. Indeed the world can no longer be understood as a collection of national economies. The electronic infrastructure that now ties the world together, as well as great advances in the efficiency of conventional

transportation, are creating a single global economy.

The very phrase "international trade" has begun to sound obsolete. Commerce and production are increasingly transnational. More and more products have value added in several different countries. The dress a customer purchases at a smart store in New York may have originated with cloth woven in Korea, finished in Taiwan, and cut and sewed in India according to an American design. Of course a brief stop in Milan, to pick up a "Made in Italy" label, and leave off a substantial licensing fee is de rigeur before the final journey to New York. Former Secretary of State George Shultz recently remarked in a speech: "A few months ago I

saw a snapshot of a shipping label for some integrated circuits produced by an American firm. It said, 'Made in one or more of the following countries: Korea, Hong Kong, Malaysia, Singapore, Taiwan, Mauritius, Thailand, Indonesia, Mexico, Philippines. The exact country of origin is unknown.' That label says a lot about where current trends are taking us."

Whatever the correct word for these phenomena, "trade" certainly seems an inadequate description. How does one account in the monthly trade figures for products whose "exact country of origin is unknown?" How are national governments to regulate the complexities of transnational production with anything like the firmness

with which they once regulated international trade? / How are politicians to whip up nationalist fervor against foreign goods when American car companies build cars in Mexico for export to Africa and pay the profits to pensioners in Chicago, and the Japanese build cars in Tennessee for export to Europe and use the income to refinance real estate in Texas? /

The information revolution not only makes the microeconomy more difficult to regulate, / it makes the macroeconomy -- the world of GNP, aggregate demand, and seasonally adjusted statistics -- harder to measure and therefore harder to control. / Many of the terms we use today to describe the economy no longer reflect reality.

Everyone knows, for example, that all the lights would go out, all the airplanes would stop flying, and all the financial institutions and many of the factories would shut down if the computer software that runs their systems suddenly disappeared. Yet these crucial intellectual assets do not appear in any substantial way on the balance sheets of the world. Those balance sheets, however, are chock full of what in the industrial age were called tangible assets -- buildings and machinery -- things that can be seen and touched.

How does a national government measure capital formation, when much new capital is intellectual? How does it measure the productivity of knowledge workers whose

product cannot be counted on our fingers? If it cannot do that, how can it track productivity growth? How does it track or control the money supply when the financial markets create new financial instruments faster than the regulators can keep track of them? And if it cannot do any of these things with the relative precision of simpler times, what becomes of the great mission of modern governments: controlling and manipulating the national economy? Even if some of these measurement problems are solved, as some surely will be, the phenomena they measure will be far more complex and difficult to manipulate than industrial economies of old.

These remarks today have not dwelt on the wonders of the gee-whiz technology emerging from your Silicon Valley, not because they are not wondrous - they are - but because revolutions are not made by gadgets, but by a shift in the balance of power. The technology is the enabling factor, not the cause. When a system of national currencies run by central banks is transformed into a global electronic marketplace driven by private currency traders, power changes hands. When a system of national economies linked by government regulated trade is replaced -- at least in part -- by an increasingly integrated global economy beyond the reach of much national regulation, power changes hands. When an international telecommunications

system, incorporating technologies from mobile phones to communications satellites, deprives governments of the ability to keep secrets from the world, or from their own people, power changes hands. When a microchip the size of a fingernail can turn a relatively simple and inexpensive weapon into a "Stinger" missile, enabling an illiterate tribesman to destroy a multi-million dollar armored helicopter and its highly trained crew, power changes hands. When the President picks up the phone to talk to another head of state rather than have an ambassador deliver a meticulously drafted note to the foreign ministry, power changes hands.

This is not to say that sovereign power will disappear - it will not - but what it does mean is that no government, over time, can act alone not subject to contradiction. The protesters in Prague were right - the world is watching, and the power of world opinion is transmitted and focused and reported by the telcon network. The world looks and reacts and brings pressure on everything from the destruction of the rain forest, the allegations of global warming, the disposal of toxic waste, to the violation of human rights anywhere on the planet.

The transition of economic thinking as to what creates wealth has moved over the centuries from land, to materials, to labor and now to knowledge make it harder for a

sovereign to exercise the kind of control it once had over the means of production in the Industrial Age. A person with the skills to write a complex software system which can produce a billion dollars of revenue can walk by any customs officer in the world with "nothing of value to declare." Investment no longer follows trade or the flag - it moves to the most hospitable climate. The sovereign can create a hostile or a hospitable economic climate, but can no longer control the flow of capital by fiat.

All of this is good news for freedom.

Ronald Reagan's powerful speech on May 31, 1988, delivered at Moscow State University, was literally heard around the world. He spoke of the power of freedom in a land that

had seen little of it; he spoke of economic freedom to release the innovations of entrepreneurs; he spoke of the information revolution "quietly sweeping the globe, without bloodshed or conflict." Few realized at the time how this message carried on the global electronic network, was working on the hearts and minds of people. "The rush to freedom and competitive economic institutions in Eastern Europe in late 1989," Henry Nau has written, "left the world breathless and caught much of the intellectual community in the United States and the West, which only recently celebrated the decline of American and Western influence, without an adequate explanation for this dramatic turn of events."⁶

⁶Henry R. Nau, *The Myth of America's Decline*, Oxford University Press, 1990, pg 1

In the last few years the virus of freedom - a virus for which there is no antidote - has been carried over and through the borders which divide us, and the relative balance between the sovereign and the citizen, and between an individual sovereign and world opinion has been permanently altered. Power really is moving to the people. While freedom can be abused and debased, as Lincoln put it, "Is there a better, or even an equal, hope in the world?"