THE FUTURE: NEW TECHNOLOGY AND RESEARCH

The Computer: A Leap Forward: Watts Wasker, an expert in computer systems believes that we are headed for an all digital generational divide. The current digital generation will soon clash with the next. Today, we are seeing less and less experts in the professions; instead we are dealing with professionals with expertise. It is becoming increasingly difficult to keep up with the massive amount of data and information that is being circulated. Doctors do not know sufficiently about drug interaction as hundreds of new drugs are being introduced. They simply cannot do the research while they take care of an overload of patients. In the future, doctors may simply become technicians as drug testing will be via computers. The relationship of humans become less important as medical technology assumes the role of the practitioner. Another problem concerns the role of Big Brother as privacy becomes an issue. Today, your personal information is no longer private; it is no longer just your social security number and bank accounts, it is information relative to your habits, what sites you visit, what you say on *Facebook* and in other social outlets that become public. In the future, you will have to pay for your privacy by using a privacy management consultant and that may cost you $5,000 per household.

Global Warming Approaches: It appears that some of the solutions that are being employed by governments are not going to be effective in solving a major global problem. These facile solutions need to be replaced with major surgery. While the slow cleaning of auto emissions is a start, there are far too many larger issues that are outpacing the current global pollution. We need major interaction, new ways to combat CO2 chemically. E.g. sulfur seeding. Biodiversity is being rapidly destroyed. Rain forests are being depleted in exchange for a logging industry; all of this with the understanding that it is those rainforests that are responsible for the elimination of CO2 and are an integral part of biodiversity which keeps our Ecosystem stable.

New Medicine: Dr. Sanjay Gupta speaks of the wild factor as advances move us closer the creating organs via stem cells. We can take specific origin based cells, multiply them, and transplant back into the body. Dr. William Gahl addresses the changing organization of a cell to make another cell that is specialized for another function. Stem cell advances will have bio-genetic robots that will interact and repair organs at the micro cellular level. Regeneration of tissue will make medical synthetic valves, screws etc obsolete. Even the regeneration of new teeth will make dentures, fillings and root canals a thing of the past. Vaccines for cancer will prevent a virus from taking hold. Even simple approaches to biological hibernation with the use of ice and saline solution can buy time for a wounded person. We are now realizing that at one time, humans had the ability to place the body into a state of rest, into hibernation. The area of hibernation appears additionally to have implications for gerontology.

Genetics and Nano-Medicine: Dr. David Sinclair of Harvard Medical School speaks of genetics as the fastest growing field. In the near future we will be able to buy a genetic map of ourselves at a reasonable price. The genome sequence is important as it is a predictor of future biological events. Dr. Seth Goldstein speaks of future robotics performing surgery without general anesthesia and without a physician being present. Other advances include a diagnostic pill that can walk through areas inside the body and through the colon taking video of what is

inside. With regard to cancer therapy, Dr. Naomi Hallis speaks of nano particles which interact with light that absorbs it and kills the cancer cells. Already there is high success rate in a controlled experimental environment. Nano medicine uses non-toxic materials. It is different from chemotherapy that invades other tissues. In Nano medicine you can tailor the response and it perfectly safe as it eliminates any side effects. Dr. Sinclair addresses anti-aging in the future via gene manipulation. This is not so much about longevity but rather about maintaining a healthy body. The pill will mimic what diet and exercise can do. The genes identify factors that accomplish the same function. Dr. Dean Ornish, a pioneer in preventive medicine and the first to take on the medical establishment in the area of cardiovascular disease via natural foods and lifestyles maintains that having a healthy and natural lifestyle can do the same. Lately, he has been working with the recipients of the latest *Nobel Prize for Medicine* of 2009, whose work revealed further the inner working of chromosomes, how the chromosomes can be copied in a complete way during cell divisions and how they are protected against degradation. The Nobel Laureates have shown that the solution is to be found in the ends of the chromosomes – the telomeres – and in an enzyme that forms them – telomerase. If the telomeres are shortened, cells age. Conversely, if telomerase activity is high, telomere length is maintained, and cellular senescence is delayed. This is the case in cancer cells, which can be considered to have eternal life. Certain inherited diseases, in contrast, are characterized by a defective telomerase, resulting in damaged cells. Many scientists speculated that telomere shortening could be the reason for ageing, not only in the individual cells but also in the organism as a whole. Most normal cells do not divide frequently, therefore their chromosomes are not at risk of shortening and they do not require high telomerase activity. In contrast, cancer cells have the ability to divide infinitely and yet preserve their telomeres. How do they escape cellular senescence? One explanation became apparent with the finding that cancer cells often have increased telomerase activity. It was therefore proposed that cancer might be treated by eradicating telomerase. Dr. Ornish has noted that when you live a healthy lifestyle, there appears changes in genes and even your brain cells change by living a better, happy and sustainable life. In this scenario, the ends of the chromosomes—the telomeres are not shortened and the enzyme of telomerase is maintained at a high level and cellular senescence is delayed. The body while complicated, has the ability to change at the cellular level. Changes ocurr not only at the chemical level but the micro atom level. We can make ourselves ill at the pathological level via toxins or by destructive brain patterns or we can make ourselves whole by maintaining a healthy lifestyle that is based on a deep understanding of the human organism.

E Commerce: Electronics and Super Computers

The speed of the electronic and informational advances in the last twenty years is noteworthy compared to the previous century. It has produced an internet, electronic devices, search engines like google, supercomputers and a vehicle for electronic commerce. Storage advances in your computers appear to be one of the largest breakthroughs. We have a Library of Congress that has stored 200 years of information. Now, we can do the same online in 15 minutes. The internet now is the tool for quick access to all types of information. Customization is the new theme as we move to I pods, touchscreens, voice imprint, photo, video, all at the touch of your palm. It is a constant tool for social media, finding jobs, meeting people. We are moving to a paperless office, to tablets that are halfway between a computer and an I pod. Expect this soon by Apple and Amazon. Expect robotics to become the norm as they will function where humans interacted before i.e. the chef, the barber etc. In the future we can

expect three dimensional images or holograms guided by GPS navigation to alert us or our children from danger or getting lost. Jeremy Gutay predicts emotional and sensitive technology, one that senses emotions fixing for humans a variety of problems via mood lighting, music, scent, video games, dinner. Expect memory implants that interact with the electrical signals of the brain.

American Superpower: Problem of Balance and Vision

As we reflect to our western past, wars of conquest, imperial-colonial control, and hegemony of existing native populations, there remains centuries later the problem of the imperial mission coupled with the addition of the economy and technology as areas that are in conflict with one another. Nation building of lesser economic nations should not be accomplished unilaterally but rather with the alignment of other nations. China is in its industrial golden age moving rapidly without a recession. Its 8.5 % growth per year poses problems for Japan and India who are also growing at a fast rate. As the population explodes by the billions, there will be a need for more of everything. There is an economic power race that is building and the Asian nations appear to be the powers of the future that the U.S. will have to contend with as its base becomes eroded with exhoritant military spending. The new world order has to assume partnerships. Eg. A new strategy that involves long standing military partnerships to keep a level setting. Additionally, nation building needs to be stabilized. A policy of engagement calls for a marriage between pragmatism and principle. Currently, Asia is rising at a rate of 8.7% which affect western exports. Geopolitics can get complicated as we speak of shortages of oil, water or the lack of access, the envronmental dollar. One fourth of the U.S. water is contaminated. Too much water is being wasted. In industrial development it takes 150 gallons to create 5 gallons. Water shortage in the future will be a global problem. It will be worth more than oil. It has now been indentified as a national security issue by the Pentagon.

The Winds of Change:Wind is the fastest growing energy technology in the world today, according to the *Energy Information Administration*. Wind capacity around the globe has more than doubled in the last three years, and experts predict the production from wind machines will triple in the next few years. And many European nations and India are constructing major new wind facilities, according to the *EIA*. It is a cheap solution, and The *Department of Energy* says there is enough wind in this country to double the electricity that we use today. How much cheaper can you get than wind? "It's so cheap, in fact, that it could provide a whole gateway to the hydrogen economy because we could use electricity generated from wind to get hydrogen from water It means that hydrogen, a much cleaner fuel source, could become the oil of the future.

Home, Hearth and Modem The home of the future will provide its own energy. It is going to process its own waste. Your counters are going to be self-cleaning. And it's going to be very interactive in the sense that your refrigerator is going to talk to your stove. Our lives become more automated as we move toward creating "smart" homes that do the thinking for us. American adults have an average of 19 hours of leisure time per week, according to a recent *Harris Interactive Poll*. More and more, Americans are spending that time in their homes watching movies, surfing the Internet and playing video games.

Turbulent Oceans, Powerful Storms While we are busy formatting our homes to fit our individual needs, the world outside may grab our attention in ways it has never done before. Environmental trends -- everything from global warming to over-fishing the world's oceans -- are beginning to affect the quality of our lives. Since the last ice age about 13,000 years ago, the

earth's surface has been warming. Humans are speeding up the process by burning fossil fuels that release warming gasses. These gasses, in turn, get trapped in the atmosphere. The ice melt from Antarctica is swelling rivers and oceans. And scientists say the next quarter century could see ocean sea levels continue to rise, flooding low-lying areas and islands and knocking on the doors of millions of people now living along the coasts. As scientists debate whether humans can slow global warming by burning less fossil fuel, research suggests we are fishing the oceans to death. For more than a billion people on this planet, seafood is more than a popular choice on a menu. The poor in Third World countries critically depend on the protein of fish for their survival. To restore the oceans' bounty will require international agreements, enforced fishing limits, and it will mean creating ocean preserves where sea life can grow and multiply.

Disclaimer: All of the aforementioned are projections that follow linear evolution without unforeseen planetary disruptions. However, as ancient wisdom attests, life and the nature of this planet works on cyclical and not lineal evolution. Scientists currently are speaking of a solar anomoly that will ocurr in 2012 that follows Mayan astronomic cyclical predictions from their 5,125 Great Cycle of their ancient Long Count Calendar, one that will include a rare Venus transit during a solar eclipse, the last ocurring in August 11, 3114 B.C. Others have pointed to 2012 as the completion of the 26,000 year Precession of the Equnoxes cycle, nothwithstanding a possible wobbling of the axis of earth that would have catostrophic global implications. Russian scientists are moreover, working on intercepting a potential comet or asteroid striking earth. Question: Is there not enough human driven chaos on earth without the addition of a major cataclism? Or is there a link between the two? From the pre-Columbian or Native American worldview, it is not about an ending or doom but about transformation and renewal and a much needed shift toward a new paradigm.