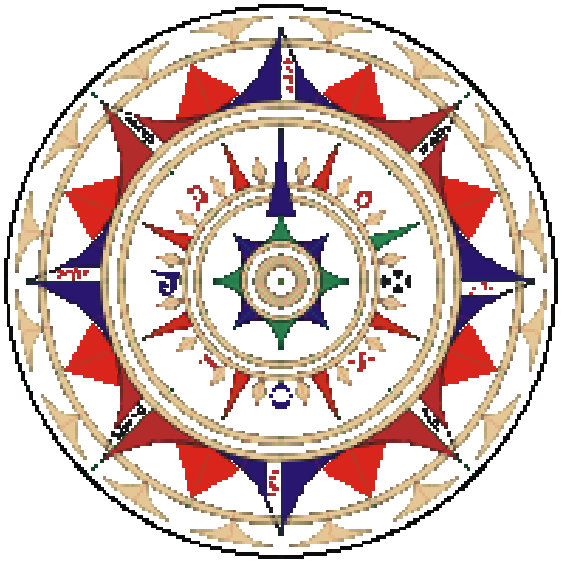
OLD - DRAFT – MUST BE REWRITTEN ENTIRELY !

Compass Rose

Navigating Lives and Nations in Uncertain Seas



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Preface

(Maybe this is more of a "Forward" and that should be written by someone else, but taking the notes I have written here as a starting point.)

The compass rose evolved in the Middle Ages as a tool and a symbol for use in navigation in the most elementary physical sense. Now we are living in an era that many people would say is far away from the lifestyle and troubles of the 11th or 12th centuries, but in this short book, more like a collection of essays, memos and notes, I put forth the claim that we are actually in a very similar framework when it comes to our society and environment.

The original subtitle for this book, which itself changed through several iterations as I struggled over a focus upon international and homeland security, counterterrorism, management of energy and the environment, and also matters of public health, was:

The Four Critical Points for Our Future on Earth
Our Crises of Direction and Decision

Public Health
Public Safety
Energy Management
Transportation

The Necessity and the Method to Address All Four Together

… … … … …

The other title I was considering was this:

What is Wrong and How to Fix It
A Guide to Post-2008 Living

This seemed incredibly bold and outrageously blunt. It was just a notion, as I considered the challenge of what to put into this book, especially from collections of different essays and articles written and for the most part unpublished. I surely do not have all the answers, and in fact I don't claim mastery over all of the problems. The fact is, nonetheless, that we are dealing with both complexity and complicatedness, in the same situation, our one world. Yes, I have some ideas about how to get through the swamp we are in and how to make changes in our individual, family and community lives in order to have a better time while we are doing our trudging and how to establish a better life sooner than later (or never). But this is not a 1-2-3 guidebook and there is not going to ever be such a thing.

The main body of this book is not very long and there are scant breaks from text – not much in the way of pictures or graphs. That is deliberate. My goal has been to plant seeds into peoples' minds and to use a few verbal crowbars and levers in order to break loose some logjams and ice floes. The Appendix is lengthy because it contains several

papers that have been revised and incorporated into the overall book. There one can find a bit more detail on some subjects, but in fact more of the material is direct and forward about what I see as the problem, and the way out of the problem. There are not the usual overload of references, quotations, and footnotes. pointing to other experts, pundits, writers, and case histories. …

Being "at sea" in a turbulence of our own making, finding that the horizon was full of dark clouds on a planetary-wide scale boding not good times for economies, environments, energy and life in general, I decided that it would be better to focus attention on how we perceive and judge, how we think and analyze, and how we synthesize and build new ideas out of old ones, in order that some people can have some new tools for solving the kind of dilemmas, riddles and quandaries that we now are in.

"Compass Rose" is, after all, meant to be like a real compass, a tool that you can use to navigate. You're still going to need a few things, not the least of which is a map or a good facsimile thereof, for how this world is shaped and how things work. And of course you're going to need some type of a ship, or else you had better be very, very good at treading water. This is not a book for those who are expecting that there is an easy, quick way out of the mess that we have co-created. I simply and truly hope that it will be useful (insightful, innovative, inciteful, ingenious) for many, many readers.

Acknowledgements

First and foremost I want to give credit and thanks to my wife Marina. She has been patient. She has been very critical of everything as well. Usually one does not find authors stating or revealing these kinds of things, but for me it is important to acknowledge and be thankful for constructive, critical thinking, because without that, I would not be producing anything much more than a pouring forth of my views and perceptions as if I had been living on an island. Marina has also supported me through her hard labors, also not very well rewarded, during these times while I have been working not only on this book but also on many other projects, most of all (it seems when I add up the hours and activities) going through some difficult phases of looking for work, investors, contracts and simply jobs. The Recession for me started a few years ago, and like many I was not prepared for how society, especially American society, had changed after the Nineties and especially after 2001 in terms of door-closing barriers such as age, personal wealth, innovation, creativity, and "thinking outside the box."

There are other special persons whom I want to thank as well. Riad Mahayni, Alan Monfalcone, Nick Petroff, Alex Dyachenko and Lena Komarrisova. You all know in what ways you have helped personally and with ideas and constructive criticism. …

…

Introduction

There are no chapters in this book. There is no 1-2-3 structure, and this is definitely not a textbook with a specific plan that must be followed in order to understand what is in each numbered section. You may read the units in any order you choose. If there are some dependencies for a given section, then provided that I did not make a glaring mistake or simply assume too much prior knowledge on the part of the reader, you will have notes and pointers for getting the additional understanding. Each unit has a focus, and each benefits from the rest of the book, but if you want to focus upon a few particular problem areas in Life 2008 and Beyond, then you can do just that in your reading. Having said all that, I would still recommend you read things in the order in which you find them, and certainly don't miss any of the units, because I do think the cumulative effect will be stronger for understanding the core points about uncertainty, unpredictable nonlinearity, and emergent criticality that has, underlying all the turbulence and stochastic behaviors, a great deal of order and coherence.

There is also no preset or uniform structure to this book. Some units are more like collections of aphorisms, and others are organized stem-to-stern, formal essays and very much like what you expect to find as a "chapter" on some given subject. There are actual essays here that have been edited only slightly and pulled in from other writings because they seem to me to offer some good points about topics like energy, security, education, economy. Perhaps to some readers this will be a heinous and unforgivable action on my part, not sticking to a strict and classical way of writing a book. But let's examine just for a moment what this book is all about, what is its purpose. I am not writing a thesis. This is not a theoretical exercise. I am typing to create in words a "compass rose" that can be useful for navigation through stormy and uncertain seas. Think of the situation of Magellan as he was navigating through and around Tierra del Fuego with his [three] ships, a nearly mutinous crew, and practically no food. Most of all they had no map and that was probably one of the most troubling things to everyone in the crew, Magellan himself no exception. How long, how far, and even after getting out to an open sea, then how long to…what? Was there even really going to be an end, or were they headed out across the Pacific into an endless sea from which it was clear there would be no return?

I don't expect this book to be a best seller, but then, I am not writing in a style that will likely be attractive to large numbers of people. I am actually writing for everyone and no one. By deliberately striving to stay away from very abstract concepts, long sentences with complex grammar, long paragraphs, and mathematical expressions, I do hope that these pages are intelligible and clear to 99.99% of readers. More than that, I hope that the content here is useful, but not just in a "toolbox" sort of way. The greatest usefulness of this book will be in changing the way people think about the way they think. And from that, to the ways they act. As I wrote in an earlier draft, I do not want to "sensationalize but to sensitize" and to make people aware of:

Problems
Solutions
Methods for Getting those Solutions Implemented

I will add a fourth here, and that is

Methods for Realizing How We Think about Building Solutions

to Poorly-Defined Problems

Much of my theoretical work in physics and applied physics has been concerned with what are known as inverse methods. This is essentially a body of mathematics concerned with going from a very rough and poorly defined data set, such as a collection of points on a receiver made by photons from an x-ray or visible light or microwave source, and working backwards, inversely, to complete the picture so to speak, to build an informational representation of something like an embedded object, a subsurface detail, that was responsible for those electromagnetic signals deflecting and reflecting in such a way as to result in the final but noisy and distorted pattern that we have. This is at the heart of such technologies as ultrasound, intensity-modulated radiation therapy, submicron imaging, and radio telescopy. What we are dealing with in Emergent Critical Processes (ECP) in all walks of life, in the economy as one very good and large macroscopic example - where there are no rays of photons and no images but instead a large composite set, a panorama of known and usual behaviors (of people, organizations, financial processes) and a large number of unknown artifacts and hidden obstructions that interfere with and transform those otherwise standard behaviors – are a great deal of inverse model behaviors. At the heart of things, I want to understand better how these inverse methods – mathematical methods – can work better than some other techniques for helping us to understand what are going on in the ECP all around us, and how we can get a better "handle" on predicting, forecasting, and controlling the way ECP affect our lives. This is a monumental task, one that I now think makes some other "famous problems" in mathematics and physics look tamer in comparison. All the same it is where I have been headed and continue to head. And if I can make some heads or tails of all this useful to the larger and more varied population of fellow humans around me, then that will be a tremendous partial along-the-way satisfaction, a reward in itself.

I've said that this is meant to be in some respects a "how to" book and one that is addressed to all readers, no matter what their level of education or professional occupation, because we are - as individual and family members of a large, densely populated and highly mobile society - all part of the problem and all part of the solution. Furthermore, we are all vulnerable to being subjected to the social and economic consequences of a large set of problems that is poorly addressed and insufficiently regarded for what they are – emergent critical life-threatening disturbance to the way we live, processes that impose change upon us, change that often is resisted by our very nature and by the ways in which we have been accustomed and habituated to live. Occasionally in this book there will be short breaks that take the form of "how to" ideas. Not all of them will appear to be consistent with the basic subject theme of the book or with the philosophical lines that are being taken now. Some of those elements, even whole essays, were written months and years ago, almost it seems by a different person than myself. Perhaps that variation is just a further demonstration of how much we do change and how much we sometimes need to change in order to adapt to the changes that are the foundation of our world.

I have not yet given a concise definite to some terms that are already being used more than once, which are foundational, and which are new. An Emergent Critical Process (Event) or ECP is precisely one of those. This is really quite fundamental. This one (at least) needs a few more words, but I believe the best way of explaining what is an ECP is to do what I intend to do through this book – show examples, illustrations, and many of them, in order that readers can understand not just a string of words about what I mean by an ECP but also how the concept evolved in my mind in the first place. I thought of

making such definitions and then decided to hold back for the most part. At any rate, because of its central importance, let me explain about ECP. These are processes which may be understood as singular events or long sequences and parallel sets of events. They are emergent because even though they may become noticed that they are occurring only in a sudden streak of awareness and not over a long period of awareness and expectation, they do have a history of growth and development. they emerge, and that means that they do not simply flash in a pan out of nowhere. They have roots that may extend in time and space, and these roots may be very deep and invisible, or they may have been showing themselves constantly, like the downward-growing tendrils of a banyan tree, for all to see, but for many to ignore and miss, until suddenly, there it is, a tangled and dense forest where once (how long ago? and why weren't we paying attention?) there was once just one tree and a large expanse of grass.

Earthquakes, hurricanes, riots, revolutions, five-day blizzards, housing market bubbles and bursts, collapses of massive numbers of credit default swaps, heart attacks, collective growing obesity – these are ECP. They are critical, in that they can and likely will have dramatic impacts upon large numbers of somebodies. Who are these somebodies, these recipients of the process's effects? Usually, from our self-centered standpoint, they are humans. Principally our favorite humans – ourselves, our family, our community, our nation, and so forth. But ECP do not affect only humans, as should be obvious from some of the tendered examples.

However, ECP are by no means only negative. They are not only disasters with bad effects. Some other very real and very positive ECP include: pregnancy and childbirth, a bull market, inflation, a growth of a breakthrough, disruptive technology, a spread of something that affects millions and ultimately everybody on the planet (some examples: the wheel, paper, the printing press, the steam engine, the computer, the internet). I have often used a particularly mundane business example to describe non-disaster ECP. Consider the Ports of Charleston, Norfolk and Baltimore. Both are major Atlantic ports and have a great deal in common as far as what they can do and what they offer physically, logistically, and financially to the shipping trades. Suppose for whatever reason – an impending hurricane threat, or a breakdown in some large cranes, or a collision between two freighters that is blocking some part of a channel, or simply an overload of business and nothing of a "big negative", for instance – Charleston cannot handle an unexpected new arrival of two large container ships owned by the XYZ Lines. The ships must come to port on the East Coast and decisions need to be made, fast. XYZ is offering not only top dollar but the prospect of moving a larger piece of its business, in exchange for some Port going out of their way to accommodate the new arrivals. XYZ goes to talk and negotiate with Norfolk, Virginia, and with Baltimore, Maryland. Alas, the Port of Norfolk's people are too busy, they work according to their clock and timetable, they can't make changes, they don't see the prospects. But Baltimore's people are quick to respond and work out a satisfactory solution for XYZ. Baltimore gets the immediate short-term new business and stands a reasonable chance of pulling additional business in from XYZ, perhaps some shipping activity that would otherwise have gone to Norfolk.

Such it is, name of the game in commerce. But this is another example of an ECP. It is a situation, a process that did not just happen instantly, overnight like a flash. It grew, it emerged. And it had some critical effects. From time to time again in these pages we will run into other types of ECP, many of which have positive aspects (at least to some

players and participants). Innovative and breakthrough inventions that become products that then are disruptive on the marketplace, disruptive to both competitors with older technologies and also consumers with new ways of thinking about using a certain product – these are also ECP and we will look at several of them in the course of this book. It is important to remember that just because something happens unpredictably, out of the blue, and even with some surprise, and just because it has critical impacts on people or organizations, that does not mean that it is always some type of disaster that threatens life, safety, or wealth.

Please remember, though - this is not a textbook. Perhaps there will be a glossary, but for now, I want to allow and encourage readers to develop their own meaning to some of these very fundamental terms. It is important for us to innovate and to explore multiple interpretations, especially when the topics at hand concern unpredictable change and shifts in nature and society that come as lightning bolts and thunderclaps for precisely the reason that we have been sitting, unprepared to change our thinking, until it is often too late.

1. Our Unique Situation Today

When I state that "all bets are off" and that we are in a world that cannot be predicted using all that we have built and used in our past for predicting economics and politics and environmental changes, I do not mean that we are lost adrift in the dark without a clue or hope. We are not faced with imminent annihilation or an apocalyptic experience, even though we may be right on the edge of one and fully capable of hurling ourselves as a society and planet into a bottomless pit. We've been there before, when voluntary nuclear annihilation was a very constant "on the edge" threat, and we will always be facing something of such a risk, hopefully not from nuclear war at our own hands, but invariably from something within Nature. There are asteroids out there, OK? But in spite of all those constant risks, we do stand a very good chance of avoidance in some cases and adjustment in others.

We certainly have a great many options for recovery out of our present economic, energy, environmental and political crises that are active and operating in parallel (necessarily, as we shall see) today. By understanding better the nature of these crises, their interdependencies, their nonlinearities and the challenges of prediction and forecast when you have "almost but not quite" the right model but just not enough evidence, statistics (or time to do more studies), we increase the probability of our being able to build ourselves a practical set of tools and models by which we can reduce the nonlinearities and turbulence, the randomness and chaos (these being wuite distinct from one another), and thence achieve greater stability in our lives. Here at the outset I do want to establish a theme, a kind of refrain, that we should recall whenever it seems like the outlook (within this book or others) is too bleak, too difficult: We can work our way out of the mess we're in and we can evolve a better life from what we have experienced and learned thus far. No room for doom or gloom.

Nassim Nicholas Taleb has made a strong impact with his recent book, "The Black Swan." [1] He talks about randomness, our inability to distinguish large deviations that go beyond the limits of what we expect to be small shifts that will come back to equilibrium. On the whole, his message can be perceived as bleak and full of dire warnings, about how we think and how we think we know (and really do not know). Taleb is concerned about epistemological processes – how we know and what are the bounds of our knowledge, or inversely, our ignorance, and our frequent inability to react with acceptance or recognition of rare and extreme events in spite of phenomena that could act as predictors for their occurrence. The events on Wall St. and in the world financial markets this year and currently ongoing, as these lines are written, the events of several major military and terrorist actions (of which Pearl Harbor and 9-11 stand out among the most dramatic in recent history but hardly the only with such high non-expectations in advance), and many events of smaller historical proportion but equally intense devastation for the lives of those involved, are what I term ECP – Emergent Critical Processes – and they fit very much into a framework that is consistent with the epistemology studied and described by Taleb. However, we need not come to a decisively negative conclusion about our future from a recognition that we do face unpredictable and even unknowable events, as long as we do not ascribe to a defeatist outlook that we cannot ever "pick ourselves up by our bootstraps" and make changes in our perceiving and thinking behavior.

Our attitude about our situation and our ability to change is perhaps more important than the details, to the extent that such can even be well-defined, about our present situation. If we are in a foggy, fuzzy world when it comes to really "knowing" what is, versus what is reported and transcribed (by someone in the media, or through our own interpretations colored with prejudices and habitual patterns of thought), then we simply have a lot of uncertainty and we may not be able to refine things further and become more "precise." Let us assume that to be the case for now. If we cannot become as exact as we would like to be, if we cannot get a solid and firm "handle" on some elusive "real facts" about (DJIA, credit, employment, oil, trade deficit, WMD, etc.), then no matter what we do we are not going to have the perfectly crisp in-focus understanding that we want. We could in fact waste a huge amount of time and energy, and ultimately lifespan and ability to notice other life-critical events, trying to attain a classical type of certainty when forever and ever we will always have something that is a macroscopic equivalent of Heisenberg's uncertainty principle.[1]

What matters very much is how we think about ourselves (as individuals and as social organizations) and our ability to deal with the foggy, fuzzy and unknowable. If we have an attitude that we are infallible experts, or something very close to that, not needing to check our work or get a second opinion, if we are so sure of ourselves that we are not only beyond mistakes but the arbiters and bellweathers of knowledge for others, then we are going to be overlooking many details, many nuances, many relationships that are not even very subtle but quite obvious. Somewhere along the way, sooner or later, we will find ourselves on the other side of where we thought we would be. The challenge is difficult enough because of the basic fact that as humans we are disposed to generalize and smooth over irregularities, to miss the phase transitions, as it were, when random flux and Brownian motion suddenly has turned into a change of state and something that is no longer following the predictable model that may have always worked for the prior general condition. But things are made even more difficult when we have become lax in our basic vigilance and we are not even paying close attention to changes, be they in the markets, the climate, or the movements of small groups and low-profile cadres of people half a world away.

So it has happened time and again in history, and most recently we are seeing precisely this kind of phenomenon manifesting in every dimension of our society. We have an increasingly complex world, and a deeply complicated one, where now there are not only billions more people but millions more in transit and an astronomical jump in exchanges and transactions between people. We have more things that can happen which can then have unpredictable effects upon everything from the price of oil to the spread of a virus, and precisely in parallel with these increases in complexity and unpredictability are decreases in attentiveness. The economic meltdown is itself very complex because it is involving so many relationships and dependencies among institutions of many industries and countries. However, it is not only in the economic sphere that we are seeing meltdowns and breakdowns that are deeply coupled with the behavior of so-called experts and pundits who have neglected to watch the signs and signals, who have neglected to consider other perspectives and especially other interpretations.

Most notably we see this in the process by which international terrorism and especially al Qaeda grew in strength, outreach, and ultimately power sufficient to launch not one but several major wide-area attacks. It is not necessarily that terrorism stands out inherently as more unpredictable due to a greater propensity to blindness of the advance indicators and signs by a greater number of people, but rather that with modern terrorism and

particular mass-casualty style terrorism, there is both a greater degree of deliberate effort to hide the signs, obviously, and a greater visibility through the media.

I do not plan to dwell on terrorism ort other intentional ECP in this book, but the epistemology of terror has much in common with that of economic crises and in particular those brought on my the investment banking and market activities of the past two decades. A few quick points here are in order. While 9-11 stands out above other events, and much has been written, argued, imagined and conjectured about events and information prior to the morning of Sept. 11 itself, there were quite a few other "spikes" in the chart, as it were, going back years. Only one of these attacks among all those going back to even the 1980's was of a sufficient impact in loss of lives and destruction of major and famous sites to really grab the attention and gut-level emotion, finally, of mainstream America and the American federal government. Some that did happen were towering anomalies that did not get sufficiently seen as part of a very cohesive and integrated plan. They looked too much like – anomalies! In particular I am thinking of the attacks on August 7, 1998 against the U. S. embassies in Dar es Salaam, Tanzania and Nairobi, Kenya the first major multi-site parallel operation, and also the first World Trace Center bombing of 1993 that would have been at least an order of magnitude greater in loss of life, not to mention a vastly larger destruction of downtown Manhattan, had it been successful as planned. The Bojinka Plot (Planong Bojinka) [2] of more than seven years before 9-11 which, had it been implemented and carried out would have brought down over ten fully loaded trans-Pacific commercial airliners without any hope of survival.) Throughout the entire period leading up to 9-11 and unfortunately also during the seven years since then but not as broadly, there have been eyes and ears shuttered and closed off to data, to public news, to "thinking outside the box" that as a result leaves some major holes and weak spots in our collective national and international security.

Some – in fact quite a few people – have responded to such events and the "missed opportunities" for connecting the dots and acting on the information and knowledge that should have been present, as evidence of particular failures by particular individuals, even to the point of speculating about very complicated conspiracies within different government administrations. While such individual "super-failure" oversights and even organized conspiracies could, logically, have occurred, it is my claim here that there is no need to attribute more organization and planning to a historical situation and sequence of events that can be adequately explained otherwise, and for which the introduction of too much structure (organization and planning) into a world of blindness to significant signs is not going to help us to learn how to become less blind in the present and future. Rather, we are more likely to go on missing the things that we have been missing all along.

Part of the reason for people not being able to connect all the dots, say a collective "Aha!" and then jump to enacting a solution for the problem, particularly in the case of what intelligence field pundits love to call "asymmetric threats," is precisely that we are and have been in a uniquely different world today than ten, twenty, fifty years ago. This is the theme that I will return to over and over in this book, and it is why this first "chapter" is only a prolegomena to the matter. We have not been noticing how some things that stand out from the typical flux of random flutterings – in the stock market, in the housing market, in the credit card market, are connected as part of a phase transition shift and not just a collection of perturbations. We have not been noticing how the anomalies of different terrorist actions were part of something different and new

indicative of greater organization, planning, communication, resourcefulness, commitment, and strategy by groups and particular individuals who had been constantly studied – and classified – in other modes that were appropriate to perhaps the 1960'r or 1970's but not to the internet-enabled, cell phone enabled, and high-tech enabled cadres of al Qaeda in the 1990's. We have not been noticing all the evidence "right in our face" of global warming, with no possibility of hiding the evidence (one can hide a bomb plot but not rising sea levels, stronger hurricanes and tornados, and more frequent intense heat waves as well as spikes and dips in temperature, the amplification of the random jumps that are part of any global change), only our unwillingness to notice the changes in the type of random disturbances. Much of this comes from our characteristic human desire to not see things as being a shift from the way we are accustomed to seeing our world. We find it more comfortable to believe that we are not in a different state of affairs and to believe that the methods we learned and the habits we acquired do not need to be changed for our world of today.

Equally noteworthy are other meltdowns and breakdowns in measures to develop control and stability in other areas of high social impact where the very large (huge) numbers of our global population, and our mobility in transportation, are unique factors never existing before the 1950's and in fact unique since the 1990's. Pandemics from a variety of viral agents including Avian flu (H5N1) and SARS are a clear example worth mentioning because the very nature of the threat and the mechanism of any pandemic process illustrate some key points about today's unique3ly complex and interconnected world and how emergent critical processes (ECP) can spread quickly and become totally unmanageable, out of control by any means other than running their natural course. A bird flu pandemic is really quite unlikely to occur at any given time or location, and an outbreak in the human population would be very unlikely to spread worldwide and quickly and into most nations and local communities. One reason for the unlikelihood is that such a pandemic does depend upon the virus changing in just one specific way (perhaps multiple ways from the standpoint of genetic variation, but all the same, one way in terms of making some type of mutation that enables the virus to be transmissible from human to human). The probability of just that right type of mutation occurring is, according to the general literature, itself unpredictable, because no one can ascertain exactly how such a mutation (that sis not also render the virus less potent or less contagious in other manners) would occur. All the same, we can look at the historical events and see that to date, with some possible and doubtful exceptions in SE Asia during 2007, there has been no crossing of the species contagion barrier. Humans may acquire H5N1 through any number of non-hygenic practices, but to date despite all the virus that is out there and in aviary hosts, nothing has become a contagion for humans.

What does this tell us about bird flu pandemics, however, as radically unprobably but devastatingly powerful ECP if and when they do occur? We do know from the medical evidence and experimentation, as well as the history of previous pandemics and large epidemics, that an H5N1 pandemic would likely spread very quickly and widely across the globe. We also know, even without elaborate computer-based simulations to remind us, that because of today's social dynamics with respect to large-scale passenger travel, plus the congestion of so much of the world's population in large urban areas (in fact in megapolis regions stretching for hundreds of miles and harboring hundreds of millions of inhabitants), there would likely be very fast transmission of a viral agent and a higher impact of death and long-term illness coming from a modern pandemic than any we have experienced in past history.

Because of the unpredictability and the inherent inability to point a finger at definite causal relationships, including definite points of origin, methods of transmission, and types of effective countermeasure, we are at a distinct disadvantage for being able to quickly respond and implement any countermeasures when something of the scope of a pandemic does occur. We don't know how the threat, the ECP, is going to emerge, what are its vectors for future growth, and what are the resources that can be counted upon – at the social level and within the individual organism – for contending with the threat. This is a situation that is probably more acutely familiar to people who have served in forest fire-fighting brigades than to most others including emergency responders. The difference is that from my vantage point, the average fire-fighting team is much better prepared and ready for the unpredictable and non-forecastable than the average investment banker, public health official, or homeland security agent is ready for the kind of events that are in their space of responsibility.

But what about the average person, the not-exception or off-the-scale person when it comes to financial assets, income, level of physical comfort, intellectual accomplishments and/or abilities, and all sorts of other qualifiers? What about the people who make up 90% of any bell curves in our society? (Of course, it is not always the same 90%!) Simply put, how well prepared are most people for dealing with serious and multiple, cascading, parallel ECP, and how can these people – we, the people – become better prepared, better skilled, at dealing with ECP in any of the forms in which they throw themselves at us in our lives? We are all together dealing with some serious ones right now in 2008. The global economic band of crises is something that is affecting everyone and in different ways but also multiple ways.

We need to be more aware of how we think and react to things that are out of the ordinary, unexpected, improbable, and even downright unbelievable. The better we can understand our own mental dynamics, our personal and collective epistemological systems and their constraints, the better we can be at developing ways to overcome barriers and blinders. Then, if we can be faster and sharper in our recognition of what is transpiring out of those foggy and fuzzy fields and clouds we see, we can be more adept at handling the ECP that come and occasionally dominate our worlds. When we get a "felt sense" for the different kinds of weather conditions, then we are more likely to be capable of preparing in advance for the equivalent of hurricanes that show up unannounced, like they did back in the "old days."

In subsequent units I will be speaking about many terms that come very close to one another and in both the everyday world, the "layman's world" and in those of specialists, whether they be quantum physicists or quantitative analysts, there are often confusions and overlaps. This is a problem because words, phrases, models, theories, and symbols of very complicated theories start to be used in all sorts of dialogs as if they were the same, or in any case something not quite what the originators and the specialist users mean by those things. We have very rich languages and we know, for the most part, how to translate and not lose technical detail (alas, this can never be said about the richness and subtlety in literature and especially within poetry, in my opinion), but we seem to have no qualms about making equivalences among symbolic "keywords" that take on a massive life of their own, especially in our recent decades of webmania and acute google-itis. Some of this mishmashing and blending together seems to be a result of our mad rush to live life faster and faster, to get the job done as quickly as possible, driven by type-A genes and bottom-lines on the brain.

I believe that we are seeking some of the unfortunate results. This is not as simple a case as looking at educational statistics and finding that students are doing more poorly on their SATs and standardized subject tests. This is more subtle, more easily overlooked, and more dangerous for our whole society. We are being sloppy in our logics and our semantics. We are blending and confusing complexity with complication, chaos with randomness, noise with turbulence, uncertainty with observability, nonlinearity with unpredictability. So long as this has appeared to be a problem only for mathematicians, physicists and philosophers, we could imagine that all the rest of us could simply skip by such fine slicing and dicing of concepts and words, and get on with the more "real" business of making money at the race track, bigger and hotter profits at the trading desk, and absolute killings on in the derivative and swap markets. But alas, things have indeed caught up with us.

In order to have a decent chance as a society aka economy to get things back in order and keep a semblance of order that will not simply slip into the same slime pit of mistaken identifications and equivalences, we must do something radically different and fundamentally earthshaking for our present way of thinking. No, the answer is not in mega-billion and trillion-plus bail-outs, not for the banks, or the too-big-to-lose corporations, nor simply across the board in a free-for-all give-away to the masses. No, the answer is not in a purely quantitative set of actions. We need to do something qualitatively earth-shaking. That qualitative change starts with the recognition, the admission, that things today are quite uniquely different than ever before in history, than ever before in modern economics, than ever before in power politics. The change starts with that recognition, and must go on to change the way we think about our thinking and the ways we perform the act of assigning meanings and values to what is coming out of our mouths and also our institutions. This implies a fundamental change in how we learn and it means that subjects such as philosophy and linguistics and history need to be seen as not so irrelevant after all. But changing our curricula in our schools and universities is not the simple answer, either, not by any means. It is just one of several necessary readjustments to the platform on which the rest of our education and our practices – of business, law, research, and production – are able to stand and grow without becoming top-heavy, unstable, and eventually crashing down around us, like we see happening in recent times.

2. Orders of Magnitude in Complexity

We hear constantly about different ECP that are imminent, about to happen, or inevitable. Though the terms I use hear are not in vogue – no one is writing in the public mass-media about Emergent Critical Processes – the talk is rife and nearly nonstop that we are somewhere near the edge of Niagara Falls, about to plummet over the precipice. The "Motley Fool" and "Newswatch" are web broadcasters that daily, or multiple times a day. send out spam about the next disaster right around the corner. "Chernoff says terrorists are about the strike with WMD," or "bird flu pandemic could happen tomorrow," or "oceans will be flooding Manhattan before long." On the opposing shore of emotion and reasoning are those who see our situation with much less alarm and even with an attitude of disbelief about such basics as global climate change or the energy, food and water shortages. Both sides share something in common, and I see this as being a shared mistake of grave propositions in how the world of today is seen in comparison to the world of centuries, decades, and even mere years in the past. The field of measurement is changed and it is such a change that we cannot infer and draw conclusions based upon what worked all the time previously with respect to wars, weather, or what people will do in the markets.

The prophets of utter havoc and complete doom, as well as the naysayers who claim we are looking at merely small and short-lived perturbations – in climate, in environmental crises, in economic instability – are both missing some important points about complexity and the exponential increase in relationships and connections that carry weight and influence between parts of our society – individuals, social groups, corporations, nations, ethnon-political blocs. The difficulty for making firm and exact predictions increases when there are differences in the numbers of variables and the manner in which those variables can be altered. Think of the ways in which a person can have their lifestyle affected by economic factors, and how any one of those factors can be altered by events in today's world on a given day, compared to how things could have been effected, including the pace of change, ten or thirty or a hundred years previously.

Here is one simple example. Let's say that I have a 401k retirement fund, as is very common for most Americans who are either in the present workforce or retired. For simplicity, let's imagine that the fund consists of four different investment allocations, 25% to each, and that these consist of funds characterized by their main investment strategies and targets: money market, S&P 500, small business capitalization and emerging international businesses. Now it should be obvious that this type of fund did not exist on hundred or even thirty years ago, but we can imagine instead funds that were simply shareholder investments within companies, Treasury bills, or gold. What is important for us is to examine how many different ways these investments can be affected, and particularly in drastic and sudden ways, either as a sharp rise or a sharp drop, in the present era and then looking at the comparable ways in past years.

Today there are market impacts, and very closely coupled, real-time in fact, between all of the world markets. All time zones, all cultures, all industries, all currencies. Very closely coupled and all impacted in real-time by each other through the media which then has the massive power of a meta-influence through its broadcast outreach into homes and offices everywhere. This was absolutely not the case even in the 1980's when Bloomberg's proprietary newstracking monitors were on the desks of nearly every

trader. And even less so than "absolutely not the case" for the markets of thirty, fifty, eighty years ago. Just think about how news traveled back in the 1920's! Yes, we have had real-time in a sense through radio and telephony, but that was real-time among isolated points and persons. Only today, only starting around 1992, and only ramping up to mega proportions in post-2004, really, with the forest-fire growth of the internet and web communities, do we have the emergence of news and opinions that are essentially many-to-many, not even one-to-many, and moreover, with massive feedback loops, both constructive and destructive.

The ways in which that 401k fund or series of funds can be affected, up or down in terms of price per share, are incredibly varied today compared to even fifteen years ago. The time it can take for a person to read a blog item or a short article on CNN, or listen to a typical 4 minute news story on the TV, and go to his or her 401k website, login, and make buy/sell changes to a portfolio, is a matter of minutes. Furthermore, it can be done in parallel, without interference, and without any common live person to sense all the sentiments and gauge the market mood among his set of clients, because the internet is designed to allow just that. Privacy in parallel, at the fastest possible speed, and definitely faster to complete a transaction that to even reach the live-person broker on the phone. This was not the case in all of the long past history of the stock market, just that branch of the securities industry alone, that we have been using as the measuring rod for getting a handle on what is happening today.

It may be helpful to look at a series of differences – a series of serious distinctions – that are often overlooked as ordinary people and self-appointed (or juried) pundits expound and pontificate about how we are going to handle ECP of today, or how we should just ignore them on the basis of all our past experiences, statistical or empirical or by any other criteria of knowledge. We can understand these series by examining some ECP from the past. Only in the last century we have had a tremendous number of ECP that have progressively – this is very important! – encompassed and involved larger and larger percentages of the global population across all demographic types and borders.

Differences from 1914, 1918, 1933, 1954, 1973, 1987, even 2001

[1]
In 1914 as many will recall there was a specific unpredictable and isolated disturbance in Eastern Europe, in a place little known or even completely unheard of by probably ninety percent of the world's population, at a time when there was not only no internet but practically no long-distance communications outside of telegraphy. The famous Archduke Ferdinand of Austria-Hungary. who along with many other figures of royalty, wealth and power in Europe was a constant target for openly violent opposition forces, was not in any unusually noticeable situation of risk. His condition was one of constant but not particular threat. On June 28, 1914 the uncertainties converged and the bullets found their marks. What ensued was not something that followed, clockwork-like, from a predefined plan. Moves leading into actual war were uncertain and actually less definite than many would like to think. War was not officially declared by Austria-Hungary against Serbia until exactly one month later, following an ultimatum for actions enabling Austria-Hungarian police to operate within Serbia, duly refused, that had been issued only on the 23rd of July.

Comparisons may be drawn to conflicts between nation-states before that era and afterwards. We can look at how the Franco-Prussian War started, and the Napoleonic Wars, and the Second World War. In each case there were many of the same uncertainties. Near-misses, almost-accords, and a swarm of events that could have led to an earlier or a later starting date for actual hostilities, or a different shape to the establishment of alliances. But there are some striking differences from the world of today.

Back then, in all of these instances, and most clearly with both of the 20th century world Wars, there was not a fully interconnected and interdependent global society. Not at all in terms of economics, nor in any other dimension of life. Of course what was going on in 1914 Austria-Hungary, as in Germany and Russia of the 1930's, as in 1941 China and SE Asia, all had clear and unmistakable impact relations for the USA and UK, just to mention two other countries. However the connections were drastically fewer and thinner than today! Consider the relations today between the London FTSE and the NYSEF, between the pound sterling, the euro, and the dollar, and what there was in comparable stock market and currency connectivity and dependency back in 1939 or 1914.

In the case of the First World War, American involvement, or that of any power beyond the radius extending from Serbia to London and to Moscow, could not have happened very quickly even if various leaders and legislatures had acted in swift unanimity to declare way (or to commit to avoiding war). There was no way to mobilize or to move masses of soldiers fast enough to do anything in a hurry, not like today when there can be forces put to sea, into the air and on the ground in matters of hours.

Furthermore, unlike today, the world as a whole, and the all-too-critical financial markets, could not be as rapidly and consummately overwhelmed with information and opinion, ranging from every expert and pundit accessible to an internet connection, to every blogger with a mind to speak and even a show to put on for YouTube, as it is today. Something happens, literally any "something," and within hours or minutes there are a swarm of blogs and forums and public opinion polls and commentaries springing up all over the world.

The complexity factor is the biggest differentiator and the one that makes the most change. We have more "connectables" (people, for one, and companies, and brokers, and airline routes, and points of entry, and (on and on) - and more connections and possible influential relationships among them, more ways that they can be changed in either small or big ways that have effects upon every-increasing numbers of other "connectables."

Although I will talk more about some of these points later on, I will give a preview by one example, before continuing to discuss some historical differentiators, using the aforementioned series of dates just for example and not as limiting cases. My special example is O'Hare International Airport. Actually it could be Hartfield-Atlanta, or JGK, or LAX, or Heathrow, or any number of others, but O'Hare is good because it is so central, so influential, and so known by many travelers for the bottlenecks and delays that ensure across the USA and even in parts of Canada when things go bad at O'Hare.

Even ten years ago it was not as bad, and certainly so if we jump in our time machine and start traveling back into the Eighties and earlier. Of course people then thought it

was a nightmare, but they have nothing on the situations of today. One airport, hundreds of planes, thousands of people, and ripple effects each time there is a disturbance from the finely-tuned and non-adjustable schedules. Because there are so many people, there are so many more people flying. Because of that and a System (speaking here not only of the FAA and the airline industry, but the whole transportation System from the individual me-and-you to the denizens walking in the halls of Congress) there are so many flights coming through O'Hare, and affecting one block of them and throwing them off schedule has an instant ripple effect upon flights already in the sky hoping to land, and others that need to take off in order to enable some others to move into their places at the gates, and eventually the effects reach those flights that are in faraway X and need to get to O'Hare so that the plane can be used for a flight out of O'Hare. You see what I mean. Things get tangled up very quickly.

We will come back to O'Hare later on. This was just a heads-up reminder, and a seed for thought. The seed that I want to plant in your mind is this and it is by example about transportation, but you should not limit yourself to that application.

First, we have exponentially increased the complexity and the interdependencies. The population has gone up only in a linear manner, perhaps a bit logarithmic actually, but not exponentially, thankfully. The ability to handle the cross-connectivity and interdependency is far overstretched. This is because things were based and are still based upon the way everything worked for smaller numbers, for a non-global society, for a USA that was reasonably manageable by the setup created in 1783 with the Constitution, for regions that had millions on the ground and thousands flying, but not millions flying, not 1.8 billion air travelers per year. [x]

Second, we have not changed our mode of transportation, our ways of thinking about transportation, in decades. Flying became an increasingly preferred form of long-distance travel starting in the 1970's actually. That is when things really started to "take off" in terms of the industry. Trains had been going down in use for passenger travel starting in the 1950's. Automobiles, we know only too well about them and the jungle of interstates and expressways we have created.

Now if we sit back and clear out minds for just a moment, we must realize that we cannot simply go long building more highways for more cars, even if we are able (as we surely can) achieve 100pmg and higher in fuel efficiency, and also greater improvements in automobile construction, safety and ecological use of materials. We cannot go on and on building more runways, more airports, putting more planes into the skies.

One thing we need to do is simplify the whole System and that is not even some matter of coming up with a brilliant new way to do mass transportation better, as with trains, such as with the I-Trans™ system concept and architecture. [3] We have to really "get out of our box" and think about coming up with a way to handle transportation that does not just replicate and clone the old ways. High-speed trains that enable carloads of automobiles with their drivers and passengers to be loaded and unloaded from quick-stop, quick-depart trains passing through most cities – this is a real breakthrough and breakaway from interstates and sprawling airports.

But an even bigger breakthrough and one that can address other aspects of the problem of massive complexity and the jam-up (or "thrashing," to use an old computer lingo term) is is we don't even need so many trains, because there are fewer people commuting

back and forth endlessly to go sit in little boxes inside of bigger boxes and doing work that can mostly be done by people as individuals or teams wherever the bodies are, so long as the minds can be connected for verbal and other critical communications. Thus we come to things like telecommuting and tele-employment, but I am really getting away from the topic for this section. It's just good for the reader to have an idea, as we go back to talking about a few seemingly disparate points in 20th century history, that all of this connects directly with the matter of how to live and work in an increasingly complex and cluttered 21st century. And perhaps it helps, for the eventual intended outcome of skill and tool building, to understand that the problems of complexity, uncertainty, perception and unknowability are spread across the whole of our culture and lifestyles, including in matters of the most everyday sort such as commuting to a job where the commuting is itself of questionable value.

[2]
So, here I want to go back to history, but in a breezy and flowing sort of way. This is not a book about history, politics or social development. It is a book about navigating through rough seas in order to make a living and to have a good life. Really, that is the objective, and I want to occasionally restate that over and over, so that author and reader alike can constantly and consistently remind ourselves that in all of our crises and uncertainties, we can aspire to navigating ourselves in a manner that sustains life, sustains liberty, and enables and enhances the pursuit of happiness.

On that democratic and libertarian note, I bring up first the year 1954. This was the year of Senator Joseph McCarthy and one of the first formalized periods of UAAA - UnAmerican Activities Against Americans – waged by the HCUA – House Committee on UnAmerican Activities. This period in American history is actually pivotal, and important as a point of comparison and differentiation with today's era of Patriot Acts, FISA and secret investigations, a la TIA and its predecessor GENOA,[4] in the name of national security but in actuality for the benefit of locking down better handles and controls by segments of the government over all of the population (and the rest of the government).

We had plenty of security and counterespionage during WW 2. Some of it was excessive and abusive, such as the imprisonment ("internment") of thousands of citizens and lawful residents who simply happened to have Japanese ancestry. For the most part, however, we had civilian watchfulness and reminders ("Turn out those lights in your home, it's a nighttime air raid drill!), and not a country-wide NKVD or Gestapo operation. In the early 1950's, with the matches lit by Joe McCarthy and the fires of fear, panic and xenophobia quickly fanned by hundreds of supporters in all walks of life, with a wave of fearful obedience and subservience to authority figures simply because they said that they were authority figures, we saw the rise of what almost turned into something of the same as we had just spent five years and over 300,000 American lives fighting to stop.

How did that happen? What were the differentiators back then, from the American traditions and customs that had not allowed such to happen even though there could have been such uprisings of fear and subservience in the 1930's, during WW 1, during the Civil War? What are the differentiators from what is going on today, what has been growing and building steam since 2001? What stopped the spread of McCarthyism in the Fifties that might not be present in 2008 to prevent a spread of something similar in the United States?

Among other things there was social stability. There was growth and a positivism within the society overall. WW 2 and the Korean War, in spite of unresolved issues and the fact of a very large presence of American troops in both South Korea and Germany, were over. There was no active war, much less two wars and the threat of more. There was no history of active mass terrorism conducted on U. S. soil. No significant military action had even been committed in the continental USA with the exception of some U-boat activity off the East Coast and some weather balloons originating from Japan and flying over California and Alaska.

The litany can go on and on, and this refrain will be heard again in different forms throughout this book. We were not living in a totally connected global society. There was no growing shortage of energy and no risk of having supplies cut off drastically and suddenly. At no time in the history of the USA prior to the present era, and perhaps since 1992 but certainly not even back in 1973 and the time of the OPEC oil embargo, was there the risk of a major shut-off for oil, and with present federal reserves and limited production within the USA, there would be a dramatic effect upon industry and not only felt in the realm of commuting and travel.

The stress levels were never as high as they are now, and also there was not the widespread limitation and fear of more limitation with respect to basic credit and money supply for consumers. This stress level and the uncertainty that is in the general population is due in part to massive and repetitive amounts of “instant information” about layoffs, freezes, foreclosures, and defaults, with no definite indicators of when things will ease up, what will be countermeasures and respites, and how specific people – oneself and one’s family – will be affected. All of this goes into a mixer, a blender, out of which comes an unsettledness and uncertainty about life as a whole. For some people, a growing number apparently, this generates a willingness to listen and subscribe to a message, a platform, a promise of solutions that can easily feed the growth of authoritarians and totalitarians. For many others it does not result in such a reaction but it creates a situation within which freedoms and abilities to do things that will fix the crises are increasingly limited, by economic factors, by exclusion due to limited economic power and the need to focus on basic survival instead of things like entrepreneurial development, or by other restrictions and impingements that result from ancillary effects – poor health, limited or no healthcare, insufficient food, shelter, and simply time to devote to constructive projects, personal or organizational, because of the need to concentrate on basic survival.

There is the old expression, “Give a man a loaf of bread and he is fed for a day, give him the tools and means to fish and farm and he can sustain himself for life.” We are in a situation where the following improvisation applies: “Make a man forage and gather all day for food and he cannot build a house, maintain a farm, teach his children, or care for how his community and state are run.”

Back in the Fifties we had McCarthy and the HCUA. People then and now did not identify the whole government, not the whole Congress nor the President (Eisenhower) with the HCUA and the purges and inquisitions that were taking place. Since 2001 we have had something much bigger, much more powerful, and involving a well-established superstructure of government. People identify not only G. W. Bush but Dick Cheney, Donald Rumsfeld, Louis Gonzales, and a host of others with a misaligned and abused system of secret practices that enable, just for one instance, inquiries about person A’s behavior and personality and political views to be demanded in the form of a deposition

from person B at organization P, with no right and even more so the threat of prosecution and imprisonment if person B or anyone in organization P proceeds to talk about that inquiry, to the original subject, person A, or to anyone else. [x] This is a very serious difference from the "Red Scare" of the Fifties.

Another important uniqueness about our situation today has to do with information collection, management, analysis, storage and distribution. Again, I will try to be brief. Readers can fill in the gaps by going to some of the recommended readings in the Bibliography. All that is necessary is to do some "googling." We live in a time when the power of computing and networking allows for incredibly fast and pervasive access to any kind of information that is in electronic form. That means just about all forms of communication and data representation, period. Even the keystrokes that you make on your own keyboard of your own private PC, in your own home, can be collected and deciphered (van Eck phishing) [5] without there being any internet connection whatsoever. That may seem a bit extreme, but for the record, it is quite possible, quite proven, and available to virtually anyone, not only a legitimate or illegitimate branch of some secret police.

The main point here is that the entire show is different today than what it was ever before. The potential impact and consequences of total information access and control is vaster, and faster, and it can affect more easily a larger segment of the population – virtually anyone and everyone, everywhere. Now one of the implications of this is that the possible reactions of that vast population are more varied and unpredictable. The consequences of this state of affairs – having nothing to do with direct police-state actions but simply with unsettledness, uncertainty, and risk – are something with which we as a society and as any groups of experts studying the matter, making models and running simulations – have no prior historical experience. All we can do is look back in history on how things were done in other eras – the McCarthy era in the USA, the different phases of rule within the Soviet Union and in the People's Republic of China, in Cuba, in Burma-Myanmar, in Nazi Germany, just to stay within the past century. And in none of those cases, not one, did you have the internet and web as it is today, in both America and worldwide. In none of those situations did you have virtually 100% of the population connected and accessible by phone and cell phone, and for the vast majority also by internet. Nor did the potential perpetrators of totalitarian actions have the powers of technology.

Perhaps most significantly, none of the possible "independent operators" – ranging from individual criminals to well-funded organized crime to hate groups to terrorist cadres – have that same access and power as exists in the hands of the formal government. This is something that is generally, as I have observed thus far, overlooked completely by people who are concerned, rightly so, about abuses of power within government, within formal agencies whether they be a DHS or DOD or CIA. People have been worried about Bush, Cheney and their cronies taking the law into their own hands and affecting people's lives and freedoms in a manner that could range across the map literally and in terms of the type of actions. The Valerie Plame phenomenon [6] could occur for many people. Black listing and shut-out of companies and individuals, on the basis of their political beliefs, economic status, and intellectual opinions, within the intelligence and defense establishment of contractor companies such as SAIC, BAE, Battelle, Booz-Allen, and Northrop Grumman have been noted publicly and widely so. [7][x][x] But there is a higher probability of wider and more devious damage to be done by groups that are motivated by greed and open to any form of cheating and stealing in business,

intellectual property, and simply in financial matters. Hackers abound and there is more damage that can be done than the simple theft of credit and debit card numbers from merchants and banks. Identity theft is on the rise and as a commodity of action for financial gain. Identity and character destruction is also on the rise, and again for motives of financial gain, or sometimes for personal vengeance and prurient satisfaction. [x] As the stress levels rise and further fragmentation in our society occurs, the propensity for such actions, in particular those that are connected to hacking and electronic privacy abuse, do increase. We see plenty of evidence for this, such as in the significant increase of teen-age hacking, where many of the perpetrators take such open pride in their work that they post videoclips about it, voluntarily, on sites like YouTube and FaceBook. [8]

One of the concerns about our unique situation with respect to information access, control and abuse is about unpredictable reactions. We do not know how people in large numbers will react when things break down or when the abuse factor gets too high. In general, our problem is that we do not know what are the thresholds of certain social breakdowns. In the famous and somewhat prophetic novel, "Wolf and Iron," Gordon Dickson talks about this in a way that can sound as if it was an account about some of the insanities that ensued in and around New Orleans following Hurricane Katrina, or about what could happen in a broader global breakdown of production, distribution and basic economy in not only the USA. "They had disagreed only on the degree of social entropy – chaos – required to trigger the leap to this new, savage expression of social organization. It was no one's fault that the threshold turned out to be lower than any of them had suspected." [9]

We have demonstrated a tendency to overestimate our level of being civilized and under self-control as a society as well as for our constraint and discipline as individuals. This is not just about ECP and grave crises affecting millions. This is simply about how we hold up together as people and as a People. It cannot be demonstrated quantitatively to the level of accuracy that we find in novels like those of Dickson or Isaac Asimov ("Foundation Trilogy") [10] and even if someone were to come out with some such theory, it would likely be poorly received, soundly thrashed, and not find much light of day, certainly in time to make much difference in the global theater. All the same, we ought to take serious note of the differences, the uniqueness, between a world that is "on edge" everywhere and over everything, as opposed to a world where there were large segments of geography and population that were very insulated apart from those undergoing upheavals, including those where the people doing the upheavals had power of information as well as power of imprisonment, torture, and the very ropes of life and death.

[3]
Same refrain, different context, when we look at things like public health and pandemic prevention. 1918 was the year (of onset, not completion) of the influenza pandemic with a virus most closely like the H5N1 avian flu. There is still uncertainty over the total number of deaths that can be attributed to this outbreak and its spread worldwide. From several million to several tens of millions. It was certainly a major pandemic in Europe and the United States. Some parts of the globe were virtually untouched, because of isolation. Much has been written and argued about the similarities and differences between then and now, the world of 1918 with WW 1 in progress, and the world of 200x and beyond. Models have been generated and simulations run in a variety of studies by all sorts of scientists coming from many different perspectives. Perhaps no other

potential pandemic has been so studied by so many people with so many variances in their backgrounds and standpoints on the subject.

What do we find that matters for our concern about navigation through our socially storming seas? We find a huge amount of unpreparedness at every level and branch of society, totally out of keeping with the potential for tremendous preparedness that we are capable of having because of our civilization's accomplishments and tools. People hardly wash their hands as a matter of general practice. This is really, really basic, and we aren't talking about high-tech but of common sense. The connection isn't being made in the schools, or in the homes. Bioprotection countermeasures – prophylactic measures that are simple and inexpensive, and finding acceptance in countries like Vietnam, Taiwan, Singapore, Malaysia, to name a few that are way ahead of the game compared to the USA and Canada – are simply being ignored by people who are in state and federal health departments (the so-called experts and pundits), school administrations, hospital infection control departments, and corporations. [11] As a result, the opportunities, the sheer and simple numbers of possibilities, for person-to-object-to-person contagion are astronomical compared to the situation in 1918 or even in 1956 [check dates] when there was the last significant viral influenza outbreak.

In more recent times we have of course the outbreak of SARS in Toronto [x] and a recurrent number of mini-epidemics onboard large cruise ships that often carry in excess of 4,000 or more passengers and crew on a single voyage. We have schools in Virginia, as one state with apparently poor awareness among health management officials at the state and local levels, having outbreaks in statistically significant numbers from MRSA [x] and also norovirus (Norwalk virus). [x] While it definitely cannot be said that, "Were X to have been done or applied to potential contact surfaces, or where Y to have been initiated as a protocol for people, then definitely condition Z would not have occurred," it is evident, and supported by many studies and a significant number of medical experts, that could be a significantly stronger defense against the outbreaks that did occur or the outbreaks of even more serious biopathogens that could occur. [12]

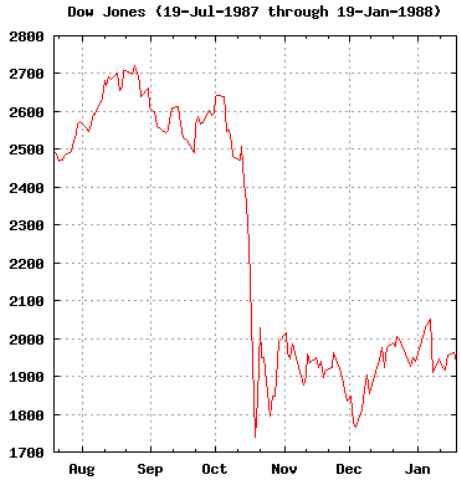
Our distinctive risk situation is in not understanding, at all levels and among what seems to be the majority of persons, how quickly we could succumb as a nation (e.g., USA) and as a planet to a major pandemic. We overstate our defenses by a long shot on every account. We point to our modern medical technology but forget what are the limits of that system to deal with millions, or even hundreds of thousands, of seriously and questionably seriously ill people. Speaking of the USA alone, we forget the percentage of our population that is elderly. Just forget them and let them fend for themselves, because they are too old and not a sufficient part of the workforce or the all-important consumer force? Perhaps that is on the minds of some people in various circles! A horrible thought but one that must be addressed because of the lack of consideration given to the problem.

The same goes for the poor and the lower income bracket segments of the population. We forget what are their means for getting even to public health emergency clinics. We omit also the consideration of how fundamentally unhealthy are so many people today, especially with obesity and obesity-derivative illnesses and chronic conditions, not only acute conditions, all of which lower strength for the immune system and for general resistance to the ravages of something like an H5N1 infection.

We also neglect to consider the massive mobility and interchange between people and goods. The recent outbreaks of e.coli and salmonella in the food supply, spanning from spinach to jalapenos (first blamed upon tomatoes) and of course packaged meats like ground hamburger, all tell us straight to our face about the problems in controlling, and then tracing, biopathogens in the food supply because of the massive amount of long-distance transportation and multi-person handling of foodstuffs in the supply chain.
In every aspect of our present civilization we have more people moving around to more places, interfacing with more other people and objects that are eventually in contact with people through ingestion or skin contact, and with more uncertainty about who went where and when and touched what, than ever before in history. As a result, we come straight back to our theme of unpredictability and the failure of reliance upon old models and examples from history. We know less today about what can happen if a viral or bacteria pandemic gets underway than every before. We certainly do have better means for treating individuals and large numbers of sick people, but we also have more than 300 million people in the United States alone, and 6.5 billion worldwide, whereas in 1918 the corresponding populations were approximately xxx million and 2xxx billion.

[4]
There could be almost no end to talking about the differences between now and anytime "then" and the mistakes of over-reliance upon how some Emergent Critical Processes played out in the past for speculation about how well and how better we can handle things in our present era. Two other examples will not suffice but will be all that I will bring up at present. My goal is not to have too long a book, because this is for getting things done, not just the edification and argumentation of scholars.

In 1987 there was a stock market crash that has been much discussed in 2008, as some sort of reference point. Many people, especially the so-called pundits of the contemporary era, seem to want to refer to "Black Monday" (of 1987)[13] as a marker, during this recession of 2008 and beyond, of "look how bad it was Wall St. and how brilliantly everything recovered." The DJIA dropped by 508 points in one day, October 19, 1987, and took almost two years to recover to its previous August 25, 1987 high of 2,722. The overall drop was approx. 22.6% in one day, and a maximum drop of 22.68% during this period. However, a simple glance at the chart for the DJIA over a six-month period (19.July.1987 through 19.Jan.1988) shows a different behavior than the most recent six-month interval for the DJIA in 2008.



[chart here for 2008]

Of course, one may argue that we are just in the middle of the crashing, perhaps at the bottom, and that things will be rebounding in the coming months, after the U.S. presidential elections are over, after the effects of the national governmental bail-outs and fixes to the banking industry and perhaps other major staple industry sectors begins to take effect, but the point that I am making is about the difference in the behavior of the markets leading up to the major slides and downturns. We experienced a very dramatic crash in 1987 and many have called it a "black swan" event, with reference to the terminology and theory introduced by Taleb and others by that name. We have had a very different series of events leading up to and influencing the drops in the world markets in 2008, and they have absolutely not been "out of the blue" or triggered by something unknown and unforeseen. People write endlessly about the inevitability of a sell-off and a transition from bull to bear stock markets as investors decide to cash in on their gains, and how periodically this leads to a run on the market as many investors react in virtual unison, with a desire to sell off and grab the highest gains before the price declines further.

That is one type of phenomenon and it may often be associated with any number of economic indicators and signs that can be interpreted by enough numbers of people as a forecast for a drop in GDP, or employment, or consumer spending, or all of these and other factors combined. But what we are seeing in recent times, leading into and now in full-swing in 2008, is very different and unique compared to not only 1987 but to any recent stock crashes, bear markets, and economic slowdowns in history. We have all of the problem-makers converging. We are being hit simultaneously with a convergence of global problems in energy, synthetic goods, water, food, and environment (not only the climate change and warming, but things like the radical decline in bee populations, which we see already having an effect on many forms of flowering plant production, especially fruits).[x] We have seeming modest cost increases and transportation delays now being significant for millions of people in scores of countries, such as the changes in shipping (going around the Cape of Good Hope rather than the Suez Canal, in order to avoid Somali pirates) that will add time and cost to goods coming from Asia to Europe.

In 2008 we have seen the step by step unfolding of consequences in the very major collapse of the derivatives and swaps market tied in with the American housing industry. We have not had the kind of "Whoa, where did that come from?" behavior that has triggered a market resetting in times before, and nothing can be laid at the doorstep of any one particular company or industry as being the trigger of bad tidings that subsequently turned into a panic.

We'll come back later to the markets and to distinctions that set 2008 and Our Time Today apart from any others in history. The point here is simply to show more examples of our unique setting and how we cannot expect to apply "tried and true" fixes, such as the actions of the Federal Reserve Bank in the USA and other central banks around the world, that had worked as effective antibiotics, analgesics or simply effective placebos in the past. In fact, these attempted fixes, to the extent that they are making people think that we can ever go back to some of the "old ways" of measuring the success and growth of economy and social functions, are more dangerous, more damaging than perhaps doing absolutely nothing at all. Why this is so, why this can be so, is an argument that runs through this book like a river, or perhaps it will seem more like a flood or even a tsunami. It is a point, an outlook, a perspective that I want to convey that

cannot come just in a single argument about one aspect of our society. It requires taking hard looks at virtually all of our perspectives and logics about how the world works.

Here we are dealing with something that runs deep. This gets to the ramifications and corollaries of what Alan Greenspan said on Oct. 20, 2008, about having made a mistake in his view of "how the world works." When we have reached a point where you simply cannot be getting more and more people to consume more and more (food, cars, clothing, PCs, cell phones, beer, anything) then you need to realize that there must be a totally different attitude about what is an economy and what is profitability and what is success, in business and in life. This is radical, this is fundamental, and this is where we have been at for some time but many of us, not only the Greenspans and Berneckes, have been denying it, keeping those hands clasped tightly over eyes and ears. This is why things are not going to just settle down in the same-same way and merrily start to climb back up, past DJIA of 14,500 again in months or even a year or two, and then climb up steadily to a new Everest pinnacle of 20,000 or, as some fantasized even in 2007, to 36,000 [x]. This is why we are in a World Re-Adjustment of not only the numbers and the quantitative values but the very fundamentals of what is value and what is not.

[5]
Finally, for now, I want to bring us closer to the present and specifically point out some differences between today, late 2008, and the fall of 2001, following the attacks of Sept. 11. We keep on going back to that day like a ping-pong ball. Of course it is a marker point for our memory and not only for this generation that lived through it. Of course it should never be forgotten, like many terrible days of infamy in history that stood alone as markets of human atrocity to other humans or as the onset and beginning of something longer and more terrible in numbers and duration. But if we want to do justice to our memories and to the memory of those victims who were annihilated in the attacks, we need to do some very serious distinction-making, discrimination and differentiation between then (the day and for months and even years thereafter) and now (principally summer of 2008 and looking down the open road of our future).

What happened in 2001 grew straightforward out of a series of careful plans that were executed by a very dedicated and capable organization that loosely goes by the name of "al Qaeda" and has had for some time a few notable public-image spokespersons and spiritual leaders, notably Osama bin Laden. Again, here is that phrase, "this is not a book about…," so my point here is not to analyze or argue a point about how 9-11 evolved, or why, or what could have been done to prevent those or any other specific terrorist attacks. What I want to hammer home is that in all of the actions undertaken by all players and sides since then – by the World, not just by Bush-Cheney and the American government and military – we have a radically different situation seven years later that alters entirely how we can look at international and homeland security, and economy, and everything having to do with the conflicts in, around, and linked with the Middle East and radical Islamic fundamentalism.

We are no longer dealing with a war against just radical Islamists who run the gamut from wanting to simply be left alone, as in "Get out of Muslim countries and quit trying to push your style of culture, politics and psychology upon us," to "It is God's will that American should be destroyed and millions killed and eventually the whole world should be converted to our brand of Islam or suffer death." We do have all sorts of enemies

including people and improved organizations (in spite of all the military and counterterrorism efforts) who stand in one place or another, or who jump around in fact from one position to another, within that very broad spectrum of belief and animosity. What we have that is even more of a threat to global society and "civilization as we know it" (which includes everything, including lifestyles in Cairo and Islamabad and in the Siberian Taiga and the Amazon Rainforest), is the confluence of global unrest, agitation, stress, and depression that has seen how to vent frustration and anger through terrorism, how to wage guerrilla wars on the scale of a Chechenya or Abkhazia or Darfur or Rwanda, how to make any number of weapons, and how to raise volunteer cadres and armies that include can even children of eight or ten years of age running around with AK-47s and backpacks that are close to their own size and weight.

We have more going on now and will have much more going on that is way beyond the issues and causes for hatred that we have seen fuel fighter groups like al Qaeda. Part of this is due to what has transpired in Iraq and Afghanistan, as well as at Guantanamo and for that matter in a host of countries in Europe but especially the United Kingdom. That is almost the "small part" of what adds to the heap of kindling and the small fires all around that make up a global-wide, trans-generational, trans-cultural conflagration. A bigger part is in the water, the food, the energy, the rest of the economy.

There are tens of millions of people in China, for instance, who have been thrust forward into the mass-psychology mill, or oven, of becoming rampant consumers, profligate consumers, Western-consumer wanna-bes. They have been shown the glitter, the flash, and the material comforts and now they do not want that to go down, to diminish, to be taken away, or simply to not have after seeing it dangled so close in front of their faces. They want it all, too, and they want it now. This is not only about China and a new emerging wanna-be class of consumers who can each have a personal automobile and a large-screen TV and a ton of appliances, toys, and gadgets, and of course also, processed fast food. This is also about India, and Indonesia, and all the rest of the world in a great big swath of Asia, Africa and Latin America, not to forget also Eastern Europe, but especially those places that simply have not had, now had something, and want more, not economizing and sacrificing and doing with less.

Furthermore, there is the issue of basics. Water and food, shelter and fuel. Survival basics. There is not enough to go around. One only has to do the arithmetic, or just read any bit of news. There is not enough water and food to go around, given shortfalls and slowdowns in production – the superficial "economy" – and reductions due to Nature and the global environmental adjustments and shifts we are only now beginning to understand, witness, and feel. So the upshot of all this is that we are going to have more global conflict, more al Qaedas, more Somali pirates, more dysfunctional countries like Sudan and Somalia, and more and more of what we have had as starter experiences courtesy of al Qaeda and George Bush's failed administration and its response to the same.

My point here, in keeping with the theme of this chapter, is to emphasize that it is all very different from any of our histories, depressions, wars, pandemics, and other Emergent Critical Processes, short or long, natural or human-induced, Than Ever Before. New ball game, and you haven't played this one before, and you haven't heard the rules of the game, because nobody has them, or simply, effectively, there are none to be read.

Understanding this reality is the first and necessary and most important step for us to all take in order to have a better handle on acting intelligently – adapting, changing our critic-selector models, [Minsky ref to Emot. Mach.] and being able to survive and sustain ourselves.

[6]
And let's remember another point about all this navigation and why we want a compass and a good one, an accurate one that will also work under adverse circumstances and suffer well through some "abuse." We do not want to just survive. We aim for something better than to "just make it through" and have enough to eke out a survival. We don't navigate, we don't put attention to where we are going, in order to just survive the storm at sea or make it to some shore, any shore. We want to reach a decent shore, either one that we know full well is safe and with plenty of resources, for the next leg of our journey (which may be remain stationary in that new place, or load up and set to sea for another voyage), and we don't want to simply end up somewhere that is a landing spot, but unknown, or barren, or known to be substandard.

We do have more than ourselves at stake in this voyage. We have more than our immediate families and present generation. We need to be good navigators for the sake of the human race. If we do not take on such big and encompassing objectives, then, it is my serious claim, we will fail miserably at sustaining our small-circle worlds in our short time frames of years and decades. Think big, think of the global picture, and we will come out better for our individual ships. Think only of ourselves, with limited or virtually zero vision, and we will be moving into Davy Jones' Locker and being food for the fish.

3. Complexity, Undecidability and Unavoidable Things

Complex vs. Complicated

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4. Knowing, Noticing, Recognizing and Acknowledging

The Greenspan Effect

Pressing the Panic Button Over and Over

5. Emergent Critical Processes

A Rudimentary Taxonomy

Dynamics that give some notice

Numbers, Mobility, Transparency, and Reduced Defenses

6. Economics Transformed

7. Energy and Environment

8. Healthcare

9. Housing

10. Security Inside and Out

Avoidance and Prevention

Detection and Diagnosis

Response and Treatment

11. Education

12. Infrastructures – Physical and Social

13. Collective Soul, Me-Think, We-Think

14. Re-Emergent Themes and Instinctive Reactions

15. Looking for Trails in the Jungle at Night

Individuals and Families

Schools, Hospitals, Service Worlds

Communities and States

16. Sensors, Signal Fires and Satellites

17. Countering the Counterers: Inertia and Resistance to Innovation

18. Walking with More Open Eyes

Alternative Economic Energy

Appendix – Essays, Fragments, & Sporadic Encounters

A.1 Economy, Education, Staying in School (October 2008)

Economy, Education, Staying in School, Alternatives for Today and Tomorrow

A.2 Pragmatic Rationalism (October 2008)

Pragmatic Rational Program : Foundations of a Platform for Action

A.3 Foreclosure Solutions (October 2008)

One Practical and Near-Term Zero-Cost Solution
for the Problem of Housing Foreclosures

A.4 Ecosymbiotics (March 2002)

Ecosymbiotics :
Integrating Economic Profitability with Environmental and Social Sustainability

A.5 Guide to Corporate Stability (January 2002)

Guide to Stability and Sustainability of a Privately-Held Company

Sixty-Four Important Questions for Management

A.6 Innovación (April 2002)

Innovación, Creatividad, Fecundividad, Descubrimiento, y Revelación

A.7 Mutual Information and Encrypted Events (July 2007)

A Mutual Information Approach to Developing Reasonable-Likelihood Associations between Encrypted Events

A.8 Emergent Critical Processes (June 2005)

Emergent Critical Processes

A.9 Connecting the Dots (Sept. 2006)

Connecting Dots to Locate and Intercept Terrorist Operations and Operatives

A.10 WMD and Vulnerability to Attack in the USA (July 2007)

Increased Vulnerability to Nuclear-based Terrorism in the Continental USA

A.11 I-Trans™ (May 2007)

A.12 Terra Firma (July 2008)

Special Notes

[1] …

Bibliography

[1] …

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The NOTES are not completed in this pre-release partial version

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[1] The famous uncertainty principle as first stated by Werner Heisenberg, $\Delta x \, \Delta p \geq \frac{\hbar}{2}$, is poorly understood in the common literature and also at times confused with the Observer Effect.

The uncertainty principle describes precision in the relationship of two measurements of one event in time - measurement of position and of momentum, for a particle. There is a limit, as expressed by the inequality. Increasing the precision of measurement for one quantity, means (not "causes"!) a loss in the precision of measurement for the other. The uncertainty principle concerns *measurement*, quantity of a parameter, and not *observation*. Often it is considered that somehow the uncertainty in position or momentum or the combination thereof is caused by some kind o physical disturbance (i.e., the act of observation). This type of causal dependency was in the early formative years of quantum mechanics a topic of discussion but is now rarely considered or advanced.

[2] The Bojinka Plot was an elaborate operation master-minded by Ramzi Yousef and Khalid Shaik Mohammed to simultaneously blow up eleven trans-Pacific airliners, at sea, killing upwards of 4,000 passengers and crew. Additionally, the general plot is understood to have also included plans to assassinate Pope John Paul II and to crash an airliner into CIA headquarters in Langley, Virginia. It is significant to note that not only was the latter modus operandi being planned (not merely considered or discussed speculatively) several years before 9-11, by persons with whom there was clear knowledge of cooperation and communication within a circle including Osama bin Ladin and the leadership of al Qaeda, but also there was a clear understanding and technical development of alternatives to traditional nitrate-based explosives for use in airline terrorism. TATP (Tri-acetyl-Tri-Peroxide) based explosives, so-called "liquid bombs," that surfaced in 2006 as a serious threat against aircraft because of the likelihood that the ingredients would not be detected by conventional security technology, and which was part of a major terrorist operation broken up by UK security forces in early August, 2006, was within the repertoire of technology being considered back in 1994 if not earlier for use against commercial aircraft.

References on the Bojinka Plot include:
Brzezinski, Matthew (2002-01-02). "Operation Bojinka's bombshell", *Toronto Star*.

Ressa, Maria (2003) Philippines: U.S. missed 9/11 clues years ago CNN
Bokhari, Farhan, Victoria Burnett, Charles Clover, Mark Huband and Roel Landingin (2003). *The CEO of al-Qaeda*. *Suicide-pilot plan uncovered six years ago in Philippines*, AP and Reuters
References on the initial TATP threats include:
BBC News UK. "'Airlines terror plot' disrupted". BBC News UK, Aug. 10, 2006
"Terror suspects planned to use liquid explosives to blow up planes". U.S.News, Aug. 10, 2006
Jennifer Quinn Esposito. "Terror plotters hoped to use peroxide explosive to blow up jets". San Diego Union Tribune, Aug. 10, 2006

[3] The I'Trans™ design is based upon the employment of both hybrid automobiles (that include charging systems onboard) and on-demand easy-rental urban automobile resources (such as are now being introduced in Paris and other European cities with scooters and motorbikes). plus trains onto which cars can easily, speedily, and conveniently be loaded and unloaded for hauling on mid-range and long-distance routes. See also Appendix article A.10.

[4] Project GENOA was started in the 1990's and led by Admiral (USN, ret.) John Poindexter, of Iran-ContraGate fame from the Reagan dynasty. It was basically a Total Information Awareness (TIA) scheme for massing huge collections of public and private email, phone conversations, faxes, and other transmissions and exchanges, openly advocating secret data collection and intrusion in addition to court-odered and court-sanctioned searches, for the purposes of being able to "search for needles in the haystack" and find evidence of plots, schemes, crimes, and occasional terrorist activities. The buzzword of the time was "asymmetric threat" and this meant anything that might come out of the blue, extraordinary, unconventional, and lethal, if not to people then at least to someone's bank account or legal code – or political positions and aspirations, Eventually it became a formal project funded by DARPA (Defense Advanced Projects Agency) until it came under severe public and congressional flak and was then officially disbanded. However, TIA went on to a fairly uninterrupted new life under the auspices of ARDA (Adanced Research Development Agency), later officially renamed DTO (Disruptive Technology Office), an inter-agency entity more or less created and sustained mutually by NSA, CIA, DIA, DTRA, and NGRO.

Of late there has been an enormous amount of TIA work that has been sponsored and managed by not only all of these agencies but by the NCTC (Nat'l CounterTerrorism Center), itself a quasi-interagency entity, and different offices and departments within DHS. Recently (Sept. 2008), Michael Chertoff, the Director of DHS, publicly announced that a new phase would be commencing in the development of critical infrastructure protection, in the form of "Phase 3" of the Einstein Program, an effort to combat attacks by hackers and other intruders against governmental and private-sector internet, database and computer application resources, not only through defensive measures (firewalls and strictly defensive barriers) but also through active countermeasures to attack the attackers. All of this makes good sense and is arguably a necessary part of our national economic, military and general defense against those enemies who want to harm us in whatever form and fashion. However, the problem, the concern, and the grave risk is that there are no adequate measures and balances whatsoever for ensuring that all of these tools are not used in deliberate and wrongful ways by factions within the government agencies, or by private-sector factions (companies), for their own illicit purposes, ranging from the circumvention of a constitutional republic to the abuse of mass information for manipulative marketing and other financial purposes.

[5] "van Eck phishing" is a term denoting the electronic capture of keystrokes from a keyboard and the conversion of those detected signals into a stream of digital keystrokes, thereby duplicating on the recipient (observer's) computer everything that the observed subject has been typing. Everything, to the extent that the reception is clear. There has been a technology of providing "Tempest" qualified computers, including PCs, since the 1980's, for defense and intelligence establishments to be protected against such electronic espionage. For further information, consult:
[articles]

[6] The case of the disclosure of Valerie Plame, wife of Ambassador Joseph Wilson, as a CIA operative agent, to the media by "Scooter" Libby, have been well publicized. Wilson was a critic of the Bush administration over the supposed evidence (shown to be misinterpreted and reshaped by the Bush

administration) over Saddam Hussein's government of Iraq purchasing materiel for the construction of nuclear weapons and specifically weapons-grade uranium enrichment. Suddenly, in 200x, his wife's clandestine and lawfully secret working identity became open, public knowledge, putting her life, his life, and national security at potential risk. The disclosures were originating from and had the clear involvement of some of the highest levels and innermost staff within the Bush White House including VP Cheney and then Chief of Staff Karl Rove. Details here on Plame/Wilson, Rove, Libby, etc.

[7] refs and examples of job/contract discrim by these corps and others

[8] Ref. to article in BBC or CNN 27.Oct.2008

[9] Dickson, Gordon, "Wolf and Iron," p. 8, TOR Books (1990)

[10] Asimov, Isaac, "Foundation" (and sequels "Foundation and Empire" and "Second Foundation", plus later volumes published in the 1980's and posthumously). the first trilogy appeared in 1948 …
In "Foundation" the reader is introduced to Hari Seldon, the Einstein-like professor, scholar and statesman who has been the principal developer of "psychohistory," a mathematical system and set of models for determining what will happen in large populations such as those of entire planets and inhabited solar systems, in an era when humans and other species of intelligent beings have spread a civilization across the galaxy. Psychohistory bears many resemblances to other scientific disciplines and methods, ranging from statistical thermodynamics in physics to behavioral analysis in psychology and political science. One could argue that much of what exists today in the analysis of consumer behavior through Google and other internet activities of users (implemented through the tracking of clicks, cookies, page visits, and macroscopic data such as actual purchases and form-filling) is very close to the rudimentary foundations of the type of data collection needed for a realistic "psychohistory" science. When we then look at such things as TIA (Total Information Awareness) we seem to be getting closer and closer to at least a full-scale attempt to implement something of similar power and utility, even though it can be argued that such systems as TIA are really going about everything the wrong way from a fundamental physics and mathematics perspective.
[additional notes and refs to articles including mine on formal ….for counterterrorism (2005)]

[11] Examples and documentation of neglect of bioprot measures by the various example places, agencies

[12] Multiple refs here to TETRAD, Aegis, and various experts (NIH, Vanderbilt, Duke, etc.)

[13] "Black Monday" is most often used, in terms of stock market crashes, for Oct. 19, 1987, but it is a term also used in reference to Oct. 28, 1929, following the start of the Crash of '29 on the previous Thursday, Oct. 24.

