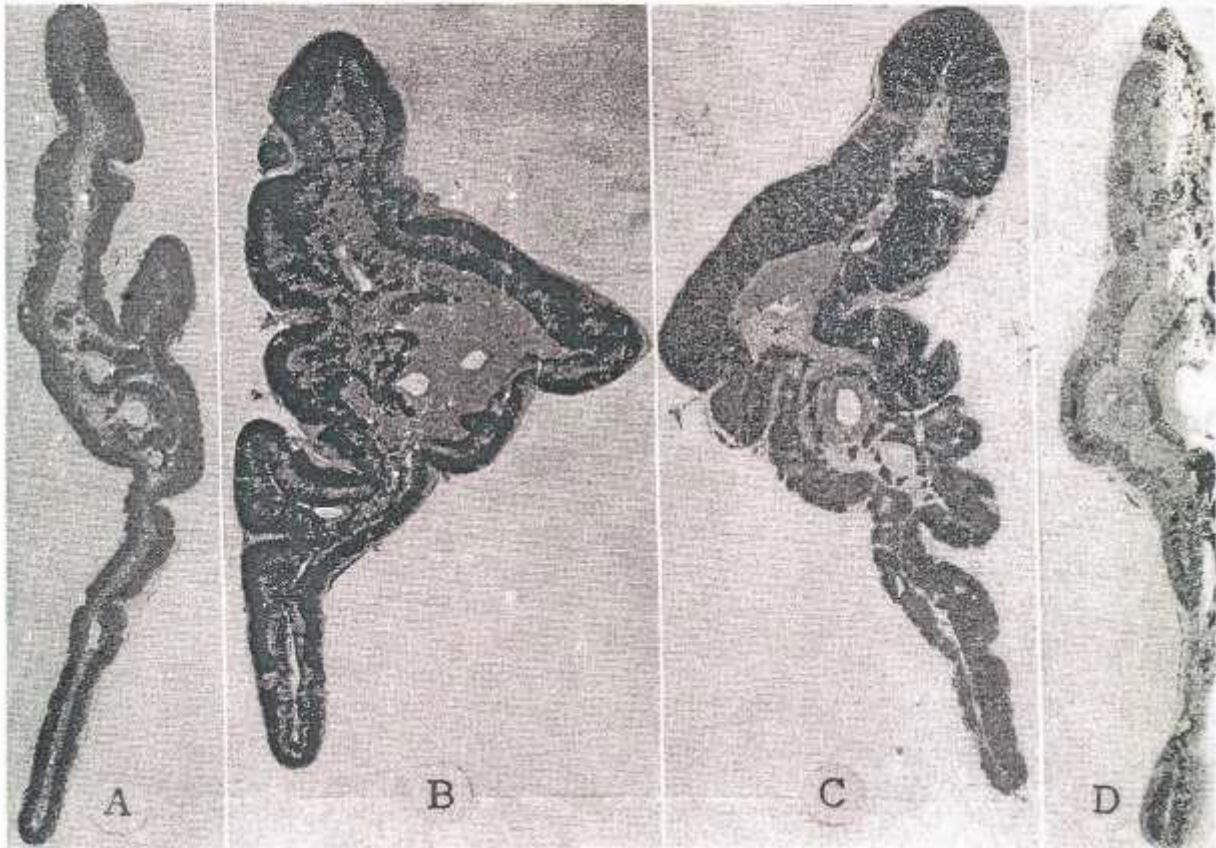


STRESS R US

AN ESSAY ON WHAT'S KILLING US, WHY, AND WHAT WE CAN DO ABOUT IT,



Adrenal changes in clinical hypertension. — A. Normal human adrenal under low magnification. Note moderate lipid content of cortex indicated here by the degree of darkness of the outer rim. — B. Compensated hypertension with enlargement of both medulla and cortex. Note also increased lipid content in the latter. — C. Compensated hypertension with marked cortical enlargement and increased lipid storage; the medulla is essentially normal in this case. — D. Decompensated aortic insufficiency with almost complete exhaustion of the cortical lipids.

(After Liebegott B46126/44.)

GREELEY G. MIKLASHEK, MD (retired)

STRESS R US: 4 PARTS, 51 TOPICS

FOREWORD by Karen Shragg and Gregg Miklashek

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FOREWORD to *STRESS R US*

by Karen Shragg, author of *MOVE UPSTREAM, A Call to Solve Overpopulation*

This book, and the extensive research by this insightful retired doctor, is one more reason to pay urgent attention to the overpopulation issue. While some only need to look at the 65,000,000 forced migrants in the world today, or the endless wars, or the fact that half of the world's population does not have access to clean water for part or all of the year, or human driven climate change, or the fact that we bring 212,000 new humans net into the world daily, others need more personal reasons to pay serious attention to world overpopulation. This seminal book closes the door on all the ways we have previously weaseled out of facing the truth of human overpopulation and our effects on the planet and each-other.

We already have clear evidence that overpopulation is driving us off of the cliff of natural resource collapse, or unsustainability, and causing so much suffering, misery, and premature death. This scarcity is produced by the overwhelming numbers of people we already have on the finite planet. We are a planet dominated by us. Our numbers are forcing other species to go extinct, and,

now, according to Dr. Miklashek, it may be our turn. One species going extinct per million in one year is normal, but now we're losing 30,000 species per year, for an average of 3 species extinctions per hour!

We already know that people behave dysfunctionally in overcrowded cities. We already understand that the stress of life is causing the diseases of civilization that we are dying from. What Dr. Miklashek does in rediscovering John B. Calhoun's "kill-switch", as explained in his book, is to put together the final pieces of the puzzle. Chronic "population density stress", also his term, is depleting our adaptive energy, suppressing our body's immune defenses, and creating the perfect storm of disease, including the new kid on the block: infertility. The constant stress we are under, what Dr. Miklashek has called "COASTER" (for chronically over-active stress response), is over-working our adrenal glands and is ultimately caused by stressors that are part and parcel of overpopulation, what he calls "population density stressors".

In developed countries, stress can be measured in blood pressure elevations, insomnia, domestic assaults, mental illnesses, road rage, heart disease, cancer, diabetes and more. In the underdeveloped world, stress has different faces, including the stress of scrounging for clean water,

food, and shelter, while interrupted by war. In Dr. Miklashek's world, there is another critical response: the biological inability to produce children. Read on.

The irony of the "kill-switch" warning is that we need to do something to turn away from the edge of the cliff, and falling fertility will help. However, the good doctor is saying, if I read him right, that we may reach a point of overpopulation where ALL reproduction permanently ceases. Game over. End of story. Lights out.

This book seems to be saying that, if we don't use birth control to limit our family size to one-child on average throughout the world, mother nature will do the job for us, but not soon enough to save the earth as we know it. Ultimately, the massive die-offs of billions of us due to COASTER will allow the earth to regenerate, but who wants to live through that natural catastrophe?

Unfortunately, the "degrowthers" seriously address the need to break out of our cultural cocoon of endless growth, no matter what negative effects this seemingly endless search for ever more "natural resources" may have on the earth and our fellow species, but seem to have little or no understanding of population biology. Likewise, the "transition movement" makes efforts at downsizing and transitioning to a more sustainable

world, but ignores the role of 212,000 more new mouths to feed daily, at our current rate of reproduction world-wide. Ironically, those of us in the overpopulation movement regularly ignore the very real disruptions that are inevitable in downsizing our huge populations, and degrowth in general. This book is the first of its kind, by exploring sustainability, population biology, degrowth strategies, health issues for us and the planet, transition, and the numbers, all in one place.

We gnash our teeth while watching the endless “news” of the plight of migrants from densely overpopulated lands south and east of the Mediterranean, but never face the true cause: unsustainable overpopulation.

We now have 78 million new passengers added to this spaceship earth every year. According to those who measure our resources, we bypassed the sustainable number of humans 80 years and 5.5 billion people ago. Enough infertile humans could help take us off of the endangered species list before the “kill-switch” is flipped, unless we continue to demand excessive reproduction to “cure” our infertility “disease”. According to this troubling but well written and thoroughly researched book, we have a critical choice to make, if we wish to save our species and the planet.

This book is a “must read” for anyone truly concerned

about the fate of our offspring and the planet they will inherit.

November, 25, 2016

STRESS R US

How “population density stress”, including our chronically over-active stress response (“COASTER”), is killing us, why, and what we can do about it, before “the kill-switch” eliminates our species from the earth.

Presented in 4 Parts and 51 TOPICS.

I was a practicing neuro-psychiatrist, who retired 5 years ago, after 42 years of making every possible effort to support the physical, emotional, mental, and spiritual healing of 25,000 souls, including writing 1,000,000 Rx for psychotropic medications. I consider myself blessed to have been granted the opportunity to have known this small city of suffering, courageous, and heroically honest fellows, and I made them a promise, which I must now fulfil.

A NEW MODEL for MENTAL ILLNESS

Together, we created a new model for understanding the mystery of “mental illness”, a stress physiology or population regulation model. This new model of mental disorders replaces the

negative aspects of the eugenic “medical model” (i.e., bad genes, sick brain-“brain disease”, bad parents, bad spouse, bad children, bad family, etc.).

We found that properly administered psychotropic medications could certainly be beneficial in reducing or eliminating otherwise disabling symptoms. However, gaining knowledge of the underlying disease process, and making the life-style choices necessary to reduce the causes of these symptoms, was equally important. “Talking therapy” and education were as important as the medications.

DEFINE and MEASURE

Of course, we had to be able to define and measure our Stress Response, and track it when over-active. To achieve this monitoring, we only had to relearn our innate ability to self-monitor our subjective “anxiety” level (on a ten point scale: 0= calmest ever, and 10= most anxious ever), and other symptoms of “autonomic arousal” associated with activation of the sympathetic nervous system. However, we also measured blood levels of the stress hormone Cortisol for scientific accuracy.

A SOBERING REALIZATION

We realized that nearly all of us would have died many times over during our artificially prolonged lifetimes, were it not for frequent life-saving medical care, excellent sanitation, clean drinking water, safe nourishing food supply, protection from warfare, protection from natural disasters, and safe housing.

The symptoms of the common psychiatric conditions of “anxiety” and “depression” were well known to the largest segment of our patients, as they were seeking treatment for these very conditions! However, as our understanding of these psychiatric conditions expanded, we soon came to see them within the spectrum of nearly all of our “diseases of civilization”. Then we realized that we were staring at the underlying common cause.

COASTER

Over-activity of the sympathetic branch of the autonomic nervous system, releasing Adrenaline, Noradrenaline, Dopamine, and Endogenous Opiates, then results in high blood levels of the adrenal gland hormone Cortisol. We realized that elevated Cortisol was the core health problem responsible for directly causing or indirectly making us vulnerable to the top ten killers of modern “stressed out” humans. Of course, there are

numerous biological and physical primary agents of disease, but our over-active stress response makes us increasingly vulnerable to these primary cause agents. We use the acronym “COASTER” throughout this book in place of “chronically over-active stress response”.

We can find little evidence of this sort of study having been done previously. Certainly these easily measured biomarkers of our over-active stress response should be studied further, and in more detail, in the future. However, we felt publication of our historical stress research, preliminary findings, conclusions, and radically new theory of disease origins not only justified but mandatory.

THE ORIGIN of ALL DISEASE

These diseases caused by or facilitated by COASTER include: essential hypertension, heart attacks, and strokes; abdominal obesity and type 2 diabetes; suppressed immune function and the resultant increased vulnerability to all infections; anxiety, depression, and suicide; addictive disease and other obsessive-compulsive disorders; kidney disease; thyroid disease; peptic ulcers and inflammatory gut diseases, as well as cancers, and our Western world’s epidemic of infertility.

Thus, a new model would be necessary to understand the mystery of what was really making us anxious, depressed, physically ill, and killing us.

This new “population regulation model” is, by contrast, based on long-known scientific evidence of our silent epidemic of COASTER. More recent neuro-endocrine researches on crowded, stressed animals and humans have established the gene-based neuro-hormonal mechanisms of “population density stress” induced diseases, and even total population collapse from the triggering of “the kill-switch”.

These researches strongly suggested that we rethink COASTER as a population regulation mechanism. A comprehensive survey and summary of these rarely publicized historically important researches will follow.

A PROMISE KEPT

I promised to write this essay-become-a-book and publish it, in my patients’ honor, in order to challenge and eventually replace the prevailing models of mental illness, as well as many other diseases. My 25,000 brave former patients deserve much of the credit for what follows.

However, this book began as a 6 page “essay” in 2002, redefining the true stress induced nature

of mental illness, but, within the process of reviewing existing published research reports, for this final post-retirement writing, my pursuit of this mystery has taken on a much broader life of its own and morphed into a 650 page book.

SAVING OURSELVES from OURSELVES

This is a book intended to provide individual humans with the scientific, spiritual, and moral references necessary to understand the true nature of our health problems and their origins in our current world-wide ecological crisis. This knowledge may empower us to make the necessary here-and-now individual life-style corrections in order to save ourselves, our progeny, and the diverse biosphere from immanent self-destruction.

WARNING!

This is not an escapist novel, nor is it a typical medical science textbook. It is a scientific mystery story, which the serious reader will find equally compelling and deeply disturbing. If the reader is not so affected, he or she has not read this book.

HURDLING TOWARD ARMAGEDDON

We are currently hurtling headlong toward a self-inflicted overpopulation Armageddon due to the following: (1) “overshoot” of our earth’s carrying capacity limits, (2) loss of the clan social structures of our ancestors, (3) “psychotic” separation from Nature by substitution of the “built” environment necessitated by overpopulation, (4) inevitable resultant destruction of the natural environment, and (5) ever stronger operation of long evolved population regulation mechanisms: COASTER. We have used the term “population density stress” to include all of these. Thus, we are experiencing increasing physical and mental illness from “population density stress” and potential population collapse from the “the kill-switch”, as well as famine, war, global environmental destruction, and Malthus’ “misery and vice”.

SLAMMING on the BRAKES

Mother Nature is currently slamming on our neuro-endocrine population brakes, resulting directly or indirectly in the top ten fatal diseases of modern men, women, and children. However, our amazing capacity for improved medical technology and our altruistic salvation of our own kind, even at the expense of all other life on earth,

is partially overriding those ancient braking mechanisms.

FOREWARNED IS FOREARMED

Armed with the knowledge discovered within the next 675 pages of this developing human mystery story, the reader will share the revelation that my patients, our reading of endocrinology, ecology, ethology, sociology, psychology, neurology, etc., and an abiding lifelong love of natural history, have revealed to us and our fellows.

ONE-CHILD FAMILIES

One-child families will reduce world-wide human populations to the 1950 level of 2.5 billion by 2100, stop the otherwise inevitable environmental collapse resulting from excessive human activity, and prevent the accurately forecast Malthusian “misery and vice” that our children and grandchildren will otherwise certainly face. By the time the courageous reader finishes this book, we believe he or she, too, will understand why we are making this outrageous recommendation.

BLINDED by STRESS ADDICTION

However, we may blindly choose to continue our current reproductive excess (i.e., 212,000 net per day or 80,000,000 per year) until we reach a genetically determined automatic turn off point, or “kill-switch” for our entire species. We estimate this limit to be just under 28,000 humans per square mile, without the option to migrate. Hong Kong is just one of several cities already above 28,000 humans per square mile and is actively recruiting fertility doctors to help with its “epidemic of infertility”, currently effecting one in six couples, and up from one in ten only twenty years previously. In America, estimates are that one in six couples (2016 data) are, also, currently experiencing infertility, as defined by one year of unsuccessful attempted pregnancy. This is a 100% increase since 1982 when one in twelve couples were infertile.

ILLUSTRATIONS by JOHN KASTNER

Hopefully, the selection of light-hearted illustrations by my old friend and colleague, the Illustrator, John Kastner, of Rochester, NY, will provide some comic relief to an otherwise deadly serious subject. As with all humor, tragedy lurks just beneath the surface, and John’s illustrations brilliantly depict the storm of mostly unconsciously

experienced population density stress-inducing stimuli (i.e., “stressors”) in our urban “built” environments and our inevitable progress toward life, and death, in a cubicle. Unfortunately, due to the large file sizes, John’s work is only available in the limited edition print copy or on his website: weeblax-uzzl.com.

THANK YOU!

The main author, also, needs to thank his wannabe-retired editor, Seamus Cooney, of Kalamazoo, MI, for his many helpful, if painful, comments and insights, as well as Erika Gavenus of the MAHB (Millennium Alliance for Humanity and the Biosphere) editorial staff for her assistance in publishing an e-copy of the book in the MAHB Library, available for free download from their website.

The online reader need only Google MAHB and enter “Stress R Us” in the small “search” window you’ll see in the upper right-hand corner of the homepage to download the PDF. Or just Google: <http://mahb.stanford.edu/library-item/stress-r-us/>. Downloading the four page “Topic List” of 51 topics or chapters, as well as the two cover images, will greatly facilitate navigating the text block on your computer screen.

HOPE

We only hope the reader finds what follows to be the revelation that putting this puzzle together and solving the mystery of human disease vulnerability has been for us. We pray that this information further informs the population reduction, “degrowth”, biological diversity preservation, conservation, as well as “resilience” and “rewilding” movements.

MOTIVATION

Moralizing about climate change and environmental destruction as the direct result of human overpopulation, the boilerplate of all overpopulation organizations and their websites, will not cause us to change our behavior and voluntarily limit our family size. But realizing that Mother Nature is pushing back ever more strongly through our over-active stress response, and the “diseases of civilization” directly resulting from COASTER and population density stress might just do the trick!

We need not be the only species left occupying Wall Street or any other area of the earth’s surface. If that horror should come to pass, however, we will simply have been the last species of our Anthropocene era to become extinct, greatly

relieving the survival pressure on all remaining species.

NONE of THIS MATTERS?

However, none of this matters, unless we, personally, as individuals, take action to reduce our reproductive activity, our consumption of “natural resources”, and our own personal “carbon footprint”. We need to act in order to save ourselves, our offspring, our fellow species, and our planet! Unless we humans honestly face the fact that we have vastly over-populated the entire earth; and that our species has, as do all mammal species, long established neuro-endocrine and behavioral mechanisms to limit our otherwise uncontrolled tendency to overpopulate, we cannot face the truth.

UNDERLINING

Borrowing a page from the study habits of serious students, every attempt has been made to ease the reader’s journey through the thicket of disturbing and often challenging technical material to follow. Thus we organized it into 51 TOPICS, with hundreds of subheadings breaking up the text block, and underlining key words and phrases.

The reader is encouraged to scan the text by reading only the underlined words on a time-saving first read-through, much like reading a textbook previously owned by an “A” student who used his or her yellow magic marker to high-light the important points for that inevitable quick pre-test review.

SCAN-READ in 30 MINUTES

You will be able to scan-read the following in less than 30 minutes, if you follow the underlined text. You may, also, find 7 BULLET POINTS immediately following the end of the text, as a condensed review. We thank Kathy Crook for that suggestion and many others!

BOTTOM LINE

BOTTOM LINE: WE IGNORE WHAT FOLLOWS AT OUR OWN RISK, AND WILL WATCH OURSELVES, OUR CHILDREN, AND OUR SPECIES DIE FROM OTHERWISE PREVENTABLE POPULATION DENSITY STRESS DISEASES, AS OUR SHEER NUMBERS OVERWHELM AND FURTHER DEGRADE THE PLANETARY ECOSYSTEM RIGHT UP TO THE POINT WHEN NATURE THROWS “THE KILL-SWITCH” AND WE JOIN THE REST OF FOREVER LOST SPECIES IN EXTINCTION.

PART 1: INTRODUCTION

1. INTRODUCTION

The first question of a clinical and scientific nature confronted by psychiatric clinicians (as opposed to the personal mental and emotional turmoil stirred up by a psychiatric education) is the “why?” and “how?” of anxiety (constant “free floating” fear: the physical and mental experience of the stress response), clinical depression, and addictive disease. Nor can we ignore the puzzling causes of schizophrenia; bipolar disorders; personality, dissociative and post-traumatic stress disorders; and the current explosion of autism spectrum disorders, among other psychiatric conditions. Understanding the basic nature of a medical problem is necessary in order to recommend treatment, including medications proven to relieve symptoms.

The Source Cause of Mental Illness

Thus, the following essay-become-book will attempt to redefine the common underlying physiological problem we are experiencing as anxiety disorders, clinical depression (

“major depression”), addictive disease, and all human communicable and non-communicable diseases. We have come to believe that the true primary or secondary cause of all human disease is “stress”, whether or not an initiator organism or toxin is required, or more specifically a chronically over-active Stress Response or “COASTER”.

COASTER Is the Product of High Population Density

However, COASTER is the human body’s natural defensive or “adaptive” response to population density stressors. These stressors are the myriad triggers or “releasers” of our ancient Stress Response which fill our modern “built” environments and which we will define in detail. These stressors are being experienced in the unsupportive social context of family and clan dissolution, as well as ever greater estrangement from day to day contact with Nature. Thus, we came to realize that COASTER needed to be included in the broader term “population density stress”, which will be further defined as we proceed in this book.

COASTER is a physiological condition, readily defined by chronically elevated Cortisol in our blood, but population density stress is an all-encompassing term including COASTER, loss of our ancestral clan-social

structures, and estrangement from nature as well—we have built stressor filled cities where once our ancestors hunted, gathered, and lived close to nature.

Human Social Organization

However, we must first briefly review the history of humanity and human social organization, which is critical to understanding how we got here. Furthermore, we will need to explore the concepts of homeostasis, ecological balance, the role of disease, and our rapidly increasing infertility in optimizing mammalian population numbers, and maintaining a balanced, diversified, finite, healthy biosphere.

Ecological Function of Disease

Furthermore, we will argue that the ultimate ecological function of the “diseases of civilization” , COASTER (including: the over-active Autonomic Nervous System, the enlarged or failed adrenal glands, and elevated Cortisol) population density stress, and their resultant human infertility is, indeed, population homeostasis. The optimization of the size of sustainable balanced human populations, within our ecological niches and among the great diversity of our fellow creatures and plants, is a

necessity, if our species is to survive. Mother Nature has understood this necessity for hundreds of millions of years.

Gulp! Hard Pill to Swallow!

This jarring and hard to swallow notion was first definitively expressed by the late animal population density researcher Dr. John J. ("Jack") Christian from his work in the 1940's, 1950's, and 1960's, conducted at the Penrose Labs in Philadelphia. Following from Drs. Christian, John B. Calhoun, Charles Southwick, V. C. Wynne-Edwards, and Hans Selye's early and mid-20th century experimental findings, as well as the clinical observations of two 19th century American neurologists, Drs. George M. Beard and Silas Weir Mitchell, we will attempt to build a case for understanding the top ten killers of modern humans as just such mammalian population regulators.

A Most Disturbing Proposition

We understand that this is a disturbing proposition, to say the least. However, we will propose that these mechanisms have been naturally selected in competing hunter-gatherer groups and throughout the 185 million year history of isolated groups of mammals on earth, in order to balance animal populations with their natural resources, and that they operate almost entirely on an unconscious level. These population regulation mechanisms reside in the ancient "limbic", "survival", or "emotional" brain (well demonstrated on the BACK COVER). As a result of overpopulation, we find ourselves sick and seek medical treatment, as all of us modern urban

and suburban Westerners do hundreds of times throughout our lifetimes, and without which our numbers would be severely reduced.

Topic List

A TOPIC LIST (or “table of contents”) is provided at the beginning of this work to allow the reader to more easily navigate the 51 TOPICS. The reader of the free online PDF version or this paper version is encouraged to print this 4 page TOPIC LIST and lay it next to the computer screen or book, in order to easily find material important to their interests. Hopefully, sub-topics will further aid the search. Good luck!

The Jargon of Endocrinology

The general reader, if unfamiliar with the jargon of the medical specialty of Endocrinology, may wish to skip the highly technical topics, at least on the first read-through. However, if we were paying attention in our high school biology classes, even the technical endocrinology should be understandable, with the aid of a dictionary and a few Google searches, as well as the diagrams in the Appendix of the print version of this work.

**** OVERVIEW ****

Now for an overview of the 51 TOPICS (or “chapters”):

Part 1

Part 1, the first 20 TOPICS of the essay, "Introduction", will develop the details of the COASTER concept but within the context of the author's experiences, over 42 years, as a doctor-in-training, practicing physician, and a clinical neuro-psychiatrist. The reader is asked to follow along in the historical reconstruction of our search for the mysterious true causes of our patients' symptoms of psychiatric and general medical illnesses. This adventure took us well beyond the limitations and distortions of the outdated, negativistic, eugenic "medical model", and self-serving drug company propaganda infusing and totally distorting medical education.

Then, we describe our discovery of the true physiological bases of our psychological and physical suffering, and the truly effective treatments for ourselves and the biosphere.

"Neurasthenia"

We will review the ground-breaking work of two 19th century American neurologists in Part 1, who first described stress-related illnesses under the general diagnostic heading of "American Nervousness",

“Neurasthenia”, “Nervous Exhaustion”, and “Wear and Tear”. They were the first physicians to accurately describe and call attention to what we today call “stress”, “anxiety”, “adrenal fatigue”, “overwhelm”, “chronic fatigue syndrome”, “burnout”, and clinical depression. These conditions were thought in the 19th century to be caused by rapidly increasing urban population density, mass transportation (railroads), mass communication (the telegraph and periodicals), and other technological advances. Also, the general physiology of the Stress Response will be elaborated and some information on inexpensive, safe, effective medication treatment options provided.

Part 2

Part 2, the next 11 TOPICS of this work, “Stress and Population”, will further develop the multiple aspects of the history of human population expansion, its potential dangers, and the critically important population regulation mechanisms introduced by the Reverend Thomas Malthus in 1798, and further explored by the naturalist Charles Darwin, in his revolutionary book, *THE ORIGIN OF THE SPECIES...*, in 1859. This part includes extensive documentation of little known, nearly forgotten ecological research done

by a series of scientists in America, Europe, Canada and Africa from 1920 through the 1960's and since.

“Population Density Stress”, COASTER, and “The Kill-switch”

These historical sources, when combined, create a solid picture of “population density stress”, COASTER, stress associated human diseases, and “the kill-switch”, as the endocrine and autonomic mechanisms of population regulation that have evolved in mammals, including us humans. John B. Calhoun’s 1973 publication of “DEATH SQUARED: The Rise and Demise of a Mouse Population”, is reviewed and Dr. Calhoun’s accidental, serendipitous discovery of the mammalian kill-switch phenomenon is high-lighted. This section concludes with a recent update from the United Nations Intergovernmental Panel on Climate Change (UNIPCC).

Part 3

Part 3, the following 16 TOPICS of the book, “Is There an Alternative?”, addresses the personal life-style, spiritual, and technological issues that must be confronted, if we are to avoid a disease-ridden, increasingly disorganized, ‘stressed-out’ life of COASTER, leading to a cataclysmic human population crash,

resulting from “the kill-switch”. Is this the life we wish to leave our children and our children’s children, as our legacy: pain and suffering?

These outcomes are widely predicted by the animal models of unlimited mammalian population expansion, as well as further catastrophic destruction of the entire biosphere—all life on earth. We should be well aware of further deterioration of the clan social unit, which is prominent in animal models of crowding. Some hypotheses regarding the primary and secondary causes of the cancer epidemics sweeping our country and other developed countries will be presented here. This section concludes with an ode to Marshall McLuhan’s famous dictum, “The medium is the message”, and a critique of the stressful mass media and their always worrisome commercial message.

Part 4

Part 4, the final 4 TOPICS of the essay, “Stress Management”, is a preliminary attempt to review current knowledge and initiate a discussion of the changes necessary for the survival of humanity and the biosphere at large.

This section is concluded with a “Topic review” and a “Conclusion”, including a partial listing of those on whose shoulders we had to stand in order to see as far as we have in this essay-become-book. Finally, an Afterword, Epilog, and seven Bullet Points, and concluding quotes from relevant luminaries complete the work.

The reader is, again, encouraged to place a copy of the TOPIC List and cover images beside the paper or digital text-block, in order to allow easy focused navigation of the voluminous 51 TOPICS and 108,000 plus words to follow. Now, let’s roll up our sleeves, find a comfy mesh bottom chair or reading stand, and dig-in.

2. THE HUMAN FAMILY

My chief psychiatric mentor was one Carl Alanson Whitaker, MD, at the University of Wisconsin Medical School, Department of Psychiatry, in Madison. It is to him that this monograph is dedicated and the reader may wish to refer back to the dedication page for Carl’s bulldog-ish likeness. Carl was the product of a large upstate New York, St. Lawrence River Valley dairy farm family, with a gift for facilitating emotional healing within troubled families,

heuristic (i.e., creative thinking generating) teaching, an insatiable curiosity, and wry sense of humor about us humans and what makes us tick. Thus, he was compelled from Syracuse University to med school and on to OB/GYN residency training, then to psychiatry and child psychiatry residencies.

A Stint at Oak Ridge

After a stint at Oak Ridge, and a controversial ground breaking “family psychiatry” practice in Atlanta, Georgia, Dr. Whitaker wound-up as a Professor of Psychiatry at the University of Wisconsin Medical School, and was the most effective, loving, genuine, and humane family therapist I’ve ever had the pleasure of knowing and working with. He was very unlike today’s uniformly non-psychotherapy trained “psycho-pharmacologists”, who are often little more than drug vending machines, blindly following drug company pseudo-scientific financially self-serving directions, under the constant scrutiny of clinically naïve “administrators” and insurance company dictates.

The Nuclear Family Explodes

No-one can possibly fully understand the emotional, spiritual, and mental experience of another fellow human without understanding the multi-generational family context from which he or she arises.

Unfortunately, a major element in what we refer to as “population density stress” is the modern family, the appropriately named “nuclear family”. Contemporaneous with our “nuclear age”, our nuclear families so often turn out to be a tiny, isolated, vulnerable social structures: unstable, evanescent, tipsy lifeboats, left adrift and alone in the vast, rising urban or sub-urban “built” sea, still roiling from the sudden sinking of the mother-ship – the stable day-to-day certainty of intact small-town American extended families and clans, or small-towns, extended families, and clans anywhere in the world. This ongoing deterioration of traditional extended families and clans is also well described in the animal crowding researches we will describe later. In fact, the early rodent crowding researches of Charles Southwick and John B. Calhoun attributed the final collapse of these populations to the disruption of the rodent family structure and the loss of parental behaviors. These researches will be further discussed later in the book.

Recent Demographic Analysis

Just check any recent demographic analysis of American society and you will see fewer and fewer intact “traditional” nuclear families, or read the latest headlines covering the explosion of single-parent families, or the “gay marriage” controversy. Today, more and more of us grow up in and, then, create our own “non-traditional” families, than did previous generations. Divorce was virtually unheard of just two generations ago.

Nuclear Decay

Few would argue against the demographic observations that the traditional nuclear family is under increasing pressure, changing, and in danger of further dissolution, indeed, much like a decaying radioactive isotope: “nuclear decay”, indeed. Many of us, in our understandable grief over this breakup of the traditional family, would like to find a simple scapegoat on which to place our blame: aliens, liberals, government, the media, lowered church attendance, drug abuse, one political party or another, etc. We believe the true cause to be more fundamental. Read on to find our explanation of this part of the mystery.

Family Reunions and Clans

Interestingly, Dr. Whitaker, in his later years, after his retirement from full-time medical practice, continued to conduct “family reunions”, or, in his words from the 1989 *Midnight Musings of a Family Therapist*, pages 140-141:

“I now began to organize family reunions that included the third generation, the uncles and aunts, the previous spouses, the new boyfriend or girlfriend, the boss, even the neighbor.” (underlining mine)

From our perspective, Carl was causing the “clan” to reconstruct itself, with his mostly unconscious direction and encouragement. We are by our very nature, clan-living social creatures, and we would still be living in clans, if the technological communication and transportation “advances” of the “built world”, including the train, automobile, and airplane had not torn our native social systems asunder. We have watched multi-generational clan-based small-town America dismantled by the automobile and airplane and moved, nuclear family by nuclear family, into the forced lonely anonymity of suburbia or, even worse, urban “ghetto” apartment complexes. Thus, we find the origins of our regular efforts to reconstruct our traditional social clans in one form or another.

Group Therapy

Group therapy is a very popular form of talking therapy, but what model drives the therapist to attempt the construction of these totally artificial groups of complete strangers? Why are work groups, sports teams, military units, church congregations, social organizations, and the like so common and successful? Why are all the myriad 12-step self-help groups so constructed? We are left to conclude that meeting and working in small groups is a limbic behavioral ritual, a temporary reconstruction of the clan social group deeply ingrained in our common ancient limbic brain psyche, essentially a social archetype in Carl Jung's "collective unconscious".

Unfortunately, this social structure is impossible to maintain outside of the ecological niche from which our ancestors sprang as clan-based hunter-gatherers. Take us out of our ancestral natural environment, with all of its common challenges: hunger, predators, competing clans/tribes, natural disasters, etc., and we no longer find lifelong membership in clan social structures mandatory for our individual and family survival.

But what about the effect of this loss of traditional family structure on our health?

The Split-Level Trap

Another body of work deserving of mention in this context is the many years-long research of fellow psychiatrist Richard Gordon, MD, and his social psychologist wife, Katherine Gordon, published in numerous journal articles and their 1960 book, *THE SPLIT-LEVEL TRAP*, in which can be found, on page 26:

“Industrialization and prosperity—particularly our incredible sustained boom since the Second World War—have made this (family and clan dispersing) mobility possible. There are relatively few opportunities for such motion in less prosperous nations (or the “old” countries of many American’s ancestral origins). A family (in the “old world”) is more or less confined to its ancestral village. The family does not fret constantly about being stuck in a particular geographic, economic and social niche, for there is nowhere else to go. The family has always been there; so have its neighbors. The desire to climb is kindled by the opportunity to climb. In America, the siren Opportunity sings from all sides (driving mobility and undermining the family).” (underlining and parentheticals mine)

The Gordons went on to compare health statistics between two hospitals: one in their home town “disturbia” (their word in 1960), Englewood Hospital in Bergen County, N.J., just outside NYC, and the other, Olean General Hospital, in rural Cattaraugus County, N.Y., a small rural town in upstate New York. Their research was widely panned by the experts but we’ll let the reader decide whether they were onto something important 57 years ago, or not. Again, quoting from their book, on pages 31-32, the reader will find the following research summary:

“Here are statistics covering a two year period at Olean General Hospital,... , and Englewood Hospital, ... :

Of all the patients admitted to rural Olean Hospital during the period, 2.4% were hospitalized for heart attack. At suburban Englewood, the figure was 11.7% (a 338% increase).

At Olean General, 6.7% of the patients were under treatment for high blood pressure. Englewood: 14.3% (a 113% increase).

At Olean General, 2.8% were in for duodenal ulcers. Englewood: 9.6% (a 243% increase)

The inference is plain: something is troubling people in Bergen—something whose effects are not nearly so intense or so widespread in rural Cattaraugus County.” (parentheticals, % increases, and underlining mine)

Later on in this book, we cite contemporary health statistics, which show the enormous increases in the diseases noted by the Gordons since their 1960 work! But, why?

For the reader who just can't wait, according to the CDC, today we visit emergency rooms 130 million times a year, averaging 42 visits per 100 of us! The most common presenting symptom is chest pain. Many more eye-opening health statistics will be presented as we read on.

Disturbia

Allow us to summarize the Gordon's 1960 findings: the multiple forms of stressful mobility—physical, economic, and status mobility that created “disturbia”, with all of its instabilities, when compared with settled small town life, was making us sick. Again, we include this disruption of the clan social unit in modern Western societies as a core element in generating COASTER and the more inclusive population density stress.

Sadly, the Gordons seem not to have been familiar with Hans Selye's ground-breaking work on stress physiology published 10 years earlier and referenced several times later in this paper. Nor, apparently, were they aware of reports published as early as 1938 by fellow physicians who found none of these "diseases of civilization" when treating members of traditional clan-living Hunter-gatherers and herdsman. Here are two such references.

Cyril Percy Donnison, MD

Another similar social-environmental context study we need to mention was done by Cyril P. Donnison, MD, and published in his now rare and out-of-print 1937 book as *CIVILIZATION AND DISEASE*, in which Dr. Donnison compared his experiences as a physician in urban, "developed", "civilized" early 20th century Britain (London) with his later medical practice in rural Kenya.

Dr. Donnison was amazed not to find a single case of essential hypertension, diabetes, Grave's disease (enlarged, overactive thyroid gland), or peptic ulcers among his first 1,500 rural Kenyan patients, living in their traditional villages, in their natural environment, in their intact

extended families and clans. He, also, noted that the rates of these diseases of civilization quickly approached those in urbanized Britain when rural Africans moved to urban environments.

On pages 10-11 of his 1937 work, Dr. Donnison prepared a table comparing the prevalence of the “diseases of civilization” among the populations of a number of British possessions in the first half of the 1930s. He was making a very general comparison of these disease statistics among the health statistics of relatively “primitive” peoples in mostly African lands collected in the early 1930’s, and nearly contemporary England and Wales in 1929. Most striking, is his report that he and his fellow physicians found not a single recorded case of atherosclerosis among 238,851 rural Kenyan patients they treated! 19 cases of diabetes are recorded! 9 cases of peptic ulcer are noted, as are 6 cases of exophthalmic goiter (hyper-thyroidism)! Cancer seems to have been omitted totally. Similar low rates of Western diseases are recorded for the other seven nations in the chart. The relative rate of atherosclerosis among all of the eight undeveloped nations is 1/100th that of England and Wales: 219:20,987, and this in comparable total populations of 39,000,000 total citizens. Interestingly, the ratio of British citizens treated for atherosclerosis in 1929 to the entire

population is 1:1858. In America today, that ratio is much, much higher, as the reader will see in the section of this book devoted to the subject. We are assuming that a similar ratio existed in America in 1929 to that stated for Britain.

Dr. Donnison speculates as to the huge differences in relative disease occurrence in these “undeveloped” African nations, versus “developed” British populations, and concludes that it must have something to do with an active versus sedentary lifestyle as well as the continuing tight-knit social structure of the African villagers. He makes other psychological speculations that are less helpful and will not be elaborated here.

Amazingly, the parallel work of Hans Selye on stress diseases, first published in 1936, appears to have been unknown to Dr. Donnison, although Selye’s experimentally stressed animals were suffering from many of the very same diseases that Dr. Donnison was recording in his comparison studies: hypertension (inevitable in Selye’s stressed rats with their massively enlarged adrenal glands) and peptic ulcers, although Donnison did not report rates of infections (expected to be elevated with Selye’s thymic and lymph node involutions). Later researchers have documented the correlation between stress and

atherosclerosis, kidney disease, stroke, hyperthyroidism, and diabetes in both experimental animals in the lab, and human medical patients. These more recent findings are addressed elsewhere in our book. Stay tuned! Now, off to the Arctic Circle with Dr. Stefansson for another comparison of the “diseases of civilization” in hunter-gatherers versus Western “civilized” populations.

Vilhjalmur Stefansson, PhD (anthropology)

Along these same lines of comparing the relative health of us modern, “developed”, “advanced”, Western, urban and suburban populations with traditional Hunter-gatherer peoples, we discovered the 1960 book by Vilhjalmur Stefansson, *CANCER: DISEASE OF CIVILIZATION?* In this eye-opening, early compilation of the observations of numerous medical professionals caring for and living with sparsely populated native peoples living above the Arctic Circle, Dr. Stefansson repeated the findings that amazed Dr. Donnison many years earlier in Africa: Hunter-gatherer natives living in their intact extended families and clans and in their natural habitat did not develop cancer, with which those of us in the “civilized” world are increasingly plagued, in a multitude of forms!

The Similarities

The careful reader will, again, note the similarities of the diseases Dr. Donnison chose to compare with the Western “diseases of civilization”, and with the symptoms of Hans Selye’s experimental stress generated GAS (General Adaptation Syndrome): (1) enlarged adrenal glands (i.e., elevated Cortisol and inevitable increased blood pressure), (2) shrunken thymus and lymph glands (suppressed immune system), and (3) peptic ulcers. More on Selye’s work later.

These diseases, as noted by Dr. Donnison above, are described more fully elsewhere in this book but the “pathophysiology” (the causes of diseases) of essential hypertension, diabetes, peptic ulcer, Grave’s disease (goiter, enlarged thyroid) are now known to be virtually the direct result of COASTER, and the logical consequence of “population density stress”.

The Essential Difference?

So what was the essential difference between Dr. Donnison’s rural clan living Kenyans and his London patients, or between Dr. Stefansson’s traditional Arctic Hunter-gatherers and his urban Swedish patients? We believe it was COASTER, due to population density stress,

as proven in the naturalistic experiment resulting from clan-living Hunter-gatherers moving to urban areas and quickly contracting all the diseases of their “civilized” patients; they were many of the same diseases that befell Dr. Hans Selye’s intentionally stressed lab animals. Thus, it was the disruption of traditional lifeways and social structures, COASTER (resulting from exposure to a wide array of population density stressors inherent in modern human “built” city life, listed later in this book), decreased physical exercise, and alienation from nature, that distinguished the two groups.

The World Until Yesterday

In 2012, social anthropologist and widely read author, Jared Diamond, published his comparison study of modern and “traditional” lifeways, *THE WORLD UNTIL YESTERDAY*, subtitled: *WHAT CAN WE LEARN FORM TRADITIONAL SOCIETIES?*. In its 499 pages, the esteemed author Diamond never mentions COASTER, or population pressure or stress, although he presents material on territorial conflicts, warfare, infanticide, and communicable diseases as regulators of population density in traditional (i.e., Hunter-gatherer and herding) societies. Ironically, he often juxtaposes his own harried, stressful lifestyle and travels on his reporting of visits to traditional societies. We must

wonder about how the good author maintains his own health at age 80. We suspect that his high level of control over his environment and time spent in the natural environments in Montana and New Guinea, as well as freedom from the day-in, day-out work stresses of those of us less financially blessed and more urban centered, may explain his resilience. Interestingly, in an interview on the net, he denied any interest in the “carbon footprint” that his travels must bring to bear on our environment.

Appropriately, author Diamond includes a section on non-communicable diseases (NCDs), rarely found in traditional societies but epidemic in Western societies. On page 449-450, he states:

“In this chapter I’ve discussed just two among many currently exploding non-communicable diseases (NCDs) linked to the Western (over-populated, crowded, stressful) lifestyle: hypertension and its consequences, and type-2 diabetes. Other major NCDs that I haven’t had space to discuss, but that S. Boyd Eaton, Melvin Konner, and Marjorie Shostak do discuss (in their 1988 book: *THE PALEOLITHIC PRESCRIPTION*), include coronary artery disease and other heart diseases, arteriosclerosis, peripheral vascular diseases, many kidney diseases, gout, and many cancers including

lung, stomach, breast, and prostate cancer. Within the Western lifestyle I've discussed only some risk factors —especially salt, sugar, high calorie intake, obesity, and sedentariness. Other important risk factors that I have mentioned only briefly include smoking, high alcohol consumption, cholesterol, triglycerides, saturated fats, and trans fats.” (note: nothing about the metaphorical elephant sitting on the couch: population density stress)

(underlining and parentheses mine)

The “Diseases of Civilization”

So, the questions which must be asked, and are never asked in modern medical or anthropological researches, are: (1) what are the environmental features of modern life that cause these diseases of civilization (i.e., “population density stressors” or COASTER triggers), and (2) what possible biological/ecological function could these diseases possibly have ? These questions are all the more pointed when we realize that all humans alive today share nearly identical genes: 99.5-99.9% identical, so this cannot be the result of genetic defects! We are forced to look for environmental explanations for the diseases of civilization.

The Paleolithic Prescription...

Can anybody see the forest, or only the trees? Are the “paleolithic diet” and physical exercise levels really the only difference between Western and traditional societies worth studying? The co-authors of the 1988 book, *THE PALEOLITHIC PRESCRIPTION, A PROGRAM OF DIET & EXERCISE AND A DESIGN FOR LIVING*, cited above by Jared Diamond, point out in amazing detail the central factor changed in the modern world: the “exploding” human population. S. Boyd Eaton, MD, Marjorie Shostak, and Melvin Konner, MD, PhD, also, point out the increasing development of the “diseases of civilization” but can only identify our sedentary life-style and high fat/salt diet as causes. They invent the “discordance hypothesis” to explain the misfit between our gene-based ancient physiology and anatomy, and the dramatically changed physical environment and diet of modern urban and suburban life.

Now, we need to offer a quote from their must-read 1988 book, to be found on page 45:

“One common suggestion is that traditional people do not contract these diseases (of civilization) simply because they do not live long enough to get them. Reasonable though this argument may seem, recent

studies have refuted it. Young men in industrialized societies show early signs of many of these illnesses—atherosclerosis, hypertension, and obesity, for example—while young men from technologically simple (hunter-gatherer or pastoralist) societies do not. In addition, even people aged sixty and above in traditional groups continue to avoid these diseases. This is not true for their Western counterparts who—even if they have no symptoms—still show silent but ominous evidence of key disease processes. If, as we suggest, it is the life-style of pre-industrial people that protects them these dreaded diseases, what factors are involved (sic)? Or, rather, what have we abandoned, and how have we changed, to have rendered ourselves so vulnerable to them?”
(underlining and parentheticals mine)

Interestingly, Dr. Evans and his co-authors further substantiate their “discordance hypothesis” with extensive references to other hunter-gatherer societies existing yet at the time of their 1988 publication, as this paragraph on page 48, in the section sub-headed “Atherosclerosis”:

“Autopsies of young or even middle-aged men in pre-industrial societies, however, fail to show a similar (atherosclerotic) process. The absence of

atherosclerosis in these postmortem studies (one of which included 1,000 consecutive autopsies) is consistent with the absence of clinical signs of atherosclerotic heart disease among people in these groups. Arctic Eskimos, Kenyan Kikuyu and Masai, Solomon Islanders, Navajo Indians, Australian Aborigines, Kalahari San (Bushmen), New Guinea Highlanders, and Zairian Pygmies are among the peoples shown to be protected from the signs and symptoms of atherosclerosis.” (underlining and first parenthetical mine)

Our current book introduces the concepts of COASTER, “population density stress”, disruption of the clan social structure, and alienation from nature due to our interposed “built” physical environments, in addition, as major causes of our increased vulnerability to diseases unknown to Hunter-gatherer and pastoral peoples at any age and irrespective of diet. Denis Burkitt, for instance, is convinced that the amount of plant fiber in the traditional diet is protective of gut problems, including cancers, which, however, Dr. Stefansson’s arctic hunter-gatherers eat none of and still avoid contracting our gut cancers.

Just read on, for all the details. Any medical anthropology grad students out there looking for a PhD topic? Nobel Prize?

3. TOO MANY HUMANS, TOO FEW LIONS

I promised my endlessly supportive patients, in the last decades of psychiatric practice, that I would title a chapter in the book they co-authored, “Too Many Humans, Too Few Lions”. When I asked a fellow retired British psychiatrist to review an early version of this book, he said this chapter title summarized the overpopulation problem sufficiently. Ah, the Brits and their lions!

Misfits R Us

All of our current living problems are artifacts of a rapid, dramatic dissolution of earlier life-ways in which they were intricately fitted, and refitted, to a slowly changing natural environment (our ecological “niches”), by which our ancestors’ neurophysiology was “naturally selected”, over 200 millennia, 200,000 years, 10,000 generations. This is Charles Darwin’s Theory of Evolution in action: the natural environment is doing the “selecting”.



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That former life-way in a natural environment, for most of us, no longer exists. We have built our own modern urban and suburban physical environment, our “built” world, which separates us from the natural environment we were created in and remain adapted to. Thus, we are truly “misfits”, or as Dr. Evans and his colleagues prefer: “discordant”.

In a recent NYT article by a woman suffering from Bulimia and Panic Attacks while stuffed into a commercial airliner, I attempted to propose this misfit or discordance hypothesis, but my offering was rejected by the NYT editor, who, apparently, only wanted to hear other stories giving this poor woman permission to use Xanax, rather than rethink the impact of modern environments, like New York City and commercial airliners, on our ancient neuro-physiology. Perhaps, that NYT editor was unwilling to look at his or her own sources of “anxiety” and panic. My brave patients and I thought otherwise!

Living in Nature

Instead of living in direct daily contact with an intact Nature, we experience an artificial, stressor-filled “built environment”. Further, triggering of COASTER and population density stress is generated by: (1) human over-population, (2) dissolution of the clan social group, (3) excessive natural resource extraction, (4) over-lapping unstable status hierarchies, (5) COASTER and population density stress activated diseases and infertility, (6) increasing globalization (aka joblessness in the “developed” world and low wage slavery in the “developing” nations), (7) the myriad destructive environmental effects resulting from petrochemical use and dependence, (8) endless war driven by the ever greedy Military Industrial Complex, (9) the “sixth extinction” of our fellow species, and (10) climate change. Is this not a truly stressor filled artificial landscape we now find ourselves in?

This transition from our ancestor’s natural environment to our modern, urban and suburban “built” environments is largely the necessary result of our exploding populations. Population density stress, including COASTER and our “diseases of civilization”, are its direct result.

Predator-Prey Relations

Surround a quarrelling human group with a ferocious common enemy, let's say a Pride of lions, (or in a non-fatal ritual, let's say in a match with an opposing sports team) and watch us pull together, devising one common defensive strategy after another and even risking injury or our own lives for one another.

In a life or death situation, our relatively petty personality differences (e.g. "political" party brain-washing, "sports" team affiliations, etc.) are left in the proverbial dust; survival of each individual depends on the survival of the group.

However, remove the common enemy(s) (e.g., hunger, severe weather, competing groups, and predators: including lions), and watch that same group tear each-other limb from limb unless and until a clear status hierarchy is established. Our species thrives in groups, only as long as we have a common external enemy and a stable common status hierarchy. Thus, we are instinctually xenophobic and competitive: we square off as an hierarchically organized force against any group or predator not exactly like us, thus increasing our sense of belonging and willingness to defend our home group or clan.

The Nuclear Family Goes BOOM!

A study of the life-ways of our prehistoric ancestors and their environs is instructive in this regard. However, all the psychiatric, psychological, social work, and family studies libraries are filled with accidental inaccuracies and distortions, as a result of studying a mere transient historical artifact, the modern urban or suburban “nuclear family”, split off from its larger and more stable extended family and even larger, more resilient yet, clan social group. Thus, the nuclear family is precariously located in its new, easily travelled, but unstable, evanescent built world.

The nuclear family is not the proper unit of study by which we can accurately understand normal human behavior and mental functioning. For that, we must turn to our knowledge of the time before written history:

Prehistory

4. PREHISTORY

“Prehistory” is a body of knowledge and an academic discipline, with which all of us “modern” humans should be familiar. Just Google it or pick up a book. Why?

Because prehistory is the repository for the knowledge of who we were and are, and how and where our ancestors lived, through long periods of natural selection by a very different physical and social environment. And, now, what could we possibly have in common with the blind mole rat, bees and wasps?

Bzzzzzzzzzzzzzz!

Modern geneticists have determined that we are 99.5-99.9% genetically identical (i.e., minimal “genetic variation”), all of us humans alive today, and we are, also, virtually identical to our ancestors back to genetic bottlenecks (or near destruction of all but a few thousand humans world-wide). Two of these “bottlenecks” occurred with the eruption of the super-volcano, Mt. Toba, Sumatra, Indonesia, 73,500 years ago, and, again, more recently, c.43,000 years ago, due to an Italian volcanic eruption and consequent two year nuclear winter. As a result of these two near extinction events, our ancestors were forced to inbreed, which explains our nearly identical genes.

We can actually think of our genetic inheritance as an indisputably honest account of our prehistoric ancestral travels, trials, tribulations, and fantastic successes. The

recent discovery of our 1-6% or higher Neanderthal genome contribution is a case in point. For another revelation, our 99.5-99.9% genetic identity (depends on source) with one another puts us in the same category of species-wide physical and physiological similarity with our brothers and sisters, as only occurs in 18 known species on earth: 16 “social” insects, the blind mole rat--the only other mammal, and us. The role this near identical genome plays in our overpopulation problem and our extreme altruism will be considered further on in this book.

The only way in which we have changed since those narrow escapes is in our sheer numbers and how these exploding numbers (and resultant natural resource exploitation and unsustainable depletion) have affected the natural environment. A central theme of our book is the health consequences of our genetically programmed neurophysiological adaptive responses to this suddenly, dramatically changed, human “developer” imposed, helter-skelter “built” physical environment, displacing our previous long evolved natural environment: the Garden of Eden. We believe these neuro-endocrine adaptive mechanisms include population size optimization, as are evident in nearly all other animal species. More on these once mysterious mechanisms later.

Back to “The Discordance Hypothesis”

Earlier, we mentioned *The Paleolithic Prescription...*, and the misfit between our ancient gene generated anatomy/physiology and our current “built” environment, sedentary lifestyle, modern diet, social structures, and population density stressors. Chapter Three in this important book, by Drs. Evans, Konner, and Ms. Shostak, contains the best review of human population growth in print. We are quoting from page 39:

“Consider, for example, current population density and growth rates. When the earliest humans, *Homo habilis*, walked the earth, they numbered only a few hundred thousand. Throughout the subsequent 2 million years, they slowly changed, evolving ultimately into people as we know them today; populations expanded—at an estimated average rate of about one-thousandth of 1 percent per year (as compared with 3 percent in the fastest growing modern populations: 3000 times faster!)

This rate may seem slow, but human populations expanded more or less steadily throughout the millennia. By 25,000 years ago, about 3.5 million people lived on earth. By 10,000 years ago—the dawn

of agriculture—this slow rate had produced a world population of between 5 and 10 million.

But then everything changed. Once people started tilling the soil and altering ancient patterns of resource availability and abundance, life became more sedentary, birth spacing became shorter, and annual population growth increased almost a hundredfold, to an estimated 0.1 percent per year. This rate prevailed for almost 8,000 years. By the birth of Christ, the world population had grown to about 300 million; by 1750, the beginning of the Industrial Revolution, it had reached 700 million.” (underlining and parentheticals mine)

Suffice it to say, the growth of the human population has continued to accelerate until now and is only now finally slowing to an approximate 65 year doubling rate, although some demographers are predicting a near flat growth rate by 2,100, but with a world-wide population of over 10 billion.

We believe that COASTER, population density stress, and, ultimately, the kill-switch, will change the course of human history dramatically in the coming 73 years. Mother Earth cannot possibly entertain 10 billion humans. There just aren't that many places at the already over-

crowded table that She set for our ancestors.

Human History

The study of more recent written human history, omitted here but lavishly illustrated in thousands of history and prehistory books, or websites, can be seen as the story of one rapidly expanding population after another momentarily usurping the adjoining lands of their neighbors. This inevitable surge of territorial expansion by warfare is necessary to enable ever greater natural resource extraction and equally inevitable territorial loss for the defeated competitor(s)—the cycles of human history.

This book focuses on what we have learned about what happens when those victorious invaders reproduce their own kind, as if there were no natural limits to or moral responsibility for their expansion, fueled by excessive and unsustainable resource extraction from a finite earth. For instance, the Early American population doubled every 25 years!

Are We Bernard Campbell's "Misfits"

We need to turn to a contributor in John Calhoun's amazing 1983 *EXPERIMENTAL BOOK*. Bernard Campbell wrote in "7-13 Components of Human Behavior", pp 188-190, as we could not possibly put it better:

"7-13-2 Human behavior is a product of human genes and the human environment. To understand it better we need only to analyze the effects of different environmental inputs on developing human nature (refs), but also attempt to assess the genetic potentials which we carry at birth and which are the product of previous human adaptations to previous environments. Therefore we need to know a great deal more about (1) prehistoric man and society, (2) prehistoric cultures and (3) prehistoric environments. From such data we can assess prehistoric adaptations (still carried within us today).

7-13-3 These adaptations can be investigated over the last 30 million years, but the last 3 million years are in one sense the most important "formative" years in human evolution. During this 3 million year period, man lived as a socially organized food-gatherer, scavenger and hunter, and most of our specialized inherited anatomical and behavioral characteristics are

adaptations to such a life-style. Today, we are faced with the interactions between the genetic potentials for such adaptations and our present social and environmental situations. The misfit can be very great, but its extent and precise nature can only be better understood by studying the hunter-gatherer adaptation."

"7-13-4 That there is a misfit is clear, and we have one priceless source of evidence which can help us to understand its extent and precise nature. Fortunately a few societies of hunter-gatherers still remain on earth, though many have disappeared during even the last 15 years. ... Only an integration between knowledge of these present-day hunter-gatherer adaptations and their ancestors, who are also our ancestors, can tell us what kind of creatures we really are.

7-13-5 This evidence could help us to analyze the nature and extent of the misfit which exists between our biology and our environment. Stress might indeed be defined in such a way, and we are certainly becoming aware of its destructive effects on both the individual and the whole social structure. It seems reasonable to suppose that we might mitigate such

stress considerably by returning the environment to fit human biology. (Until now, however, the political difficulties in advancing such a policy have proved insurmountable)". (underlining and italics mine)

Pathologising Ourselves

We have been pathologising ourselves rather than recognizing the prehistorical fitness of many of our "diseases" for an earlier ecological environment. We are ecological misfits! Most of our "diseases" make sense in an earlier ecological context. But what possible sense you ask?! Although it may be rare for any particular disease to appear beneficial to us as individuals, the overall health of the clan social group is critical for the survival of our species, or any other species for that matter. Since we now realize that our genes are nearly identical from one person to the next (99.5-99.9%), the central goal of group survival is even more obvious: we are easily replaced as individuals but our genes survive into the future, if our social unit survives! This is a critically important core concept of this book. In fact, this is the core message of this entire book!

Anxiety is NOT a Disease

For instance, anxiety is not a “disease”, it is the word we use to describe how we feel when our Stress Response is activated, which was a momentary experience in the ecological context our ancestors inhabited, but now our day-to-day nearly constant experience in our over-crowded “built” world. This same anachronistic “misfit” analysis may be applied to many other, if not all, so-called diseases of civilization.

“Misophonia”

We attempt to carry out this “misfit” analysis for many other conditions elsewhere in the book. However, here’s one such analysis for the new “disease” of “misophonia” (“dislike of sound”). Our “built” modern urban and suburban environment is filled with extraneous loud, unpredictable noises, such as Harley-Davidson motorcycles, un-muffled engine noises, sirens, fire-crackers, loud modern “music”, shouting, cell phones, pagers, etc. In our ancestor’s world, these noises could well have announced an imminent predator attack setting off our fight or flight stress response to save our very lives.

But, what about more subtle sounds like the crackling

of dry leaves, or chewing sounds, or other sounds? Might these sounds be associated with a stealthy approaching hungry predator looking for food during mealtime, or a higher ranking fellow at a prey kill, or a fellow clan member seeking higher status by eliminating the sleeping competition, or a stealthy warrior from a competing enemy clan? Would our ancestors have survived without this auditory sensitivity, living in a nocturnal predator rich and rigidly hierarchical clan-living natural environment, in regular competition with other clan groups for prime territories? Should our ancestors not have been on heightened alert when competing with their fellow clan members at a fresh kill-site or sleeping in our campsite surrounded by nocturnal predators?

“Disease” or “Misfit”?

So, is this condition a “disease” or an anachronistic “misfit” of our genetic inheritance to our brand-new built environment? You be the judge. Our advice: beware of scientists bearing new diseases, without reference to possible utility in prehistoric lifeways. How can we adjust our lifestyles to limit this misfit, just as Bernard Campbell suggests? We use simple foam rubber ear canal plugs to reduce transmission of loud Stress Response activating

sounds, which we are regularly otherwise receiving in our modern built environments and which can permanently damage hearing. We kept a bowl filled with a variety of these for our patients. Such hearing protection is much less expensive than buying hearing aids later in life and allows us to preserve our keen prehistorical hearing while enjoying the subtle sounds of the forest and meadow, where we can still find access to nature.

More about approaches to restoration of our natural environment and necessary return to sustainability, as well as our life-ways fitted to that pre-historic environment, and our ancestral social structures, will be found in PART 3: IS THERE AN ALTERNATIVE?

But, now, we need to look further at the extreme differences between the health of our “traditional” hunter-gatherer clan-living neighbors and us modern urban and suburban Westerners. Why? Well, because, as Dr. Campbell explained in the quote above, we can learn a great deal indeed about our own ancestral predecessors as a result of studying remnant clans/bands of human societies still living traditional lifeways.

Hunter-gatherer Neighbors

Our hunter-gatherer neighbors are a living museum of human prehistory, and comparisons of their health with ours can be very revealing. The one most obvious but often totally ignored comparison is demographic: those ancestors living 10,000 years earlier, of whom there are only scattered remnants today, were 4-6 million in total numbers worldwide and we are 7.4 billion, or 1233-1850 times more!

Pre-Columbian American Populations

When our first European and later African pioneer ancestors arrived in North America, there are estimated to have been one or two million native people already well established in a wide variety of life-styles ranging from hunter-gatherer to sedentary agriculturalists. Thus, in our still young United States, we are only 165-330 times overpopulated when compared to our clan-living native ancestors. Only 330 times overpopulated! So, that's 330 times versus the world-wide average of 1,233, although these comparisons are for very different dates: 1492 AD(CE) in the US versus 10,000 BC(E).

The continental US population of newly arrived hunter-gatherers 10,000 years ago or more must have been quite small, but would have rapidly expanded until territorial competitions between clans and tribes stabilized at approximately one million over thousands of years, roughly 400 tribes of 2,500 total members divided into 25 clans of say 100 members: 40 men, 40 women, 20 children. We may never know the true details, but our fortunate first-hand knowledge of Native American societies and lifeways at the time of European contact suggests a picture like this one. Needless to say, the same cannot be said of the fortunes of our Native American brothers and sisters at that time, and, certainly, later on in our history of blatant genocide and territorial theft.

However, this is a book about population density stress, and its consequences for an established peaceful indigenous native population cannot be over-looked. Our ancestral European immigrants, with their African slaves and indentured near slave workers, spilling out of an overpopulated Europe and Africa quickly overpopulated the “New World” and drove the natives to near extinction

We Americans are for the main part descendants of the overpopulation excess of a European homeland bursting at the seams, if we are honest with ourselves! One source

indicates that in the same time frame that Europe's population expanded from 10 million to 55 million, 60 million additional Europeans had fled to the "New World". One source even indicates that the main stimulus for Thomas Malthus' theory of population growth was not just Ireland, but the population explosion of European immigrants in the New World.

More about the obvious increasing population density stress and stressors will be considered later in this book. Now, we must address the "diseases of civilization" that are killing us, although unheard of in "traditional" hunter-gatherer societies, already considered earlier in our book.

Now we must ask the question: "are we as sick and dying as this book is proposing and, if so, why?"

5. THE TOP TEN KILLERS OF MODERN HUMANS, THE EARLY STRESS RESEARCHERS, and "COASTER"

Get comfy in a favorite chair, with multiple stand and walk breaks, because this 60 some page topic is really a book-within-a-book. Fortunately for the reader, its length,

breadth, and depth is not typical of most of the other 50 topics, but we believe it will hold the reader on the edge of his or her chair all the same. Many of our early readers asked for more details about COASTER's role in causing human disease, so here they are.

The Top Ten Killers of Modern Humans

The top ten killers of modern humans in descending order of magnitude and across all age groups in 2015: (1) heart disease, (2) cancer, (3) chronic lower respiratory diseases, (4) unintentional injuries/accidents, (5) strokes, (6) "Alzheimer's disease", (7) diabetes, (8) influenza and pneumonia, (9) nephritis, and (10) suicide. All are the direct or indirect result of a chronically overactive Stress Response, or "COASTER", which is due to "population density stressors", and is a component of the broader term "population density stress". How can we possibly make such an outrageous statement?

First, we need to show a highly suggestive correlation between the increases in both population density and the "diseases of civilization", as well as the absence of these diseases in traditional, low density, minimally hierarchical,

clan-living, Hunter-gatherer populations, living in harmony with the rest of their natural environment.

“A Shocking Rise in White Death Rates in Midlife”

In Paul Starr’s November 2, 2015 article published on-line at [www://prospect.org](http://www.prospect.org), he is summarizing the publication of Case and Deaton’s 2015 paper published in *Proceedings of the National Academy of Sciences* on this subject, and states on the first two pages:

“Drugs, alcohol, and suicide have taken an unparalleled toll on middle-aged whites, especially those with a high school degree or less.

In a reversal of earlier trends, death rates among white non-Hispanic Americans in midlife have increased sharply between 1999 and 2013, according to a new study by economists Anne Case and Angus Deaton, winner last month of the Nobel Prize for economics. [...]

Case and Deaton’s analysis,..., also shows increased rates of illness, chronic pain, and disability among middle-aged whites. The findings have important implications for American politics and public policy,

particularly for debates about economic inequality, public health, drug policy, disability insurance, and retirement income.

[...]

Case and Deaton's data indicate that the white midlife mortality reversal was due almost entirely to increased deaths among those with a high school degree or less. Mortality rates in that group rose 134 per 100,000 between 1999 and 2013, while there was little change among those with some college, and death rates fell by 57 per 100,000 for those with a college degree or more." (underlining mine)

So, according to this Nobel Prize winning research, those of us unfortunate enough to be at the lower end of our socioeconomic dominance hierarchies, in our constantly increasing populations, are getting sick and dying faster than those "higher ups". But why?

How Sick Are We?

And if we don't realize how sick we are, or don't want to admit it, let's refer to the online report of the National Center for Health Statistics, 2015.

In 2014, there were 724.6 deaths per 100,000 Americans from all the top ten causes already noted in this book, or 2,393,000 that year. Annualized death rates have been improving for 7 out of 10 diseases, as increasingly innovative and expensive medical interventions allow many of us to survive our maladies longer, but death rates are increasing for “Alzheimer’s Disease”, unintentional accidents, drug and alcohol overdose, and suicide.

Compare our increasing sickness, need for medical care, expanding long-term care facilities with the fact of our still exploding world-wide population: about 80,000,000 humans are added per year: 136 million births minus 56 million deaths.

Our Morbid Reality

As for “morbidity” (i.e., sickness): heart disease, cancer, hypertension (i.e., high blood pressure), diabetes, hypercholesterolemia, clinical depression, anxiety disorders, suicide, addictive diseases, and obesity are increasing, while cigarette smoking is decreasing, and survival is improved for all of these diseases with ever more extensive and expensive medical interventions. 9.8% of us 232,000,000 adults in the US report that we have only fair or poor health overall, or 22,736,000 adults. That’s 1/10 of us reporting “fair” or “poor” health.

Why are we so sick and dying? And, in spite of this growing ill-health and death, why does our total world-wide population keep growing at nearly 80 million per year?

Prescription Drug Use

Prescription drug use is on the rise, with 4.3 billion Rx written annually just in the US in 2015, although healthcare utilization is steady over the past 13 years. Most telling of our growing sickness and resultant need for ever more sophisticated medical interventions is our per capita health care expenditure, which has risen from \$4,121. In 2000, to \$8,054 in 2014, or a \$3933 per capita increase, which is a 95% increase in 14 years! And the 2016 figure is \$9451, or a 17% increase in 2 years, but 129% in 16 years!

It's costing more and more just to keep us alive. These healthcare expenditures are approaching 20% of the national GDP and a defining issue in the US Congress.

Cyborgs R Us

We are becoming animal-machine hybrids, "cyborgs", with our ever more frequent and expensive body part replacements, whether with high-tech metals/plastics,

cadaver, human donor, or other species' organs, not to exclude miniature sub-cutaneous electronic devices to regulate heart rate (i.e., "pacemakers", etc.), squelch pain signals, or deliver life maintaining drugs. So, wealthy "first world" victims of the diseases caused by population density stress continue to find new, expensive ways to overcome Nature's efforts to cull us. Cyborgs R Us.

"The Island"

In the recent movie, "The Island", humans are cloned from DNA donated by wealthy customers in order to provide a biological "insurance policy" against injury, sickness, and death itself. The customer simply has a duplicate grown to order for a handy source of replacement parts. Ironically, two Arnold Schwarzenegger movies use nearly the same theme, "ERASER" and "THE 6th DAY". Just how far from "harvesting" embryonic human tissue is the full-blown cloning of humans for replacement parts for the wealthy? What ethical red line will we not cross in order to maintain or extend our lives, if we can afford the expensive technological upgrades? But why do we need this ever more heroic medical technology?

Sought Medical Help Lately?

85.1% of us saw a health care provider for treatment in 2014. These are not indications of a healthy population, although the wealthier more educated class has far better healthcare access already!

As for other measures of health and disease prevalence (i.e., current number sick), in this case for the noninstitutionalized youth population, 10.2% of children aged 5-17 were diagnosed with attention deficit/hyperactivity disorder and 5.4% had serious emotional or behavioral difficulties in 2013-2014.

According to the National Center for Health Statistics' report, "Health, United States, 2015: At a Glance" available on the net, in 2013-2014, 12% of adults (245 million adults) 45-64 and 29.4% of adults aged 65 and over, had been diagnosed with heart disease. And these numbers may not include the 33% (now 50%!) of us diagnosed with hypertension in 2014, or 81 million adults, and this number is growing 1-2% per year. These numbers are for the definition of "hypertension" set at >140/90, but the new criteria from the AHA lower it to >130/80.

6.7% of adults aged 45-64 and 18.2% of adults 65 and over were told by a physician or other health

professional that they had cancer, excluding benign skin cancers.

Approximately 1,696,500 of us Americans over the age of 65 died of these “diseases of civilization” in 2014, which we believe to be as the direct or indirect result of population density stress.

Cancer or Heart Disease at Retirement?

So, by age 65, we Americans can look forward to a combined risk of 47.6% (!) of having either heart disease or cancer or both, which does not account for Alzheimer’s disease (1/9 Americans or 11%, so, subtotal= 47.6+11=58.6%!), chronic lower respiratory diseases, unintentional injuries, stroke, diabetes, pulmonary infections, nephritis, suicide, or addiction (1/8-1/10 American adults). Getting the picture? And all of these diseases are on the increase! Oh, what a glorious future to behold!

We are sick and dying, but WHY? Do you care to know? Or, like the vast majority of the professional medical community, would you rather stay uninformed?

Just Don’t Want to Know?

If you really don’t want to know why we are sick and

dying, stop reading this book and return to whatever distraction you were most recently engaged in. Perhaps, the “social media”, video games, favorite TV show/commercials, “sports”, favorite boiler-plate political source (FOX NEWS, CNN?), intoxication, etc., is your preference?

However, for those brave souls who really want to look the causes of our ever worsening society-wide sickness directly in the eyes, gird your loins and read on, although you might want to take a break at this point.

Ready to soldier on?

Truly, we understand that this eye-opening information is stressful in and of itself, but we believe that knowing the truth about what’s making us this sick will set us free to make new healthier lifestyle choices, save our children’s lives, save the planet, and bring balance back into the ecosystem. Try to bear with us a little longer as we delve into the true nature of the problem, although you may jump ahead to the solutions sections anytime you choose.

1/3 of Americans Have High Blood Pressure

To repeat, in 2014, approximately one third of adults aged 20 and over had hypertension. Of these, one in six

of these adults had uncontrolled hypertension! “Essential hypertension”, the primary form of hypertension, is largely the result of COASTER, which includes over-activity of the sympathetic nervous system, excessive blood levels of sodium retaining adrenal steroid hormones (Cortisol, aldosterone, etc.), as well as renin and angiotensin, the combination of which cause vasoconstriction, sodium and water retention, increase blood volume and, therefore, blood pressure. These medical facts are well known and indisputable, although the full picture includes many more elements beyond our scope here. As if this were not bad enough, let’s bravely soldier on to mental health, or our lack thereof.

1/6 Americans Have Taken Psych Meds

“One in 6 American Adults Say They Have Taken Psychiatric Drugs, Report Says”, is the title of a Dec. 12, 2016, NYT article by Benedict Carey. This article summarizes a “Letter” published that same date in *JAMA Internal Medicine*, which states:

“Results: Overall, 16.7% (1 in 6) of 242 million US adults reported filling 1 or more prescriptions for psychiatric drugs in 2013, including 12% reporting (taking) anti-depressants (1 in 8); 8.3% (1 in 12) filling

prescriptions for anxiolytics, sedatives, and hypnotics;
and 1.6% taking anti-psychotics.” (underlining and
parentheticals mine)

Take-away Message

So, the take-away message is: we are sicker, we are
increasingly obese and diabetic, 1 in 6 are taking
psychiatric drugs, 85% of us are seeing our physician at
least once a year, we are taking massive amounts of
prescription medications to survive, and our blood
pressures are going through the roof. We are receiving
ever more medical care, spending twice as much on
medical care as 14 years ago, and dying more frequently
from Alzheimer’s disease, accidents, and suicide, as well as
drug and alcohol related causes. According to demographic
analyses associated with the ACA (aka “Obamacare”), 23-
33% of “non-elderly (i.e., under 65) Americans have “pre-
existing” serious medical conditions. We are a very sick
population. But, why?!

“Ok, Ok”, the attentive reader must be asking, if he or
she has taken their Ritalin or drunk several cups of
coffee/tea and made it this far in the book, “what the
heck is making us so much sicker, what do you mean by

‘population density stress’, and what’s this COASTER business?!”

COASTER Defined

COASTER (acronym for “Chronically Over-active Stress Response”) can be scientifically defined as elevated hypothalamic CRH and blood Cortisol levels, as well as over-activation of the sympathetic nervous system. CRH (cortico-tropin releasing hormone) is the master stress hormone originating in the hypothalamus and amygdala deep in the ancient brain. COASTER is triggered by the several elements of population density stress: (1) the myriad modern environmental “population density stressors” in our urban “built” environments (necessitated by human overpopulation); (2) loss of the day to day direct immersion in the natural, primordial physical environment of our prehistoric ancestors, due to the intercession of the human “built” world; (3) disruption of prehistorically supportive social structures (i.e., clans) and clan sustaining behaviors of our ancestors; and disrupted exercise and dietary patterns of the “modern” world. The term “COASTER” refers to the physiological state which occurs with prolonged activation of our Stress Response, while “population density stress” incorporates the COASTER

effect but also includes the external conditions that cause this physiological reaction.

These population density stressors are more pronounced and frequent in the lower socio-economic class, whose status correlates directly with their level of education. More on this later in TOPIC 25, HIERARCHY, DOMINANCE, AND SUBMISSION.

COASTER's role in anxiety and depression, as well as neuro-developmental spectrum disorders, will, also, be elaborated at length later in this work.

COASTER Is Causing Heart Attacks and Strokes

At the risk of repetition, as a direct result of elevated brain CRH, blood Cortisol, and an over-active sympathetic nervous system, COASTER, we develop the number one killer of modern Americans: atherosclerotic vascular disease, resulting in heart attack and stroke, from which 87,725 Americans perish monthly, 1,052,700 annually. The reader may wish to recall that in Dr. Donnison's statistical table described earlier, not a single diagnosis of atherosclerosis was made among 283,851 "cases attended" in 1932 Kenya!

The research on experimental atherosclerosis with animals, done by Drs. Katz and Stamler at Michael Reese Hospital in Chicago in the mid-20th century, and published in their 1953 book supporting our contention of COASTER as primary cause, will be found later in this work. As the reader will note, Katz and Stamler determined that Cortisol, combined with high blood fats (lipids) was the primary cause of atherosclerosis in 1953! However, also recall Dr. Stefansson's inability to document a single case of atherosclerosis among all of the hunter-gatherer peoples living above the Arctic Circle and subsisting on a very high fat diet!

However, atherosclerotic vascular disease is a well-known component of Cushing's disease, first recognized in the early 20th century as a result of adrenal cortical over-activity due to adrenal tumors or tumors of the pituitary gland. The pituitary gland is located at the base of the brain and tumors can over-produce and secrete ACTH (adreno-cortico-tropic hormone), the hormone which in turn causes the adrenal gland to over-synthesize and over-secrete Cortisol. So, over-production of Cortisol is highly correlated in Cushing's disease with atherosclerosis. We must also note that weight gain, high blood pressure, poor short-term memory, fatigue, weakened bones, diabetes, and impaired immunological function resulting in frequent

infections are characteristic features of Cushing's disease. But what about the AIDS epidemic? Isn't that an immune deficiency condition as well?

The AIDS Epidemic and COASTER

Chronically elevated Cortisol levels, also, suppress several aspects of the immune response, leaving us vulnerable to infectious diseases and, we contend, cancers.

Sadly, those of us alive in the 1970's and 1980's have probably all witnessed the deadly AIDS (Acquired Immune Deficiency Syndrome) epidemic, before the wonderful HIV (Human Immune-deficiency Virus) suppressing drugs became readily available, at least to those who could afford them. Late-stage AIDS sufferers developed multiple treatment resistant infections and cancers, particularly Kaposi's sarcoma, and the pneumonias which often brought on their final demise. The reader is asked to pay particular attention to the co-occurrence of HIV-AIDS and cancer.

When treating this disease, we physicians tracked blood levels of "t-lymphocytes" (short for "thymic-lymphocytes", as they originate in the thymus gland), the very link in the immune response provided by the same

thymus gland that Dr. Selye saw shrunken and destroyed by stress in his stressed experimental animals, and described in his General Adaptation Syndrome (GAS) triad: (1) enlarged adrenal glands, (2) peptic ulcers, and (3) shrunken thymus gland and lymph nodes (causing reduced or no t-lymphocytes!). Anybody else out there put 2 plus 2 together and get 4?

So, one way of looking at our current health problems (particularly heart disease, infectious diseases, cancer, etc.) is to say that we may all be moving through our stressor filled modern world with a form of COASTER induced AIDS. "CAIDS" epidemic?

We have never known a modern physician, who studied the t-lymphocyte counts in his or her stressed-out patients. COASTER is not recognized as bona fide disease currently, let alone as a causative agent in any other disease. Anybody want a Nobel Prize in Medicine? Those of us who treated AIDS patients, however, know that any added stress could be the death of an early AIDS patient, and was clearly reflected in their lowered t-lymphocyte count. They had to learn to manage their stress in order to survive. Measuring t-lymphocytes in the blood of a

non-HIV-AIDS patient ought to be a pretty good biomarker for COASTER.

THE CURE WITHIN

This 2008 book, subtitled “A History of Mind-Body Medicine”, by Harvard Professor Anne Harrington, addresses the role of stress in causing the deaths of AIDS patients.

On page 172, she concludes:

“In other words, a generation of young men was dying not just from HIV but from the chronic stress of living with the (added stress of) rejection and disdain of society (in addition to population density stress!).

The AIDS-patient community, for its part, seemed to have little trouble incorporating the new ideas about stress and the (suppression of) the immune system into a series of politically impassioned stories about what was truly killing them (sic).”

On the following page, 173, she continues:

“Nevertheless, the early years of the AIDS crisis created a lasting legacy for the stories our culture would tell about the meaning of stress. They taught us that the modern era had not escaped the age-old plagues of infectious diseases after all; they also

taught us that the well-recognized syndrome of modern life, (population density) stress, had a reach that had not previously been suspected. We learned that by undermining immune function, stress could compromise our ability to defend ourselves against infection (or cancer)."

Then Prof. Harrington adds:

"What about cancer? Did stress affect the ability of the immune system to fight tumors in ways that accelerated the progress of the disease? Certainly, many cancer patients began to think so." (underlining and parentheses mine)

The good Professor then shares a number of anecdotes supporting this hypothesis, as provided by a number of cancer patients she interviewed, which is the core of her book.

Feel free to read Prof. Harrington's well written book, although, sadly, her knowledge of stress physiology, and most of what's in this current book on population density stress, is very limited. She makes reference to the work done by Drs. Beard and Mitchell on neurasthenia, by Walter Cannon on "fight or flight", and by Hans Selye on the GAS (general adaptation syndrome), but avoids

physiological detail or reference to the extensive health consequences, except for “just so” generalizations by non-scientist social critics, and one quote from page 61 of Hans Selye’s prescient 1979 book, *The Stress of My Life: A Scientist’s Memoir*:

“I asked myself...why so many people suffer from heart disease, high blood pressure, arthritis, or mental disturbances. These are not completely stereotyped signs of all illness, yet they are so frequent that I could not help suspecting some non-specific common factor in their causation.” (underling mine)

We believe that “non-specific common factor” that was causing “heart disease, high blood pressure, arthritis, or mental disturbances” is finally explained and well documented in our present work. What do you, the critical reader, think? Read on for more evidence of our theory. Did we get it right? Are we solving this mystery of growing human disease in our ever more crowded “modern” “developed” urban human populations?

At no point does the good Professor Harrington show any evidence of knowledge of the animal population density research reviewed in our book, nor, apparently, did

any of her featured “experts” even mention this “elephant in the room” dimension in their work. Prof. Harrington spends the rest of her well-written book examining various elements of stress reduction, without ever actually defining stress, let alone its underlying sources. Ironically, she and her featured experts were hovering right on the edge of the breakthrough discovery of population density stress and its resultant killing diseases of civilization that our book is attempting to highlight!

Now, back to more specifics of exactly how COASTER and population density stress are killing us off.

COASTER Is Causing Obesity and Diabetes

Prolonged elevated CRH and Cortisol levels in COASTER suppress normal insulin function, while elevating blood sugar levels through “gluco-neogenesis” (i.e., cortisol dissolves protein from bone, muscle, and solid organs, which the liver converts into glucose), resulting in diabetes, or a worsening of diabetic control, and largely causing our obesity epidemic when that unused glucose is converted into stored fat. This mechanism is, also, doubtless, the primary cause of the oft mentioned “Metabolic Syndrome”, which includes the development of

obesity and, eventually, type 2 diabetes mellitus. And remember those Cushing's disease patients, with the adrenal or pituitary tumors causing Cortisol overproduction we mentioned earlier, they are always obese and diabetic.

Diabetes is now number 7. on the top ten list of diseases killing us. Elsewhere in this book, you will discover that numerous physicians have found no evidence what-so-ever of diabetes in members of hunter-gatherer clans living their traditional life-ways in the remaining isolated enclaves of earth's natural environments.

COASTER Drives Addiction

A primary cause of alcohol abuse and dependence, as well as the "opiate epidemic" and numerous other substance/"process" addictions, is COASTER, experienced as anxiety, depression, PTSD, and all the other illnesses described above. They are scientifically established results of COASTER and well referenced elsewhere in this book. A newly published article in *JAMA Psychiatry* by Grant et. al. reports an increasing rate of Alcohol Use Disorders (DSM IV: AUD's) with an overall prevalence of 12.7% or 1/8 American adults. Over the decade 2003-2013, the most disturbing statistic was a 106% increase in AUD's among

those of us over 65! The overdose deaths of nearly 60,000 Americans in 2016 is national news and cause for a national declaration of a “state of emergency”.

Three Trillion Dollars for Healthcare!

Stated as a percentage of total annual financial productivity, we spend 18-20% (1/6-1/5) of our GDP on trying to keep ourselves alive in the face of our ever increasing diseases of civilization. We consider this number a pretty good estimate of the increasing impact of COASTER or “population density stress” on the health or lack there-of in the American population.

Earlier in this book, we gave the percentage of the anything but healthy American general population who require at least one doctor visit annually: 85%. The percentage of “non-elderly” adult Americans with pre-existing conditions ranges from 23% to 33%, depending on the state.

The attentive reader will recall the main questions this book proposed to answer: “what’s killing us, why, and what we can do about it?” How are we doing so far? Just wait until you see what’s coming next: our infertility

epidemic! Cheer-up, good news is coming later, but we're going to have to work for better health and, at least as importantly, to save the rest of the biosphere.

Psychosocial Medicine,...

We need to refer now to a 1948 book by British physician James L. Halliday, MD, DPH, *PSYCHOSOCIAL MEDICINE, A STUDY OF THE SICK SOCIETY*. This reference is important because Dr. Halliday identified essentially the same diseases in Britain which we argue are clearly the result of COASTER, and his book presents a very readable survey of increasing psychosomatic diseases during the industrial revolution. He, also, highlights "A Declining Birth Rate and Psychological Health" in Britain following WW I.

Although apparently untrained in endocrinology or ethology, Dr. Halliday made this statement on page 132:

"This suggests that noxious psychological factors of the communal environment (i.e., population density stressors) may be etiologically relevant to (i.e., cause) the (downward) movement of the birth rate."

(parentheticals and underlining mine).

More about COASTER's effect on reproduction later.

Now, what about the “sick headaches” so much a part of the 19th century condition “neurasthenia”, and discussed at length in the next section of this book. Read on, if you don’t already have a migraine, or even if you do! The truth will set us free, remember?

Migraine Headaches (aka “Sick Headaches”)

As a medical student at the University of Wisconsin Medical School, we were assigned to the Headache Ward at University Hospital. On that ward, we were taught the mechanisms, types, and treatments of headache, with examination of patients suffering from them: Muscle Tension, Migraine, Cluster, Temporal Arteritis, Post-traumatic, and TMJ (temporo-mandibular joint), were prominent types. Oh, and ice-cold strawberry ice cream!

What We Were Not Taught in Medical School

However, what we were not taught at the time was the fact that all of these headache types (except the ice-cream) resulted from pretty much the same cause: a chronically over-active stress response, COASTER. In the particular case of migraine headaches, we were instructed that constant increased sympathetic tone caused prolonged

contraction of the trans-cranial arteries, which course in and out of the little worm holes in our skulls, or “cannulae”, notable and memorable from the bleeding cuts to our finger tips, if we were curious enough to rub them over these razor sharp entrance and exit holes in our study skulls in the anatomy lab.

Furthermore, we were instructed that once the stored sugar supplies in the walls of those eventually exhausted arteries ran out (caused by constant smooth muscle contraction), the vessels dilated and could not return to a contracted state until forced to by vaso-constricting medicines or resupplied with stored sugars during a long period of R and R in a quiet darkened room. Caffeine and ergotamine were the preferred medications at that time and caused a forced contraction of the smooth muscles in the artery walls, at least temporarily relieving the throbbing pain. Furthermore, the only pain receptors within the entire brain, we were told, resided in these outer artery walls.

So, now we had exhausted transcranial arteries rubbing their outer walls and pain receptors over razor sharp bony edges and painfully scraping against them with every heartbeat, every pulse of blood being pumped into our

brains. No wonder migraine sufferers were experiencing horrible throbbing head pain!

And, oh, by the way, areas of the brain are not getting necessary supplies of oxygen during this time, due to the decreased size of the lumen (hole or channel) from swollen cranial artery walls, and so we suffer from localized failure of brain function, typically in the visual cortex and resulting in “aura” and “scotomata”: wavy lines or spots in our visual fields. In severe cases, we can actually suffer temporary mini-strokes. Thus, we are incapacitated by a “sick headache”. The WHO has described migraine as “the sixth highest cause worldwide of years lost to disability (YLD)”.

For further info on migraines and their treatment, the modern reader only needs to consult the web. Interestingly, these “sick headaches” were well known in ever faster paced urban American populations, as reported by two 19th century neurologists soon to be mentioned in this work.

Why Are We So Sick?

So, why on earth do we have all these often fatal illnesses and “sick headaches” anyway? Wait just a minute! Could these killing diseases possibly have a long

evolved natural, ecological function? Why is COASTER trying to kill us off? And, don't forget the other side of this demographic coin: why are we still adding nearly 80,000,000 new humans to our over-crowded earth each year? So, let's dig into the question of human overpopulation.

We Are Overpopulated!

We are at least 1,233-1,850 times greater in number world-wide today than our Hunter-gatherer ancestors 10-14,000 years ago (assuming a Hunter-gatherer population world-wide of 4-6 million and current world-wide population of 7.4 billion). We are no-longer fitted into our former Hunter-gatherer, ecologically balanced niche in the natural environment. And, by the way, those ancestors, no more than 6 million world-wide, appear to have maintained that stable population over the entire post super-volcano Mt. Toba eruption time period of 60,000 years, and until the "agricultural revolution" 10,000 years ago, except for a temporary dip c.43,500 years ago due to another volcanic eruption in today's Italy. In North

America, we can accurately estimate the native population of today's United States at 1-2 million prior to the arrival of our European pioneer ancestors. Early pioneers escaped the territorial and clan forces holding earlier populations at bay and resulted in the 165-330 times greater population we experience today. Again, the early American population doubled in 25 years!

Senator Al Gore gave our population as 5.5B in 1992, when he published *EARTH in the BALANCE*. Today, in 2017, we are 7.4B world-wide, or 1.9B more in 25 years. So, at our current rate of population growth, 214,000 more humans on earth daily, we would reach 9.3 billion in 2042 or 11.2 billion in 50 years, 2067—a doubling time of 75 years from Sen. Gore's 1992 publication date.

Optimal Population?

Again, six million is apparently a working estimate of our optimal population for 60,000 years, as hunter-gathers,

in an ecologically balanced ratio to other species and other renewable natural resources, except for the momentary dip 43.5kya due to the Italian volcano mentioned earlier, and until the agricultural revolution, which started approximately 10 thousand years ago. Then, we quickly raised our numbers, by a factor of 10, in 9 thousand years, to 300-350 million by the time of Christ, only 2017 years ago.

Since then, we exploded in numbers from 300 million to our current 7,400 million, or 7.4 billion, 25 times our number 2017 years ago! Our current population worldwide is, thus, 1233-1850 times the stable (optimal?) population of our hunter-gatherer ancestors.

Unsustainable R Us

In order to maintain this enormous population and its explosive growth, we have chosen to extract mostly non-renewable natural resources (oil, gas, coal, rare minerals, water, oxygen, etc.) at an unsustainable rate. We are literally eating ourselves out of house and home.

No Problem, Be Happy?

Admittedly, this is a difficult concept for those of us fortunate citizens of developed nations, who seem to have every possible resource readily available at our finger-tips, or, at least, a short drive away. Furthermore, the economic system we have chosen drives us to consume as if there were no tomorrow, as might all too soon be true!

The interested reader might want to jump, temporarily, to TOPIC 9, “Stress, Anxiety, and The Unconscious Mind”, for a detailed introduction to the physiology of the stress system.

The Ignorance of Science

The well-established scientific knowledge of the physiology of the stress system, although earlier limited to experimental animal models, and its potential negative effects on human health, have been known since the 1950’s and earlier. However, as recently as 2005, Prof. Seymour Levine, in his introductory paper “Stress: an historical perspective”, Chapter 1.1 in the *HANDBOOK OF STRESS AND THE BRAIN, VOLUME 15, Part 1: The Neurobiology of Stress*, Edited by Steckler, Kalin, and Reul, stated on page 6:

“That there is a relationship between stress and illness is now extensively documented, as is the relationship between stress and GC’s (gluco-corticoid adrenal hormones—more about these later). What is not clear is the relationship between GC’s and illness.”
(underlining and parentheticals mine)

Well, then, good doctor, if there is “a relationship between stress and illness”, WHAT IS IT? How many more billions of taxpayer dollars will it take before you and your Ivory Tower colleagues read some obscure book on stress that lays the answer right before your feet, like this book, for a start? Dr. Kalin has ignored multiple requests to look at this work, let alone read this book, but is apparently just too busy in the lab to tear himself loose. Dr. Kalin is the Chairman of the very Psychiatry Dept. at the University of Wisconsin Medical School that the main author of this book graduated from. So much for honoring the alumni! Careful, Dr. Kalin, what goes around comes around.

If the Psychiatry Dept. website is any indicator, little academic work of real practical value, except some obscure esoteric wet lab. research, is getting done or promoted by what was once upon a time a great teaching institution, in spite of the millions of dollars in taxpayer monies pouring

into their coffers from mostly government grants for “research”, and “teaching”.

Also deserving of criticism in this vein of wasted research time and money, is a recent study by another group at the University of Wisconsin Population Health Institute: “Does the Perception that Stress Affects Health Matter? The Association with Health and Mortality”, *Health Psychol.* 2012 September; 31(5): 677-684. The premise of this confused effort is: “The perception that stress affects one’s health is conceptually distinct from the amount of stress an individual is experiencing....”

No Connection?

So, we are led to believe that there’s no connection between the amount of stress we are experiencing and our conscious awareness that it is harming our health. Nice try! Phooey! As will be mentioned later in this book, “cognitive-behavioral” psychologists have been making a living trying to convince their unquestioning clients that, if they’ll just change their thoughts to sweet, optimistic, “resilient” ideas, irrespective of their physical environment, they will not only escape the negative health effects of COASTER but, also, benefit from a stressful lifestyle. If the

reader buys this crap, we've got some nice marshland in Florida that we'll give you a really good deal on.

The Stress Response is an ancient neuro-endocrine survival reflex that most authors of papers on stress know nothing about. Read what follows and become your own expert, or just believe that changing your mind will change your many hundred million year old neuro-physiology. Your choice. The solution to COASTER that the good, if naïve, folks at the Population Health Institute seem to be recommending, in the middle of the highly stress inducing center of Madison, Wisconsin, is simple denial. The answer to surviving our recently constructed and continuously over-built hyper-stressful, over-populated urban environments must be more targeted than a simple "out of sight, out of mind" approach. Read on for the true story.

For Historical Perspective

For perspective, this book will attempt to review the earlier work by numerous researchers demonstrating a direct or indirect causation of human disease by elevated Cortisol levels, apparently unknown to Dr. Levine, in addition to all the material on Cortisol's role in causing diseases already presented up to this point. Had the good

Dr. Levine never heard of or treated Cushing's disease? Perhaps he has never left the lab apparatus in his Ivory tower?

Dr. Addison's Disease and Neurasthenia

In fact, the earliest descriptive medical reference to the ill-effects of stress hormones, or in this case the lack thereof, that we could find was by the British physician, Thomas Addison, MD, in 1849, known today for describing "Addison's disease", caused by destruction of the adrenal glands. Dr. Addison identified numerous causes for "supra-renal failure", including tuberculosis, identifiable in post-mortem examinations, but never identified cases without an obvious pathological cause, "idiopathic adrenal failure". Nor did the good doctor make an association with population density stress, although adrenal failure in the guise of "neurasthenia" was highly correlated with the rapidly developing stressful urban life-style prominent in his time. However, the symptoms he described in his patients included and closely paralleled those associated today with COASTER, in its terminal phase, which is adrenal fatigue or total failure and death, as seen in Addison's disease 168 years ago.

Dr. George Miller Beard's "NEURASTHENIA"

However, 20 years later and an ocean away, American neurologist, George Miller Beard, MD, in New York City, popularized the term "neurasthenia" (literally nerve weakness), starting around 1869. At the same time, Kalamazoo, Michigan psychiatrist and hospital superintendent Edwin H. Van Deusen, MD, authored an 1868 paper on neurasthenia as well, more on him later.

Dr. Beard authored the self-explanatory pamphlet, "AMERICAN NERVOUSNESS: IT'S PHILOSOPHY AND TREATMENT" in 1879, after delivering it as an address before the Baltimore Medical and Chirurgical Society on February 12, 1879. Dr. Beard defined neurasthenia as a medical condition, with symptoms of fatigue, anxiety, "sick" headaches (migraine), impotence, neuralgia (nerve pain), among many others experienced by the patient. Dr. Beard hypothesized that the cause of these symptoms was exhaustion of the central nervous system's energy reserves, which the observant Dr. Beard accurately attributed to the "advances" of civilization.

“Nervous Exhaustion”

The persistent Dr. Beard went on to publish an expanded book-length version in 1880, A PRACTICAL TREATISE ON NERVOUS EXHAUSTION (NEURASTHENIA) Its Symptoms, Nature, Sequences, Treatment. Paragraph three of the Feb. 1, 1880, “PREFACE” states the following, which is still relevant today, 137 years later:

“Among specialists and general practitioners alike, there has been, on this whole subject, a fearful and wondrous confusion of ideas; these functional nervous symptoms have, in short, always slipped from our grasp whenever we attempted to seize them and bring them into science; and in discouragement and disgust, and in a spirit of skepticism, which is the highest form of credulity, physicians, imitating the unscientific example of the laity, denied the existence of such symptoms, just as they had formerly denied the existence of Diphtheria and Hay Fever. Neurasthenia, indeed, has been the Central Africa of medicine—an unexplored territory into which few men enter, and those few have been compelled to bring reports that have been neither credited nor comprehended.” (underlining mine)

Ironically, I just responded to an on-line article in a prestigious newspaper on the subject of “Myalgic encephalomyelitis” or “Chronic Fatigue Syndrome” which described the battle for establishing the legitimacy of this diagnosis in the “modern” medical community/literature. Apparently, our esteemed “modern” physicians haven’t read about George Miller Beard or his discovery of “Nervous Exhaustion” in 1879, or his book published in 1880. Today, we know these symptoms to be caused by adrenal fatigue, treatable, and quite likely for a complete recovery. The NYT medical science editors are utterly uninformed. Want to learn the truth about ME/CFS? Read on. Dr. Beard had defined this condition thoroughly 137 years ago.

“Symptoms of Nervous Exhaustion”

Dr. Beard thoroughly expanded on his initial symptom list from 1869, in his book of 1880, in the chapter “*Symptoms of Nervous Exhaustion*”, pgs. 15-85, listing the following headings, selected from the 53 in the book:

*“Tenderness of the Scalp ***(ME/CFS), Dilated Pupils*, Sick Headache and Various Forms of Head Pain*/**, Changes in the Expression of the Eye, Congestion of the Conjunctiva*/**, Disturbances of the Nerves of Special Sense (irritable, tender eyes) (ME/CFS), Muscae Volitantes,*

or floating specks before the eyes/**, Noises in the Ears (tinnitus)*/**, Atonic Voice*** (ME/CFS), Deficient Mental Control*** (ME/CFS), Mental Irritability*, Hopelessness**/*** (ME/CFS), Morbid Fear (includes agoraphobia)*/**, Flushing and Fidgetiness (includes syncope-fainting)*/**/*** (ME/CFS), Frequent Blushing*, Insomnia*/**, Drowsiness*** (ME/CFS), Tenderness of the Teeth and Gums, Nervous Dyspepsia* (includes flatulence, nausea, and diarrhea), Deficient Thirst, and Capacity for Assimilating Fluids*** (ME/CFS), Desire for Stimulants and Narcotics*** (ME/CFS), Abnormalities of the Secretions, Abnormal Dryness of the Skin, Joints, and Mucous Membranes*, Sweating Hands and Feet*/**, with Redness (Palmar Hyperidrosis)*/**, Salivation, Tenderness of the Spine (Spinal Irritation)***, and of the whole Body (General Hyperaesthesia)*** (ME/CFS), Coccydynia, Peculiarities of Pain in the Back*** (ME/CFS), Heaviness of the Loins and Limbs (ME/CFS), Tremulous and Variable Pulse and Palpitation of the Heart (Irritable Heart)*/**, Local Spasms of Muscles (Tremors)*, A Feeling of Profound Exhaustion*** (ME/CFS), Cold Feet and Hands*, Diseases of Men (including impotence)*, and 16 more!*

The asterisks*, denote signs or symptoms known today as characteristic of activation of the sympathetic branch of

the autonomic (think “automatic”) nervous system, also known as Part A of the 5 Part Stress Response. The double asterisks**, denote symptoms associated with COASTER, Part B of the 5 Part Stress Response, caused by chronically over-produced CRH in the brain and Cortisol from the adrenal glands with its fellow gluco-corticoid hormones. The triple asterisks***, mark symptoms resulting from under-production of Cortisol and other adrenal corticoid hormones, as the adrenal cortex becomes increasingly exhausted with adrenal fatigue. The parenthetical (ME/CFS) indicates symptoms of that condition, as a result of adrenal fatigue. The obvious point being the utter correspondence between adrenal fatigue/failure and Myalgic Encephalomyelitis/Chronic Fatigue Syndrome.

The 5 Part Stress Response, as presented in this work, is an evolved form of Dr. Beard’s neurasthenia concept and is fully explained in detail in TOPIC 10, and as a separate removable appendix to this work.

Thus, most of Beard’s neurasthenia and nervous exhaustion patients may have been suffering from adrenal fatigue or Addison’s syndrome, the symptoms of which result from the opposite condition to COASTER: low

Cortisol levels, due to exhaustion of the adrenal cortex, as seen in the slide on the far right of the sequence on the FRONT COVER.

Many of the COASTER symptoms Dr. Beard reported were doubtless due to hypertension (high blood pressure) caused, short-term by the activation of the sympathetic branch of the autonomic nervous system and release of adrenaline, or long-term, primarily by high blood Cortisol and aldosterone levels, as well as other factors. However, the device we take for granted today to measure blood pressure, the sphygmomanometer, or “blood pressure cuff”, had not yet been invented in 1869, or even 1880. More about this later in the book.

Dr. Beard’s Untimely Demise

A very hard worker and dedicated physician, Dr. Beard, further, published *AMERICAN NERVOUSNESS, ITS CAUSES AND CONSEQUENCES, A SUPPLEMENT TO NERVOUS EXHAUSTION (NEURASTHENIA)*, in 1881, as a 352pg. expansion of his earlier address and pamphlet.

Ironically, the good doctor passed away in his 44th year, perhaps, from nervous exhaustion and a stress-induced immune suppressed communicable disease, influenza,

which a healthy immune system, and not one suppressed by Cortisol, may have allowed him to survive. Doubtless, the ever more crowded living conditions of his city of residence made a contribution to the spread of his influenza virus.

Wear and Tear...

A fellow 19th century neurological physician, Silas Weir Mitchell, MD, LLD, of Philadelphia, as a result of his medical observations during and after the Civil War, published his *WEAR AND TEAR OR HINTS FOR THE OVERWORKED*, in 1871, 5th ed. 1878, making similar observations to those of his colleague in New York. On page 67, he states the following:

“The wearing incessant cares of overwork, of business anxiety, and the like, produce directly diseases of the nervous system, and are also the fertile parents of dyspepsia, consumption, and the maladies of the heart. How often we can trace all the forms of the first-named protean disease (of the nervous system) to such causes is only too well known to every physician, and their connection with cardiac troubles is also well understood. Happily, functional troubles of heart or stomach are far from infrequent precursors of the

graver mischief which finally falls on the nerve centers if the lighter warnings have been neglected; and for this reason no man who has to use his brain energetically and for long periods can afford to disregard the hints which he gets from attacks of palpitations of heart or from a disordered stomach.”

Before Freud, Neurasthenia...

An excellent more recently published review of the 19th century medical literature on neurasthenia is F. G. Gosling's *Before Freud, Neurasthenia and the American Medical Community, 1870-1910*, 1987. In his thorough review, Mr. Gosling found: “Between 1870 and 1910 case reports of 154 men and 152 women were published in medical journals.” He continues, also on page 34:

“Patients described symptomology easily recognized by modern readers as stress-related.” (underlining mine)

Millions of possibly preventable stress-related deaths may have occurred due to the ignorance of advances in the science of stress physiology and the potential negative health effects of COASTER, on the part of modern medical

educators, practitioners, the medical “industry”, and the mass media.

The medical specialty which deals with the adrenal glands, Endocrinology, to this day, does not accept “Idiopathic Hyper-adreno-corticism”, COASTER, or its resultant “adrenal fatigue” as bona fide medical conditions worthy of study and treatment. The term *Neurasthenic Neurosis*, although present in the American Psychiatric Association’s *Diagnostic and Statistical Manual of Mental Disorders* in its 2nd edition, from 1968 through 1980, was removed in the 3rd edition and since.

Finally, a cynical and sarcastic Mr. Gosling states, on page 173:

“The management of less acute psychiatric problems, particularly that elusive disorder (sic) known as “stress”, has also defied scientific solution. Stress, in fact, has become a badge of professional achievement, much like neurasthenia a century ago. Stress is associated with white-collar occupations, high pressure jobs, and heavy responsibilities: it has even been used to symbolize the professionalization of certain occupations (e.g., “nurse burnout”). Like neurasthenia, stress is a non-life-threatening condition but one that nevertheless produces uncomfortable and disturbing symptoms (sic)

in its victims—insomnia, depression, loss of ability to concentrate, and eating disorders.” (underling and “sic”s mine)

Yes, Mr. Gosling, brief episodes of stress may be non-life-threatening, but COASTER is killing us, just as it did in the 19th century! Back to the books, Mr. Gosling!

“THE HISTORY OF CHRONIC FATIGUE SYNDROME”

The liaison psychiatrist Dr. Simon Wessely wrote the above titled paper, available as a download on the net, for an edited volume on CFS in 1994. His well-researched effort included an excellent over-view of earlier work in Europe and the US on neurasthenia as it morphed into the more recent interest in chronic fatigue syndrome.

Of special interest for our book was a reference to an 1868 paper by the earlier mentioned E. H. Van Deusen, Medical Superintendent of the Michigan Asylum for the Insane in Kalamazoo, MI, titled: “OBSERVATIONS ON A FORM OF NERVOUS PROSTRATION (NEURASTHENIA) CULMINATING IN INSANITY”. We cannot resist the temptation to include a brief quote from the first page of this 1868 paper:

“Among the causes (of neurasthenia), excessive mental labor, especially when conjoined with anxiety and deficient nourishment, ranks first. It is also traceable to depressing emotions, grief, domestic trouble; hemorrhage and debilitating diseases, following or coincident with depressing mental influences and sleeplessness.” (underlining and parenthetical mine)

Sadly, Dr. Wessely’s otherwise thorough review nowhere mentions our over 100 references to researches on stress, population density stress, or our deteriorating general health, except for his excellent review of the historic work of George Miller Beard and Silas Weir Mitchell on neurasthenia. However, on page 14 he states:

“By 1914 the observation that neurasthenia frequently followed an infection was widely acknowledged. For many, including Osler, Ely, Oppenheim, Cobb, Horder, Ladova, Clarke, Kraeplin, Althaus, Arndt, and others, influenza was a prominent, and sometimes the principal cause, of neurasthenia, but claims were made for many others, especially typhoid, and latterly the effects of vaccination (ref).”
(underlining mine)

Paying Attention?

So, the reader of this book, if he or she has been

paying attention, should be able to put together the fact that COASTER lowers resistance to infection, as a result of the immune suppression resulting from high Cortisol blood and tissue levels. Then, with the adrenal gland exhausting and energy sapping effects of any infection, we come down with the symptoms of neurasthenia, identical to chronic fatigue syndrome, and adrenal fatigue, unless we have already died. Is the picture becoming clearer?

This really is not rocket science, but, apparently, no-one previously writing about these subjects ever fully researched the 100plus primary historical sources in our book.

Six of One, Half Dozen of the Other

Chronic Fatigue Syndrome, Neurasthenia, and Adrenal Fatigue are different names for the same condition, and all resulting from COASTER and population density stress. The exhausted adrenal gland is no longer able to produce the energy releasing gluco-corticoid stress hormone Cortisol and we are utterly exhausted all the time. The fact that no-one other than our clinical psychiatry practice has ever measured Cortisol levels in chronic fatigue syndrome is reflective of the gridlocked state of “modern” drug company controlled medical research. And, yes, we discovered many cases that fit this model exactly:

abnormally low blood AM Cortisol levels in patients who complained of symptoms of chronic fatigue following a long illness, recuperation from a serious injury, or other lengthy stressful episode, whether physical or psychological.

“It’s the (Adrenal) Economy, Stupid!”

We believe that these patients’ adrenal glands would have resembled the slice on the far right on the FRONT COVER, had we been able to image them. Of course, no “managed care” company would ever allow funds for such an “experimental” procedure. When these patients were treated for adrenal fatigue, their chronic fatigue symptoms lifted and they resumed their previous lives, but all the wiser and more careful about the role of COASTER in a future potential relapse.

Google the lengthy medical term for COASTER, “idiopathic hyper-adreno-corticism” (enlarged adrenal cortices from an unknown cause, resulting in elevated blood Cortisol levels), and you will find no references to humans, only veterinary animals, at least in the first 5 pages I just reviewed! PhD, anyone?

So, Where's the Forest?

Physicians and medical researchers have been so over-involved in the minutiae of their research (the little details of their narrowly focused, highly competitive research, aka "reductionism", or "not being able to see the forest for the trees") and so totally isolated from the day-to-day realities of clinical medical practice: sick people, that they have lost track of the big picture, which, in fact, is so very simple, and, again, was first reported in America by E. H. Van Deusen, MD, in 1868, and George M. Beard, MD, in 1869!

Google "adrenal insufficiency" and find the Wikipedia entry, in which you will then find one obscure mention of "stress", as a cause of "primary adrenal insufficiency", buried in a chart on page 4. You will only find a link to "adrenal fatigue" references if you click on a side-bar heading, "symptoms of tired adrenal glands".

The underlying cause of the majority of all human diseases and unnecessary deaths is, as yet, unknown to "modern" medicine, or the NYT medical science editor, although fairly well described 147 years ago!

COASTER Is Preventable

High central nervous system CRH, and the resultant high blood Cortisol, levels are killing us and are preventable, if and only if the population density stressors causing COASTER are understood and addressed with proper interventions and life-style changes, which will be spelled out, in detail, in the following pages. Shall we start with the number one killer of modern urban and suburban humans, which is heart disease, as noted earlier in this topic?

Back to Heart Disease

At the risk of repetition, atherosclerosis (or hardening of the arteries or coronary artery disease) is the number one cause of death in America (404,140 out of 242 million adults in 2014 per National Center for Health Statistics).

The American Heart Association and American Stroke Association recently released a report entitled "CARDIOVASCULAR DISEASE: A COSTLY BURDEN FOR AMERICA, PROJECTIONS THROUGH 2035". In their report they state that 41.5% of the US adult population have some form of cardiovascular disease and that the number is expected to increase to 45%, or 131.2 million, by 2035!

High blood pressure alone is currently diagnosed in 96.1 million Americans, 30% of our adult population. By age 65, 80% of us have some form of cardiovascular disease! Please refer to this report online for further breakdowns by age, ethnicity, etc. So, what is the cause of this modern American epidemic of cardiovascular disease?

Enter Drs. Katz and Stamler

The reader may recall that we promised more about two physicians at Michael Reese Hospital in Chicago, working with nonhuman experimental animals in the late 1940's and early 1950's, who published their results in book form as *Experimental ATHEROSCLEROSIS* in 1953. The authors, Louis Katz, M.D., M.A., and Jeremiah Stamler, A.B., M.D., stated on pg. 233:

“Considerable attention has recently been focused upon the possibility that adrenal cortico-steroids (including Cortisol or its close cousin in rabbits: cortisone) may induce vascular injury or may be otherwise involved in the pathogenesis of vascular sclerosis” (underlining and parenthetical mine).

They go on to point out the well-known pathological observation that:

“clinical endocrine disorders characterized by excessive secretion of adrenal steroids (e.g., Cushing’s disease) tend to exhibit considerable atherosclerosis at autopsy”.
(underlining and parenthetical mine)

And, finally, they state, on pg. 241:

“The data of this experiment indicate that cortisone (Cortisol=Hydro-cortisone) definitely potentiates atherosclerosis when accompanied by an atherogenic level of cholesterol intake.” (underlining mine)

So, add COASTER (chronically over-activated Stress Response), with its elevated corticosteroid (Cortisol) blood levels, to a high fat diet with plenty of saturated fat and cholesterol, and we get atherosclerosis, heart attack, vascular dementias, and stroke. The same result has been found in numerous naturalistic field studies of wild baboons, rats, etc. The reader may recall Dr. Donnison’s statistics on rural Kenyans he and his British physician colleagues examined in 1932, when they were unable to find a single case of atherosclerosis among their 238,538 patients.

Robert Sapolsky’s studies of stressed baboons, particularly those with low status, are well reported in his very readable book, *WHY ZEBRAS DON’T GET ULCERS*, 3rd

edition, 2004. Heart disease and atherosclerosis is especially well covered in chapter 3, "STROKE, HEART ATTACKS, AND VOODOO DEATH", under the subheading "CHRONIC STRESS AND CARDIOVASCULAR DISEASE", pages 41-49.

COASTER and a HIGH FAT DIET

Let us repeat, COASTER and a high fat diet result in atherosclerosis, heart attack, and stroke. COASTER alone, even with a low fat diet, has the same effect, but the gridlocked medical-governmental-academic-media establishment has yet to inform the American or world public, or move to develop and publicize programs to normalize this excessive stress, COASTER.

However, billions of dollars are spent annually by terrified Americans to reduce blood cholesterol with expensive medications, even with their serious side-effects, fueling drug company profits. More on how to self-regulate stress (COASTER), over activity of the sympathetic nervous system, and high stress hormone levels, later in this book.

Mind Your Heart,...

Even Harvard cardiologist Dr. Herbert Benson's 2004 book, *Mind Your Heart, A Mind/Body Approach to Stress*

Management, Exercise, and Nutrition for Heart Health, shows little evidence of knowledge of the endocrine causes of coronary artery disease, which the attentive reader should have just absorbed. Dr. Benson's book shows only a superficial and limited treatment of the physiological Stress Response, otherwise covered in detail herein. Our critique of his book goes much further, but we need to return to the more relevant and detailed work of his 20th century predecessors.

Type A BEHAVIOR AND YOUR HEART

Finally, many readers may recall the well-received book published in 1974, *Type A BEHAVIOR AND YOUR HEART*, by San Francisco cardiologists Friedman and Rosenman, which describes the results of decades of research into the personality type prone to coronary artery disease and heart attack, which they accurately called an "epidemic" in 1974. Today, coronary artery disease holds the top spot as the most effective destroyer of human lives in our "developed", "industrialized", "modern", Western urban societies.

Drs. Friedman and Rosenman

The good doctors Friedman and Rosenman attempted to define a distinct personality type prone to heart attack before age 70: “a particular complex of personality traits, including excessive competitive drive, aggressiveness, impatience, and a harrying sense of time urgency.” Their Type A cardiac patients seemed “to be engaged in a chronic, ceaseless, and often fruitless struggle—with themselves, with others, with circumstances, with time, sometimes with life itself.” However, they found the Type A personality type in 50-60% of a group of 2,500 randomly selected otherwise normal Federal employees recruited for study in San Francisco! We believe they were describing our increasingly ubiquitous COASTER phenomenon!

In Friedman and Rosenman’s mostly forgotten book, they questioned the currently popular drug company promoted hypothesis that elevated serum cholesterol and other fats were the primary cause of coronary artery disease, as stated on page 52:

“But there is some question whether we can simply blame cholesterol alone for producing the coronary lesions that may be present in an adult whose serum cholesterol is normal or only moderately elevated (250 to 275 mg./ml.). Indeed we may be quite wrong in so

doing, because now we know that moderate elevations of the serum cholesterol frequently occur when certain other noxious agents (cortisol?) are at play in the human body. The question is the old familiar one: how do we distinguish a symptom (chest pain, heart attack, stroke) or sign (elevated cholesterol, abnormal EKG) from a cause (COASTER?).” (parentheticals and underlining mine)

This is the scientific conundrum of mistaking “correlation” (i.e., two things occurring at the same time) for “causation” (i.e., one thing makes another happen). Just because two things can be measured in the same place at the same time does not necessarily indicate that one caused the other.

We, however, believe that we have assembled an adequate amount of supportive information in this book to demonstrate, beyond a shadow of a doubt, that COASTER causes human disease, including cardiovascular disease.

NERVE TROUBLES,...

Another forgotten historical reference by a practicing English physician associating heart disease and neurasthenia with worry and the hurried lifestyle of his countrymen is

the 1929, *NERVE TROUBLES, CAUSES AND CURES*, by Cecil Webb-Johnson, M.B., Ch. B., in which he stated on pages 4-5 the following prescient observations:

“Next to worry as a cause of nerve weakness (i.e., neurasthenia) comes hurry. To avoid hurry is essential to the busy man or woman. The great men of the centuries past were never in a hurry, and that is why the world will not forget them in a hurry. A man who is always in a state of haste and excitement is an incompetent man and his work will be badly done. In addition, he does not get through the same amount of work in a given time as the man who takes things calmly, but at the same time concentrates. Furthermore, hurry has a clearly debilitating effect upon the tissues, and may in time injure the heart. The business woman should most particularly heed this warning, for her sex has, as a rule, less power of concentration than a man (sic), and is apt to expend its energy on a multitude of channels, diving from one thing to another in an endeavor to cope with the day’s work (suggesting, perhaps, the good woman might benefit from more assistance from her husband, children, and kin?!). Hurry and hustle are the foes, not only of good, satisfactory work, but of the nerves and brain. In his

famous address to the students of Yale, Sir William Osler said: ‘One of the saddest of life’s tragedies is the wrecking of the career of young collegians by hurry, hustle, bustle and tension—the human machine driven day and night as no sensible fellow would use his motor’.” (underlining and parentheses mine)

Not So Fast, Mr. Gleick

Interestingly, the famous New York author, James Gleick, in his 1999 top seller *Faster, The Acceleration of Just About Everything*, begins his forgettable but well written exploration of time keeping by critiquing Friedman and Rosenman’s work and the concept of “stress”. However, he never makes any other attempt to define the health effects, good or bad, of “hurry sickness”, which the San Francisco cardiologists made a laudable attempt to do!

Sadly, neither Friedman, Rosenman, nor Gleick show any evidence of having read or researched any of the 100 other authors mentioned in this current book, the true stress researchers, so often overlooked by near-sighted, status seeking modern authors, including medical doctors.

Addison's Disease and Cushing's Syndrome

To provide further historical context, Dr. Beard's patients in 19th century New York City, and the patients described by Dr. Addison in England in 1855, demonstrated most of the same symptoms that are, today, treated by physicians for the diagnoses of Cushing's syndrome (hyper--adreno-corticism: high Cortisol levels, and inevitable coronary artery disease) and Addison's disease (hypo-adreno-corticism: low Cortisol levels, and no increased coronary artery disease).

Earlier, we discussed the symptoms and mechanism of overproduction of Cortisol in Cushing's disease, however, the far more prevalent idiopathic adreno-cortico hyperplasia (aka "Cushing's syndrome") and its inevitable result, hyper-cortisolism (elevated blood cortisol), are followed, by the equally inevitable idiopathic adreno-cortical failure, "adrenal fatigue", or Addison's syndrome.

These are potentially life-ending conditions, if not treated. More on adrenal fatigue later, TOPIC 27. This sequential progression of COASTER is powerfully illustrated by the adrenal gland slices pictured on the FRONT COVER of this book.

COASTER by Another Name

The all-important take away point here is that physicians who treat patients suffering from our ubiquitous “diseases of civilization”, including “Hurry Sickness”, have been describing many of the symptoms and signs of COASTER for over 145 years, during a seven times increase of our population and increased urbanization. However, modern medical education never mentions these far more common and equally dangerous endocrine conditions, which are the well described and experimentally verified causes of the top ten killers of modern humans. We must ask: “Why not?”.

We are overly stressed, almost totally unaware of it, haplessly addicted to it, and modern medical providers do not recognize the under-lying problem, inform their patients, or treat the true cause. However, our physicians recognize the signs and symptoms of the diseases of civilization and are proficient in prescribing 4.3 billion medications per year to keep them under control and keep us alive. This ever increasing financial burden has now reached \$3 trillion and consumes 18% of the GDP. So, again, what is making us sick and killing us in spite of our \$3 trillion outlay?!

We are living and dying through this 20th and 21st century's epidemic of stress related disease, as our recent ancestors were during the 19th century's neurasthenia and nervous exhaustion, and we are equally ill-equipped to diagnose, prevent, or adequately treat stress disease.

Thus, population density stressors, resulting in COASTER, are killing us, in spite of the increasing dollars we fork over to the medical research and care industry annually in order to escape the Grim Reaper, yet one more time.

DISEASES PECULIAR TO CIVILIZED MAN

In closing this section, we need to cite the work done by the Cleveland surgeon and founder of the Cleveland Clinic, George Crile, MD. In Dr. Crile's 1934 work *DISEASES PECULIAR TO CIVILIZED MAN, Clinical Management and Surgical Treatment*, he described on page 4 of his Introduction the following:

“Evidence is presented tending to show that these diseases (hyperthyroidism, nervous exhaustion or “soldier's heart”, peptic ulcer, and diabetes) are due to the operation of the energy system (i.e., COASTER) which, although it has endowed man with his power and glory, has also punished him with certain

infirmities, which now threaten the occasional man and vaguely point to the extinction of his species; for evolution may be the curse as well as the blessing of civilization.

We propose the control of this excessive activity of the kinetic system (COASTER) by rationalization, and if this is insufficient, by the performance of one or more of the following operations, either singly or in combination, namely, the removal of the thyroid, the excision of certain sympathetic ganglia, or the division of the nerves leading to the adrenal glands.”

(underlining and parentheticals mine)

We have been informed that the Cleveland Clinic was endowed with funds generated by just such surgical procedures to relieve the medical consequences of COASTER, especially surgical removal of enlarged thyroid glands—Goiter.

Sadly, Psychoanalysis

Sadly, American neuro-psychiatry was entering into the “modern” age of psychoanalysis at the turn of the last century, led by the brilliant nicotine-fueled neurologist and pioneering psychoanalyst Sigmund Freud, MD. We say

“sadly” because interest in further research into the mechanisms of the admittedly poorly described conditions of neurasthenia and nervous exhaustion ground to a halt with the rush to the more fashionable fad of the moment: psychoanalysis and its theoretical psychological bases of psycho-sexual conflicts and the curative method of psychoanalysis. More will be said about this sudden transition in focus later on in this work. Now, on to masturbation, close to the seat of all our problems, or not?

Masturbation

In concluding this section on early stress researchers, a quote from Smith Ely Jelliffe’s and William Alanson White’s iconic 1915 psychiatry textbook, *DISEASES OF THE NERVOUS SYSTEM, A TEXT-BOOK OF NEUROLOGY AND PSYCHIATRY*, to be found under the heading “**Neurasthenia**”, on page 621:

“It is better to consider neurasthenia as the expression of a very marked auto-erotic fixation, as a return to that infantile period of development in which the child takes a preponderating interest its own body. Masturbation is quite liable to be indulged in as a means of auto-erotic satisfaction but the physical act of masturbation is perhaps relatively unimportant as

compared with the crippling effects of the auto-erotic introversion.

This condition is known as a primary fatigue neurosis (or neurasthenia) and has certain quite characteristic and constant symptoms which are in the main a feeling of pressure on the top of the head, more or less insomnia, spinal irritation, with perhaps pain in the back, certain paresthesias, easy fatigability, emotional irritability, and some depression.

This condition (i.e., neurasthenia), despite outward evidence to the contrary, has been traced in most instances where careful analysis of the symptoms has been made, to a specific etiology, namely to excessive masturbation or frequent pollutions." (underlining and parentheticals mine)

We would have preferred that medical practitioners at the time would have spent less time talking with their patients about their masturbatory behaviors and "frequent pollutions" (?) and more time focused on neurasthenia (stress research), as initially delineated by Drs. Beard and Mitchell. This really is a wonderful example of how easily "science" can allow itself to be led astray into yet another "just so" story.

But, then, we've always had more fun talking about sex than carrying out the hard work of understanding how stress could be the underlying cause of all our patients' health problems.

Seriously, our early progress in understanding the role of stress in creating multiple symptoms of disease was derailed by Dr. Freud's profound influence on early mental health practitioners and researchers, who were erroneously preoccupied with infantile sexuality and the good Dr's. genius for making up fascinating stories to support his theories. Today, we refer to such stories explaining symptoms, without a shred of testable evidence, as "just so stories". Such made up stories make for entertaining novels and movies but have little to do with the hard work of verifiable, testable scientific theories of disease.

Now, let's move on to treatable dementias: also known in plain language as "short-term memory loss". But, then, if medical science always depended on plain language, what need would our patients have of us "experts"?! HmMMM.

6. TREATABLE DEMENTIAS and the MYTH of “ALZHEIMER’S DISEASE”

Our clinical experience, which was not a “double-blind placebo controlled” scientific study (i.e., the currently accepted bullet-proof standard for “scientific” studies), but a 40 year series of 25,000 individual case studies, led us and our patients to the conclusion that 4 types of short-term memory loss (i.e., primary feature of “dementia”) were often easily treatable and reversible, although this does not hold for the vascular or traumatic dementias.

Dr. Alzheimer, after all, defined a syndrome (a collection of findings observed repeatedly in patients exhibiting similar symptoms) of a triad (3) of findings: short-term memory loss in life and histo-pathological (cell damage, studied under a microscope) findings of “amyloid plaques and fibrillary tangles”, actually signaling little more than cellular death. These damaged nerve cells, in the brains of patients known to have suffered from short-term memory loss (“dementia”) prior to their deaths, lacked evidence of a full-blown well-defined “disease”, by modern terms. To date, no one causative agent has yet been found, in spite of billions of taxpayer dollars spent on research!

So, where did the misnomer “Alzheimer’s disease” originate, if not in the strictly “scientific” medical literature? Well, the good doctor misidentified his findings as “a peculiar disease” initially, but it certainly is a misnomer that has well served the financial interests of

“Extended Care”, “Assisted Living”, “Alzheimer Unit”, memory enhancing drug industry, and other care-taking business partners. It’s now a trillion dollar business and a real “growth industry”. Recent expensive failures of silver bullet drugs developed to remove beta-amyloid have shown a light on the deficiencies of the 25 year old “amyloid hypothesis” to explain the causation of AD.

Most Cases of Short-term Memory Loss Cured

However, we discovered that most cases of short-term memory loss could be reversed with restoration of one or more of four common bio-chemicals, classified as “transcription factors”. These biochemical play a critical role in the process of copying DNA to m-RNA (i.e., “transcription”) and initiating the synthetic chain for making new proteins and enzymes: the engines of life. These four critical transcription factors are: (1) the sex hormones (estrogen and testosterone), (2) Vitamin B12, (3) thyroid hormones, and (4) Cortisol.

We worked closely with obstetric and gynecological specialists to safely restore estrogen levels in post-partum depressed, and demented menopausal women, which commonly restored short-term memory and normal mood.

As estrogen is known to promote cancer growth, careful monitoring is necessary. More on post-partum depression coming up in TOPIC 14, as well as breast cancer in TOPIC 45.

Dementias in men were frequently corrected with restoration of testosterone levels, which could often be accomplished with the over-the-counter nutraceutical DHEA (dehydroepiandrosterone), instructions for the safe use of which can easily be found on the net and in Dr. James Wilson's self-help book, *Adrenal Fatigue*, 2001. Negative effects of elevated testosterone blood levels enlarging the prostate gland and promoting prostate cancers must be considered as well.

Restoring **Vitamin B12**

Vitamin B 12 (in concert with Folic acid) is, also, necessary for proper memory and mood functions, among many other important functions, but blood levels of this vitamin rarely identify deficiency states in our experience. Remember, which your physician may not in his or her insurance company and administrator driven rush to see another patient every 8 minutes, blood levels of most substances may not be an accurate assessment of total body levels or tissue levels. Furthermore, the digestive problems common in stress disorders, caused by the

sympathetic branch of the autonomic nervous system discharging and paralyzing the stomach while stimulating bowel emptying, may disrupt adequate B12 absorption, requiring restoration of normal tissue (not just blood) levels, and requiring vitamin B12 I.M. (intra-muscular) injections to restore memory and mood. This may be particularly true since we moderns constantly flush our guts with detergents, antacids, and anti-biotics. B12 biosynthesis by bacteria in the small intestine is known, but probably not adequate for most of us moderns and we still need exogenous sources of this critically important vitamin.

Restoring **Iodine and Thyroid Hormones**

Thyroid hormones (T3, T4) are, also, necessary for short-term memory function and healthy mood, but some geographical areas have no iodine in the soil, which is necessary for thyroid hormone synthesis. Thus, residents of such areas may not have adequate dietary iodine, unless eating foods from outside the area rich in iodine and using iodized table salt. Taking a daily supplement of the iodine-rich seaweed "kelp", in an inexpensive tablet form, available in every health food store, will correct this cause of short-term memory and mood impairment. Kelp, also, contains numerous trace elements necessary for vital functions. Iodized table salt is, also, a source of iodine, but many of

us are on low salt or no-salt diets due to our raging epidemic of high blood pressure: 30-33% of all adult Americans, as cited earlier.

Restoring **Cortisol**

Finally, adequate tissue levels of Cortisol, unavailable with adrenal fatigue, are necessary for normal memory function. Recall that with Adrenal Fatigue, Cortisol levels, along with mineralocorticoid (which support blood pressure), and possibly 16 other adrenal steroid hormones, are low. DHEA supplements can help restore Cortisol (and sex hormone) blood levels, but rebuilding normal adrenal gland function according to a treatment program worked out with a knowledgeable healthcare provider is the ideal solution to this problem.

Temporarily elevated Cortisol blood and CSF (cerebral spinal fluid) levels, also, improve short-term memory, but chronically elevated levels (COASTER) impair it, so we don't want to go into that written test highly stressed, after days of "cramming", only to draw a blank on material we just studied and had down pat, so take a day or two off and relax before taking that important test. The daily physiological blood level ("diurnal") swing in Cortisol levels, also, explains why we don't recall our dreams. Cortisol washes the blackboard (if anybody recalls what a

blackboard was!) just as we are awakening, when levels are highest. Can't recall the dreams you were just having before awakening? This is why.

Daily Cortisol Cycle

In our natural diurnal (daily) cycle, blood Cortisol levels are typically low throughout the day, rise rapidly around 3AM, peak on awakening, and fall rapidly mid-morning, unless we are being continuously re-stressed by the wide range of stressful stimuli ("population density stressors"), which will be identified later in this book. Then, Cortisol levels are high all day long (COASTER) and into the evening, which results in the main cause of our insomnia epidemic. More on this later.

The two middle adrenal gland slices on the FRONT COVER demonstrate this high output state, resulting in "essential" hypertension (high blood pressure), as a result of a chronically over-active stress response, COASTER. In fact, these images provide iron-clad evidence of the correlation between COASTER, adrenal cortex enlargement, and high blood pressure, although we already know that the neurochemical mechanisms are far more complex than this simple picture.

Again, adequate Cortisol levels are necessary for normal short-term memory function. In the large population of

mostly undiagnosed patients with adrenal fatigue (one of whose failed adrenal gland slices can be seen on the far right of the series on the FRONT COVER), who can no longer produce adequate levels of Cortisol, dementia, clinical depression, chronic fatigue syndrome, and “auto immune” diseases result. Consulting a naturopathic physician, chiropractic physician or other holistic health care professional, and following the nutritional advice in Dr. James Wilson’s book, *Adrenal Fatigue*, can restore the health and function of the adrenal cortex. We’ve done it, and so can you!

So, an editor of this paper (which seems to include everyone who reads it!) may ask, why include a section on dementia, in a book on stress? Well, Cortisol, when elevated over lengthy periods, COASTER, further disrupts normal digestion, causes peptic ulcers, and contributes to poor absorption of Vit. B 12. COASTER suppresses the production of the pituitary hormone GNRH (gonadotropin releasing hormone--more about the population lowering significance of this later!) controlling the production of the sex hormones, estrogen and testosterone. This is central to the suppression of reproduction in crowded mammal populations, which is thoroughly explored elsewhere in this book. Cortisol suppresses the production of the pituitary

hormone TSH (thyroid stimulating hormone) that stimulates the thyroid gland to produce thyroid hormones necessary for normal mood, memory, and energy metabolism; and, paradoxically, too much or too little Cortisol directly causes short-term memory loss and mood problems.

Wouldn't it be a shame if we didn't need a sizeable number of all those nursing home Alzheimer's beds and a large portion of general hospital beds after-all!

7. STRESSED-OUT IN THE WOMB, DEVELOPMENTAL SPECTRUM DISORDERS: ASPERGER'S, AUTISM, SCHIZOPHRENIA, ADD/ADHD, and LEARNING DISORDERS

We may not need to call the reader's attention to the alarming increase in "Autism Spectrum" and Developmental Disorders in America, but we thought a few statistics from the CDC (Centers for Disease Control and Prevention) necessary to begin this topic. A major theme of our

medical mystery book is how rapidly our population is becoming sicker, in spite of the Herculean efforts of the medical, educational, and public health communities to the contrary.

According to the CDC's 2015 report: "Key Findings: Trends in the Prevalence of Developmental Disabilities in U.S. Children, 1997-2008", we find the following:

"Data from the study showed that developmental disabilities (DD's) are common: about 1 in 6 children in the U.S. had a DD in 2006-2008. These data also showed that prevalence of parent-reported DDs has increased 17.1% from 1997 to 2008."

Further on in the report, the authors state:

- "Over the past 12 years, the
- Prevalence of autism increased 289.5%;
- Prevalence of ADHD increased 33.0%"; [...]
- Males had twice the prevalence of any DD than females...; [...]
- Children from families with income below the federal poverty level had a higher prevalence of DDs."

This report, available on the net at </ncbddd/index.html>, also, states that ASD is 4 ½ times more common in boys (1 in 42) than among girls (1 in 189) (underlining and parentheses mine)

Perhaps most important of all is the statistic that ASDs have nearly tripled in the past decade.

Cortisol Is Neurotoxic at High Levels

In other sections of this book, we have learned, or will learn, that Cortisol is neurotoxic (kills nerve cells) in high levels and over extended periods of exposure, as with COASTER. Bruce McEwen, PhD, co-authored 2 scientific papers in 1995, which you can search for on the Web, describing the neurotoxic effects of stress (no doubt due to elevated Cortisol levels) on hippocampal neurons (see the two facing sea-horses on the BACK COVER, the hippocampi), which are critical for memory and mood. Prof. McKewen published now frequently reproduced photomicrographs of these hippocampal nerve cells before and after stress exposure, dramatically illustrating the damage caused by COASTER: side by side the reader sees a healthy tree-like nerve cell next to a withered, “pruned” nerve cell with far fewer branches. A picture really is worth a thousand words and the reader can easily find

McKewen's iconic image of the neuron damaged by stress on the net.

In their 1982 paper in *Developmental Psychobiology*, 15(5): 461-470, Burgess and Coss reported their findings in: "Effects of Chronic Crowding Stress on Midbrain Development: Changes and Morphology in Jewel Fish Optic Tectum", stating:

"This study investigates the effects of a biologically relevant stressor, crowding, on the development of neurons in the major teleostean (i.e., fish) brain area, the optic tectum. ...crowding significantly decreased the density of dendritic spine formation on apical dendrites of pyriform interneurons in the basal region of the tectum..." (underlining and parenthetical mine)

Bottom line from this early study of developing fish brain: population density stress (our term in this book for "crowding stress") prevents normal, healthy brain cell development in young fish.

J. J. Christian, in his 1971 paper, contained in Ian McLaren, ed., *Natural Regulation of Animal Populations*, makes reference to another paper by E. Howard, *Federation Proc.*, 22, 270 (abstr.) (1963), and states on page 75:

“Particularly interesting in this regard (the effects on reproduction of crowding) is the observation that increased concentrations of corticosterone may permanently affect the development of the brain in mice.” (underlining mine)

Sadly, this obscure paper is not deemed important enough by the powers-that-be to include it in Google Scholar.

So, what does this effect of elevated maternal stress (Cortisol) on the developing fetal brain cells have to do with our epidemic of neurodevelopmental disorders in children? Let’s look further at what’s happening in the brains of unborn babies in their mother’s womb, when mom is experiencing COASTER, subjected to population density stress.

Maternal Stress

Another group of stress researchers have been studying the connection between maternal stress, elevated maternal stress hormone (Cortisol) levels during pregnancy, and the development of post-partum mental health problems in the children of these stressed mothers. Numerous follow-up studies, conducted after stressful events in the lives of pregnant women, especially during the first trimester of

pregnancy, such as wars and natural disasters, have demonstrated significant elevations in the subsequent rates of neurodevelopmental disorders among their children.

Maternal Cortisol elevations in the much less precarious 3rd trimester have long been known and are thought to be consistent with healthy outcomes and parturition (birth). It's the early, 1st trimester exposure that we are concerned with here.

For a review of this literature, including multiple references to multiple studies, see Marta Weinstock, PhD, "The long-term behavioral consequences of prenatal stress", *Neuroscience and Biobehavioral Reviews* 32 (6): 1073-86. Her findings are summarized in the Wikipedia entry on the "hypothalamic-pituitary-adrenal axis", pg.4, under the heading "Prenatal Stress":

"In humans, prolonged maternal stress during gestation (pregnancy) is associated with mild impairment of intellectual activity and language development in their children, and with behavior disorders such as attention deficits, schizophrenia, anxiety and depression; self-reported maternal stress is associated with a higher irritability, emotional and attentional problems (in the newborn)." (underlining and parentheticals mine)

“Critical Periods”

Finally, we need to understand one important use of the concept, from Developmental Biology, of “critical periods” in early intra-uterine development, especially in the nervous system.

In our use of the term, critical periods are exact times in the sequence of development of a specific organ during which that organ or organelle either develops further, under the influence of certain physical-chemical “induction signals”, or does not. However, if an organ or organelle does not develop during the appropriate critical period, it may never develop. Biology and medicine are full of examples of the tragic outcomes of such blocked development during critical periods, including spina bifida, cleft palate and hair lip, as well as the thalidamide babies born with undeveloped limbs, and more recently Zika induced microcephaly, etc.

Why couldn't the same mechanism of a disrupted or missed critical period due to high Cortisol levels in the mother's blood during the 1st trimester, thus passing into the developing fetal brain, cause similar missed steps in the developmental sequence of brain nuclei (bundles of nerve cells with specific functions)?

In the Realm of Hungry Ghosts

Vancouver based Family Practice and Addiction Medicine practitioner and author, Gabor Mate', MD, has written extensively on the addiction research of numerous colleagues and presents that work at length in this 2008 book. "So what?", the observant and ever-critical reader may say.

Fortunately for us, Dr. Mate' is from that same region of the ever-skeptical world, Hungary, that my great-grandmother and Dr. Hans Selye were born and raised in. In his heretical tome, he accurately questions the "genetic" hypothesis of disease, including his main focus on addiction. Most importantly for this section of our book, he focuses his hypothesizing on the negative effects of elevated Cortisol levels upon the developing brains of unborn children, in the womb, who are destined for lives plagued by addiction.

Dr. Mate' states on pages 215-216 of his 2008 book the following summary:

"Numerous studies in both animals and humans have found that maternal stress or anxiety during pregnancy can lead to a broad range of problems in the offspring, from infantile colic to later learning difficulties (ref) and the establishment of behavioral

and emotional patterns that increase a person's predilection for addiction. Stress on the mother would result in higher levels of cortisol reaching the baby; and, as already mentioned, chronically elevated cortisol is harmful to important brain structures especially during periods of rapid brain development (in the 1st trimester)." (underlining and parenthetical mine)

Wait a darn minute, didn't we just speculate the same thing! Thank you, Dr. Mate'!

Now, summarizing, all we have to do is combine these three data streams into one big hypothetical river: (1) maternal stress may lead to elevated blood levels of neurotoxic stress hormones passing through the placenta and into the fetal brain during pregnancy, which, if occurring (2) during critical periods in the development of embryonic or fetal brain infrastructure, in the first trimester, are neurotoxic, and (3) disrupt or even prevent the normal development of brain structures critical to mental health in later life. These three factors, then, may be responsible for the rapidly rising flood-tide of neuro-developmental disorders that we are experiencing first-hand in our population today, including the explosion of Autism Spectrum Disorders, learning disabilities, and addictions.

THE EVOLUTIONARY NEUROETHOLOGY OF PAUL MacLEAN

In their 2002 book, edited by behavioral ecologist Gerald Cory, Jr., and psychiatrist Russell Gardner, Jr., can be found child psychiatrist James C. Harris' chapter, "EMPATHY, AUTISM, AND THE INTEGRATION OF THE TRIUNE BRAIN". On page 162 we found the following description of the autopsied brains of 9 individuals diagnosed in life as autistic:

"In all 9 brains the forebrain abnormalities were confined to the limbic system (emotional brain). The neurons in the hippocampal fields, CA 1-4, subiculum, entorhinal cortex, mammillary bodies, amygdala, and medial septal nucleus were abnormally small and more densely distributed than in age and sex-matched controls. When Golgi (stain) methods were used to demonstrate neuronal processes, the neurons in hippocampal CA 1 and CA 4 regions showed reduced complexity (just like those in Bruce McKewen's researches published in 1995) and in the extent of their dendritic arbors (tree-like branches)."

Further, on the same page, he adds:

"...although their report is descriptive, their neuropathological findings are consistent with the

origins of infantile autism being in the prenatal development of the brain, with ongoing pathological processes that persist into adult life." (underlining and parentheses mine)

Unfortunately, Dr. Harris, although initially willing to look at a draft of this book, refused to communicate further after perusing the on-line version and reading the Foreword. Apparently, this child psychiatrist was not much interested in a book that confronts the issue of the neurological consequences of human overpopulation head-on (pun intended), including one that strongly suggests our limiting family size to one child. Thinking too far outside the box of traditional psychiatric training for the good doctor? Ironically, both John B. Calhoun and John J. Christian studied and received their doctoral degrees at Dr. Harris' Johns Hopkins University.

The attentive reader will recall that Cortisol is neurotoxic in higher concentrations and may well be the cause of the in utero shrinking, compacting, and pruning of these vulnerable neurons. Furthermore, he or she may recall Bruce McKewen's published images of neurons from stressed animal brains demonstrating the loss of complexity or "pruning" of dendritic arbors (i.e., nerve cell branches) in the hippocampus. Is this picture coming together for

you? It certainly is cause for further investigation, if nothing else. PhD anyone?

Preventing Neurodevelopmental Disorders

Thus, prevention of neurodevelopmental disorders may require a civilization-wide reassessment of the stress hormone levels in pregnant women, particularly in the first trimester. We need to pay attention to and provide the environmental conditions necessary to normalize stress hormone levels in the mother and the developing embryonic fetal brain, as well as undertake our voluntary effort to reduce human populations on earth with one-child families.

Another negative consequence of COASTER in the developing child's brain following birth is the potential disruption of normally developing nerve connections from the neocortex caused by high Cortisol levels (the newer outer covering of the brain—the convoluted outer layer in the illustration on the BACK COVER). These connections develop during the first 18 months of a newborn's life and provide, primarily, excitatory inputs to the limbic system's inhibitory GABA (gamma amino-butyrac acid) releasing interneurons, which, thus, provide inhibitory control over the

primary emotional responses of the more ancient limbic “survival” brain.

A newborn child’s developing brain bathed in neurotoxic levels of Cortisol (COASTER) does not develop healthy inhibitory inputs from the neocortex and overly impulsive teenagers and adults result. Such individuals “act before they think” and fill up our jails and prisons. Dis-inhibiting substances of abuse are all the more dangerous when used by these already impulsive individuals. So, COASTER is filling up our jails and prisons.

The reader interested in this subject may wish to read the work done by Allan Schore and Daniel Siegel, which is nicely summarized in Richard O’Connor’s 2005 *Undoing Perpetual Stress*.

“Collateral Damage” of Endless Wars

Needless to say, excessive maternal stress is a particular problem in war-torn populations, often forced into long stressful migrations to escape danger, and during environmental catastrophes, including drought, food shortages, etc.

Pregnant women and young mothers must not be subjected to excessively stressful environments and, quite to the contrary, must be provided with all the psycho-

social supports necessary for the normal functioning of their stress systems. Family leave should be mandatory, if we want healthy, productive children for the next generation.

The fateful alternative, leaving pregnant women and newborn children in overly stressful circumstances, will surely result in further increases in new generations of mentally-ill, overly emotional, impulsive children and adults. Such Cortisol induced in-utero brain damage can only result in further unnecessary increases in expensive care-taking bureaucracies, mental health centers, jails, prisons, civil unrest, wars, addiction problems, and psychiatric hospitals.

Well, now that we've solved the stress induced early neuro-developmental piece of this mystery, what about the role of sudden dramatic changes in our lifeways in causing our mysterious epidemics of sickness and death?

8. CLAN-LIVING HUNTER-GATHERERS

Archaeologists, social anthropologists, and pre-historians have shown that we are descended from clan-living hunter-gatherers, who lived sustainably in groups of under 100 occupying a small cluster of semi-permanent often communal dwellings. These communal dwellings housed

multi-generational family groups or whole clans and often surrounded a common ceremonial dwelling. We are communal creatures, “pack” animals, similar to the furry canine companions we adore, and who howl plaintively throughout the day when left alone.

Children of the Clan

The ability of such clan social groups to support and protect children was limited, as famine and predators were never far away. However, children were precious to the entire clan and brought their cheery optimism, resilience, and hopefulness to the entire group. No one adult was responsible for the entire round-the-clock care of a single child.

Child-rearing was a shared responsibility of the entire clan and, thus, brought joy, rather than burden, to all involved. However, they had to contend with the ever-present danger of predators, always lurking close-by and waiting for just the right moment to swoop in and grab an unattended infant, with whom the predatory big cat or wolf or hyena would just as quickly disappear into the bush, never to be seen again. Constant vigilance was mandatory, as was constant social engagement, caretaking, and play. No child was ever raised alone and every child was critically important to the clan’s survival.

A Vague Memory of Clan: Small-town America

The lonely, isolated anonymity of modern urban and sub-urban life is a far cry from the life-ways of our ancestors, or even the multi-generational “extended family” farm homestead of our grandparents. Small-town America (or anywhere on earth), where we could walk safely down the main street and greet by first name any of 150 fellow residents, is but a vague memory for most of us urban dwellers or suburbanites, grasping, as we must, the lifeboat of the nuclear family, often desperately clinging to our sole “significant other”, as we sink below the relentless waves of unending stress, doubt, worry, and alienation. It was these courageous, drowning castaways that we struggled to buoy-up for 42 years of psychiatric medical practice, as well as ourselves, of course.

The True Price of Social “Progress”, in the words of the prominent 19th century American physician and author, Silas Weir Mitchell, MD, written 146 years ago :

“How much and what kind of good came of the gradual change in all these (life-way) matters we well enough know. That in one and another way the cruel competition for the dollar, the new and exacting habits of business, the racing speed which the telegraph and

railway have introduced into commercial life, the new value which great fortunes have come to possess as means towards social advancement, and the over-education and over-straining of our young people, have brought about some great and growing evils, is what is now beginning to be distinctly felt." (underlining and parenthetical mine), from *WEAR AND TEAR OR HINTS FOR THE OVERWORKED*, 1871, page 9.

Now, on to a more in-depth study of stress physiology, the psychiatric term "anxiety", the role of the unconscious mind in generating "stress and anxiety" (n.b., they are two words for the same thing), and a critique of the role of Freudian psychology in undermining stress research to this day.

Hopefully, the reader is becoming as engrossed in this unfolding mystery of what's making us so much sicker and killing us off, as all of us writing this book are. Hold on, the plot is about to thicken and deepen as we descend into the true nature of stress, anxiety, fear, and the unconscious mind. Get ready for the ride of your life!

9. STRESS, ANXIETY, and THE UNCONSCIOUS MIND

So, what exactly is the neurophysiological toll on our bodies and minds for this dramatic, sudden change in life-ways and the resulting effects of COASTER, as part and parcel of population density stress?

The single most common psychiatric affliction in the general population is anxiety. And what is “anxiety”, if not the name we use for what we consciously FEEL when our HPA axis (hypothalamic-pituitary-adrenal axis), the Stress Response mechanism, is triggered and the sympathetic branch of the autonomic nervous system is activated, resulting in a 200 MPH electro-chemical impulse racing the 18-20 inches from the limbic system into the brain stem and on into the adrenal medulla. (Please turn to the images of the adrenal glands in the Appendices at the end of this book and on the FRONT COVER, for illustrations of the simple structures of these two fried-egg-like endocrine (ductless) glands perched on top of both kidneys, thus, “ad-renal”= “on top of the kidney”). BAM! “I felt like I was struck by lightning!” Doubtless, the reader has had this experience and most likely more than once.

The “Fight or Flight” Response (aka “Anxiety”)

We know that, when alarmed, startled, confronted by a stranger or authority figure, or threatened by a predator, our hearts start to race, our hands sweat, our skin turns cold and clammy, we blush, our pupils dilate, a knot forms in the pit of our stomachs, the hair stands up on the back of our neck, our muscles tense, our breathing gets shallow, we feel all eyes upon us, and we may even get a powerful urge to run for the door. These are the physical sensations, the feelings, of an activated sympathetic nervous system releasing noradrenaline from millions of nerve endings synapsing with motor cells throughout our bodies, and when adrenaline is being released into our blood stream from our adrenal medullas triggered by that same sympathetic nervous system “rush”. The parent compound of epinephrine is dopamine and it is also released during the fight or flight reaction through the equally ancient meso-limbic pathways and plays an important role in motivation, reward seeking, anger (the “fight” in fight or flight), and positive mood.

This is the source of the fear in us that predatory wild animals can actually smell, the adrenaline on our breath. Again, you may view cross-sections of these glands on the FRONT COVER of this monograph (and in diagram 2,

inside the BACK COVER). The reader may find diagrams of the autonomic nervous systems in the Appendix, as well. But when did scientists first start studying this most common of all human emotional experiences?

Mr. Charles Darwin

This reaction was termed the “fight or flight” response by another one of our scientific heroes, Dr. Walter B. Cannon in 1915, in his iconic *BODILY CHANGES IN PAIN, HUNGER, FEAR, AND RAGE*. However, Charles Darwin described this behavior in his 1873 *THE EXPRESSION OF THE EMOTIONS IN MAN AND ANIMALS*, in CHAPTER XII, “SURPRISE—ASTONISHMENT—FEAR—HORROR”, where, on pages 290-291, he observed:

“The heart beats quickly and violently, so that it palpitates or knocks against the ribs; but it is very doubtful whether it then works more efficiently than usual, so as to send a greater supply of blood to all parts of the body; for the skin instantly becomes pale, as during incipient faintness. This paleness of the surface, however, is probably in large part, or exclusively, due to the vaso-motor center being affected in such a manner as to cause the contraction of the small arteries of the skin. ...perspiration immediately

exudes from it. [...] The hairs also on the skin stand erect; and the superficial muscles shiver.”

On page 292, Mr. Darwin further observes that:

“...there is a sudden tendency to headlong flight; and so strong is this, that the boldest soldiers may be seized with a sudden panic.”

In such an episode, adrenaline (epinephrine) is being released into our blood, as well as endorphins -- opiate-like chemicals produced by the same poly-potent chromaffin cells in the adrenal medulla. Elsewhere, in the central nervous system (CNS), dopamine along with endorphins, epinephrine, and norepinephrine are being released at the same time. The small doughnut of tissue derived from embryonic neural crest stem cells surrounding the obvious “doughnut hole” in the middle of the adrenal gland slices on the FRONT COVER is the “adrenal medulla”.

If we want to scientifically document our activating Stress Response, we only need to measure the precipitous drop in the vitamin C level in our blood when stressed (a good reason to take 1-2 gms. or more in a slow-release form as a daily supplement). We’re certain the reader

knows this anxiety feeling associated with the fight or flight response, or “Stress Response”, firsthand. Yuk! And the statistics show that ALL of us have had at least one panic attack during our lifetimes by age 50.

Our problem is not that we have inherited this Stress Response and its “anxiety” feeling, which originates in the corticotrophin releasing hormone (CRH) neurons of two ancient brain regions: (1) the central nucleus (CE) of the amygdala (an 18 sub-nucleus, thumbnail sized, almond shaped, brain-within-a-brain situated in the ancient Temporal Lobes lying along the sides of the brain), which is well-illustrated as the head of the two facing hippocampi or “sea monsters” on the BACK COVER of this monograph; and (2) the para-ventricular nuclei of the hypothalamus at the base of the brain. The para-ventricular nuclei may be seen as the long white strips on either side of the slit (the 3rd ventricle) right in the middle of the brain illustration on the BACK COVER.

This set of structures is often referred to as the “Limbic System” or “Emotional Brain”, although the hypothalamus is typically not included in the limbic system.

But, to follow our mystery further, why the heck should we have this annoying ancient fight or flight system anyway? Why do we have all of this needless “anxiety”?

Mice Before Men?

What we must remember from high school biology class is our mammalian history. Our earliest mammalian ancestors were subterranean mouse-like or tree-living (arboreal) squirrel-like animals who lived 160 million years ago, but were not unlike their descendants living in our trees and yards today. Think about it, squirrels and field mice are obviously potentially highly stressed prey animals, constantly vigilant, ever on the look-out for predatory dangers, with their darting movements, sudden freezes (very adaptive in a reptile and dinosaur filled world—these earlier animals were instinctively attracted to movement), and quick escapes from our sight on approach. The progeny of these early ancestors lived over a span of at least 100 million years, mostly dodging hungry predatory dinosaurs and reptiles.

But don't we carry many of these same genes today? Yes, and so it's no wonder that we have such a hair-trigger and potentially over-active Stress Response! Does this extended time table help? It certainly did for the thousands of anxious patients we treated and helped to

understand the true origins of their anxiety problems. Knowledge is power! So, why is this ancient self-protective mechanism still so active?

However, our problem today is not the myriad temporary effects of adrenaline and associated endorphins released from that tiny doughnut in the middle (“medulla”) of the adrenal glands, in response to the discharge of the master stress hormone, CRH, and triggered by the many “stressors” in today’s modern “built” world. Neither is our problem the second, slower, hormonal phase of the Stress Response caused by the release of the anterior pituitary gland hormone ACTH (adreno-cortico-tropic hormone), which causes the further release of the adrenal steroid hormones, including Cortisol, from the adrenal cortex. The adrenal cortex is that thick outer-shell layer surrounding the medulla (see greatly expanded cortex in the overactive adrenal glands from hypertensive men on the FRONT COVER).

This crescendo or “waterfall” of stress hormones along the HPA axis (hypothalamic-pituitary-adrenal axis), triggered by a stressor, is naturally self-limited in its temporary actions and, thus, normally turns itself off after the stressful stimulus is removed.

But, What If the Triggers Are Many and Frequent?

This sequence of neuro-chemical events is, indeed, typically experienced as a few moments of “anxiety” or fear, followed by a period of calm, but not as chronic anxiety or worry, unless another stressful stimulus or multiple stimuli are presented over and over, triggering yet another Stress Response, one after another. Again, this crescendo or waterfall of hormonal releases is a relatively new occurrence due to our stressor filled man-made “built” environment and a near constant experience for us modern urban or suburban humans.

Remember our childhood thrills on amusement park rides, when one surprise after another leapt out at us as we rode through a dark tunnel in our little self-propelled car? Maybe we pleaded to ride it again, but maybe not. Maybe we were terrified and threw-up! One episode of controlled fright might have been enough. But, what if we have inadvertently created our own endless amusement park ride and it's making us sick and killing us? Want to get off the COASTER? Want to continue until our mystery is solved?



Nov05#05 Kastner Nailed.jpg (Command Line)

Our Stressor Filled “Built” Environment

We have built an artificial environment, especially in our urban centers but throughout our stressful cultures world-wide filled with stressors that are triggering this Stress Response repeatedly many hundreds of times daily. We refer to these “built” environmental triggers as “population density stressors”, because they increase directly with our numbers, our dramatically changed lifeways, our separation from our ancestral natural environment, and our loss of clan social supports. These stressors result in multiple sequential Stress Responses, or what we call COASTER, the main physiological component of “population density stress”, which is killing us through the “diseases of civilization”.

As environmentalist Karen Shragg would say, we have now moved upstream to the true source cause of all our health problems, as well as our environmental degradation problems! We have finally met the enemy, and he is us: our unnaturally inflated numbers; the unnatural environments we have created to house, feed, and care for our ever-expanding numbers; the unsustainable natural resource depletion necessitated to sustain our numbers;

and the social disruption necessary in the process. All of these make-up “population density stress”.

For the truly curious reader, helplessly fascinated by the behavioral effects of CRF (CRH, these abbreviations are used interchangeably), we recommend Dr. Ned Kalin’s article, Chapter 19, “BEHAVIORAL AND ENDOCRINE STUDIES OF CORTICO-TROPIN-RELEASING HORMONE IN PRIMATES”, pp 275-289, in Souza and Nemeroff’s book, *CORTICOTROPIN-RELEASING FACTOR : BASIC and CLINICAL STUDIES of a NEUROPEPTIDE* , 1990, as well as the many other articles on CRH by leaders in the field. Suffice it to say, for our purposes here, that CRH (CRF) is the master stress hormone, responsible for initiating the Stress Response.

Regulating CRH

All attempts by modern medical scientists to chemically regulate CRH release by blocking CRH receptors have been to no avail so far. However, as the reader will learn in TOPIC 16, the well-known, inexpensive and highly effective blood pressure medicine clonidine already has this effect. Unfortunately, modern allopathic doctors have become so dependent on drug company propaganda, and are so ignorant of the basic science of medicine, that we

rarely think to use clonidine as an anti-stress drug in clinical medical practice.

In reductionist laboratory researcher Jay Schulkin's new book on CRF and its role in addiction, for instance, he never mentions the therapeutic use of clonidine, which is well known to any medical addiction specialist for lessening the severity of rebound hyper-stress withdrawal symptoms in alcohol, opiate, or benzodiazepine addicts. So much for our Federal tax dollar expenditures on addiction research! We will discuss our experience using clonidine to treat our over-active stress responses, whether the result of drug withdrawal or COASTER, in TOPIC 16.

Again, our real meta-problem (the problem behind the problem) is that we have unknowingly created a living environment filled with myriad frequent stressful stimuli (i.e., "stressors"). These multiple triggers, which we group under the title "population density stressors" over-activate the Stress Response resulting in COASTER. Then, when over-stimulation of the gluco-corticoid receptors in the hippocampus, which normally turn down CRH production, causes loss of this inhibition, the CRH neurons run Amok and we overproduce CRH: COASTER. These triggering stressors, in their original ecological context, were

associated with great danger but were relatively rare and infrequent in that former paleo-environment. So, in that hunter-gatherer world of our ancestors, our hippocampus promptly turned off CRH production once the stressor causing the fight/flight reaction had passed. Furthermore, we have inadvertently eliminated the daily rhythms, rituals, and socio-cultural mechanisms that naturally regulated our stress systems, reassured, soothed, and destressed us during and after true, life-threatening, but transient, solitary, rare environmental dangers. Thus, we have created our very own Frankenstein monster: population density stress.

Population Density Stress

These triggers of the Stress Response are detected by an unconscious, ancient limbic sensory system (e.g., the system responsible for blind-sight: visual recognition of environmental obstacles in otherwise totally blind individuals). This limbic sensory system triggers the Stress Response automatically, according to ancient genetically encoded programs dating back at least 225 million years, and including the following Population Density Stressors:

Strange locations; stranger's faces; alarmed facial expressions on our fellow's faces (emotional contagion);

sudden movements of large objects in our peripheral vision; loud, alarming, sudden, unexpected noises (e.g., automobiles, trucks, motorcycles, aircraft, lawnmowers, leaf blowers, string trimmers, vacuum cleaners, chainsaws, police sirens, ambulance sirens, fire sirens, garbage trucks, guns, fireworks, buses, train horns, car horns, “alarm” clocks, appointment “alarms”, screaming humans, barking dogs, loud emotionally disturbing “music”, ringing phones, ringing doorbells, beeping electronica, etc.); and dominance confrontations, occurring at every moment in our daily travels, whether on the highway, the sidewalk, the office, the classroom, the “big-box store” check-out line, or at home, etc.

Pictures Worth a Thousand Words

We call the reader’s attention to John Kastner’s wonderful illustrations accompanying this text for humorous depictions of our “built-world”—a man-made jungle of Stress Response activating audio-visual stimuli or population density stressors. We need to point out that John has shared that he draws these illustrations after his long practiced Za-Zen meditative practice has completely emptied his mind, and, only then, do these images appear and he simply transcribes them. We believe that they

represent images of the “built” world surrounding John and all the rest of us living in contemporary urban environments. John and his wife live in Rochester, NY, but this could be any city world-wide. His wonderful illustrations are accurate depictions of the world our amygdalas are seeing daily and, therefore, triggering our Stress Responses over and over again daily. This is the man-made realm driving COASTER and summed up with our term “population density stress”.

“Appraisal” Appraised

Dr. Richard Lazarus studied this perception-of-stimulus side of the Stress Response and named it “appraisal”, which he determined operates at a conscious as well as unconscious level. Importantly, he conducted studies defining “cognitive”, attitudinal properties which resulted in varying, individualized sensitivities of our Stress Responses. He further demonstrated that we could adjust our attitudes toward, our “appraisals” of, these stimuli and thereby damp down our reactivity to stressful stimuli.

However, for our purposes here, the entire spectrum of environmental stimuli capable of causing an increase in blood Cortisol levels must be considered, irrespective of the nuances of the “appraisal processes”. John Kastner’s

illustrations depict the world our unconscious appraisal process is forced to attend to daily, which is far more complex and triggering on the conscious perceptions Dr. Lazarus has written about.

“WORRY” Is Just a Slobbering Pavlovian Dog

Of great importance is the fact that our fearful ideas (aka “worry”) can become Pavlovian “conditioned stimuli” or learned triggers of the Stress Response. Thus, a worrisome idea can be unconsciously learned to trigger the Stress Response, because it has previously been paired with an unpleasant experience, just like Ivan Pavlov’s famous dogs, conditioned to salivate on hearing a bell, previously learned to announce a meal.

Our near constant mass media propagated threats (so reminiscent of George Orwell’s dystopian novel 1984) of “terrorism”, distant wars televised constantly by Big Brother, imminent global financial ruin, constant worry about the safety of loved ones, constant worry about our health and our ability to afford life-saving care, job insecurity, retirement insecurity, relationship insecurity-fear of abandonment, etc., are all ideas which trigger the Stress

Response, over and over again, day-in and day-out, fueling COASTER and adding to population density stress.

A late 19th century and early 20th century Boston neurologist, George Lincoln Walton, MD, was convinced from his considerable clinical experience with Harvard students that worry was, indeed, at the core of the problem of neurasthenia, which he explained in his 1907 book *WHY WORRY?* On page 15 he wrote:

“Neurasthenia (nervous prostration) has for its immediate exciting cause some overwork or stress of circumstance, but the sufferer not infrequently was already so far handicapped by regrets for the past, doubts for the present, and anxieties for the future, by attention to minute details and by unwillingness to delegate responsibilities to others, that he was exhausted by his own mental travail before commencing upon the overwork which precipitated his breakdown. In such cases the occasion of the collapse may have been his work, but the underlying cause was deeper. Many neurasthenics who think they are “all run down” are really “all wound up”. They carry their stress with them.”

Sorry, Dr. Lazarus, but Dr. Walton was way ahead of you and didn't even mention his work in your 1999 book, *Stress and Emotion*. Don't we recall something once said about history repeating itself, but those of us who don't read the work done by early investigators being forced to repeat it? It was something like that. Now, let's look the worry process directly in its reddened, dark circled eyes.

Worry Apocalypse

We have created a living-environment flooded with these conditioned scary Stress Response activating ideas! Every day in our hectic lives is Halloween! Watched the evening "news" lately, or the 24 hour news cable channels, turned on the radio, or read a newspaper, or gone to a "news" website, or read a "news" magazine, etc. ? Elsewhere in this book we have noted recent research reported in "THE WEEK" magazine documenting our "world now filled with the inescapable distractions of technology", which reveals that we average Americans consume more than 63 gigabytes of media content or 150,000 words during our 13.6 hours of daily media exposure! What the article does not measure is how many of those words are pre-programmed or conditioned triggers of our Stress Response.

No wonder Dr. Beard had blamed the invention of the periodical press (i.e., magazines and newspapers), railroads, and the telegraph for “American Nervousness” in 1869! What would he think about the vastly increased density of these population density stressors in modern “civilized” society, especially with our massive interlinked electronic communications networks? Although flying in modern passenger airplane is statistically safer than driving in an automobile, who among us, having been conditioned by the horrible images of innumerable crashes, compliments of the electronic and print media, isn’t stressed and anxious when we fly, let alone by the inevitable “Homeland Security” TSA pat down at “security check points” before boarding?

As we will find out shortly in this story, if worry isn’t enough to keep us stressed-out, sick and dying, we also have an internal war between our instincts and an environment filled with triggers of our aggressive, hierarchical, territorial, dominance, and erotic impulses, the net effect of which is what Dr. Freud identified as the sole source of “anxiety”. Oh, wait a minute, we’ve already established that anxiety is just the subjective, personal experience of our Stress Response! So, our devil really is

an over-active Stress Response, COASTER. Let's define "Stress Response", once and for all!

+++++

History of the "Stress Response"

This acute "Stress Response" was first studied experimentally by Walter B. Cannon, as the "fight or flight response", but it was the Austro-Hungarian-Canadian physician Hans Selye (pronounced "Sell-yea"), MD, who defined the effects of chronic stress as the general adaptation syndrome ("GAS") in his experimental animals as the triad of (1) gastric and duodenal ulcers, (2) adrenal gland enlargement, and (3) shrinkage of the thymus glands (critical for immune function). Unfortunately, Dr. Selye limited his initiating stimuli to extreme experimentally produced "emergencies" in his tortured rodents including: hemorrhage, introduction of toxic substances under the skin, exposure to temperature extremes, suffocation, etc. He described 3 phases of the GAS: alarm reaction, resistance, and exhaustion.

The GAS

Dr. Selye knew of a role for adrenal corticoid steroid hormones as inhibitors ("glucocorticoids") or promoters

(“mineralocorticoids”) of inflammation , and he summarized his many years of research in a monumental 1950 book, *The Physiology and Pathology of Exposure to STRESS. A treatise based on the concept of the GENERAL-ADAPTATION-SYNDROME and the DISEASES OF ADAPTATION* , 1025 pgs. His laboratory in Montreal initiated and trained a generation of stress researchers and was critically important in popularizing the concept of stress in the media

In fact, Dr. Selye, in 1950, had stumbled on the core theme of this book, stress (COASTER or population density stress) limiting population growth, but, apparently did not recognize its significance, as stated succinctly on pg. 103 of his monumental work, but addressed nowhere else in its 1025 pages:

“Systemic stress brings about the G-A-S due to a coordinated readjustment for defense of the principal biologic functions. Activities not immediately necessary for the maintenance of life during an emergency, such as **growth** (e.g., growth in length of the organism as a whole, anabolism of tissue, regeneration) and the phenomena connected with the process of reproduction (e.g., the development of the male and female gonads, the female sexual cycle and lactation) are inhibited....”
(underlining mine)

Selye's work has been criticized for the non-specificity of the pre-programed, stereotyped nature of his early version of the Stress Response, his GAS. His work has, also, been criticized by cognitive-behavioral research psychologists, such as Richard Lazarus, for lack of definition of "stimulus and response specificity". Indeed, an enormous body of research remains to be conducted in this regard. In fact, the stress response producing potential of most of the already postulated stressors has never been scientifically studied! However, our ability to count how many molecules can fit on the head of a pin grows daily by leaps and bounds! (Please, forgive our occasional lapses into humor, as you will be reminded later in this work, laughter is stress relieving!)

Unfortunately, the good Dr. Selye was unable to apply his research to his own life. In his autobiography, *The Stress of My Life, A Scientist's Memoirs*, he describes a stress filled life, including a packed international lecture schedule that kept him running from one engagement to the next like any other "jet-setter". However, he also describes his scrapes with disability and death: from bilateral hip replacements due to chronic osteoarthritis (resulting from COASTER and adrenal fatigue?), peptic ulcers

(one of the GAS triad!), cancer (also from immune suppression by high cortisol?), and “an emergency prostatectomy”. He, apparently, never had the insight to recognize his own stress diseases or to follow his own research protocols and get a blood Cortisol level, which doubtless would have been pathologically elevated and skewed during the day, until he developed adrenal fatigue and it fell to lower than normal levels causing unbridled inflammation. Instead, Dr. Selye drove himself on mercilessly and rationalized his stress-filled life with the concept of “altruistic egoism”. His writing is a bit unclear as to what this totally made-up construct was composed of. The good doctor abandoned science when it came to justifying and rationalizing his stress-filled life-style. Clearly, he was thoroughly addicted to stress and not about to give-up the neurochemical rewards associated with stress addiction, just like any other good addict.

Beyond Selye and Lazarus

However, the focus of this current book broadly encompasses many parallel topics not previously addressed by Drs. Selye or Lazarus and their colleagues. The material brought together in this current effort is too important to await the admittedly valuable work necessary to fully

describe and define stimulus and response specificity. Furthermore, we suspect that much of the needed specificity will eventually be provided by learning specialists, who will demonstrate how classic Pavlovian conditioning modifies and shapes our individual responses to particular stimuli.

A generalized operational definition, which a researcher can directly measure, of the Stress Response, is found in the well-known symptoms of activation of the sympathetic nervous system: increased heart rate, enlarged pupils, cold sweat (the Galvanic skin response), piloerection (hair standing on end), etc.; and, most importantly, elevated Cortisol levels, will suffice for this work. But what of the good Dr. Freud?

But What Would Dr. Freud Say?

At this point, we should, also, mention the contributions of Sigmund Freud, MD, although I consider the further studies carried out by his pupil, Alfred Adler, PhD and his students (i.e., development of the concept of the inferiority complex, which, in my analysis, results from our instinctual struggles to rise from the lower reaches of status hierarchies-- more on this later), more germane to the subject of stress, which was omitted from Dr. Freud's work on anxiety, studied exclusively within his upper-class Viennese clientele. Dr. Freud's psychoanalytical researches highlighted the constant presence and power of the unconscious mind but restricted the intra-psychic sources and the subjective, conscious experience of anxiety to the efforts of one mental agency, the "Ego" (German for "self"), to resist the unconscious urges of the instinctual drives of the "Id" (i.e., sex and aggression drives) to exert themselves, contrary to the early parental programming of the third mental agency, the "Super-ego" or conscience. Mental and behavioral symptoms are explained as the result of this uneasy internal mental "conflict". He

even sought to distance himself from the, by then, threadbare subject of neurasthenia, in preference for his newer concept of “anxiety” produced by unconscious intra-psychic conflicts, again, mostly of an aggressive or sexual nature.

Psychoanalysis, Stress, and “Anxiety”

Psychoanalysis was Dr. Freud’s preferred, extremely expensive and drawn-out treatment to relieve these conflicts, the symptoms caused by the conflicts, and the anxiety generated by these unconscious conflicts. This very uncomfortable anxiety was thought to be announcing/warning of the threat of repressed sexual and/or aggressive impulses on the verge of bursting through into consciousness and anti-social behavior at any moment, thereby putting the individual at great risk by behaving outside the rules of his or her social group. In Dr. Freud’s view, anxiety was a sort of alarm bell, a very fitting theory for a Victorian age. However, key to the “psychoanalytic method” is the paying customer, the “analysand”, is instructed to allow his deepest thoughts to surface as “free associations”, which can then be analyzed by the “analyst” (i.e., the highly trained and, therefore expensive professional conducting the analysis). Of course, this analysis occurs on the analytic couch, where upon the patient reclines while the upright seated and thereby

physically dominant psychoanalyst “interprets” his or her “free associations” and dreams.

The hierarchical nature of this analytical relationship should not be lost on anyone reading this book. The analyst has cast himself or herself in a clearly more powerful dominant position, and the patient or “analysand” is relatively helpless, subordinate and submissive. Typically the analysand comes to view the analyst as a father or mother figure, someone from the past, who was, also, in a superior status position. Psychoanalysts refer to this phenomenon as the “transference neurosis”. However, again, this routine recognition of a submissive status in a hierarchical relationship with a higher ranking individual should not come as any great surprise to the reader. Alfred Adler’s concept of the inferiority complex is more applicable to understanding the significance of status hierarchies in human affairs than Freud’s transference neurosis, although both are similar perspectives on the same biological reality.

We should recognize, however, that the good doctor Freud fairly well described what we know today to be the functional neuroanatomy and neurophysiology of our central nervous system, but derived totally from his

observations of the mental processes of his patients during their analyses: Id, Super-ego, and Ego. His description of the metaphorical function of the Id corresponds to the currently understood functions of the brain stem, amygdala, extended amygdala, and hypothalamus: sources of primitive survival motives or drives; the Super-ego corresponds to the inhibitory control provided by the neocortex to the limbic mid-brain emotion centers; and the Ego corresponds to the relationship thus produced with the outer environment, which comprises our true intervening over-reaching self.

The Problem of Anxiety

Of even greater relevance to the issue of stress and stress disease, the core subjects of this book, was Dr. Freud's metaphorical description of "anxiety" being generated by the struggle of the Ego to restrain release of sexual and aggressive impulses of the Id from becoming Superego tabooed behavior, which could be socially endangering to the individual.

This very real occurrence of "anxiety" is ever more frequent in our current "built" environment and over-crowded, provocative populations, cut off from the rhythms, supports, and clearly established social status hierarchies enjoyed by our ancestors. We must, in fact,

properly identify this “anxiety” as the feeling we experience when our stress hormones are elevated and our sympathetic nervous system has been activated. However, in this case such “anxiety” is generated by ***an internal struggle*** or “conflict”, rather than a real external predatory threat or ancient pre-programmed signal announcing such a threat. “Fear” is the exact same physiological experience but results from real, identifiable environmental triggers or “stressors” that announced an imminent predatory attack or hierarchical status challenge in our hunter-gatherer ancestor’s environment.

Stress, By Any Name

Thus, our experience of “worry”, “anxiety”, “fear”, and “COASTER” are identical, only the source of the trigger is different: (1) “worry”: an internal idea, (2) “neurotic conflict”: anxiety-producing internal struggle, (3) “fear”: a real conscious external threat, and (4) our chronically over-active stress response (“COASTER”). All are identical responses to a real conscious or unconscious ancient threat signal or trigger.

Unfortunately, Dr. Freud paid little attention to the equally important sources of elevated “fear” (“objective anxiety”) due to environmental triggers, in addition to

“anxiety” over internal conflicts generated by the very primitive impulses such urban crowding and highly suggestive mass media bombardment massively overstimulates. He briefly mentioned these in general terms in one of his later works: *CIVILIZATION AND ITS DISCONTENTS*, 1930. However, the good doctor, in elaborating on his “pleasure principle” of human motivation, writes of its opposite, “suffering”, stemming from life’s inevitable frustration of pleasurable impulses demanded by the modern, urban environment in his native Vienna. Thus, COASTER was doubtless every bit as responsible for his patients’ symptoms, otherwise rationalized as his “just so” stories regarding their presumed neurotic psychosexual conflicts.

However, we should allow Dr. Freud to speak for himself on this matter, as he does on page 28:

“Suffering comes from three quarters: from our own body, which is destined to decay and dissolution, and cannot even dispense with anxiety and pain as danger-signals; from the outer world, which can rage against us with the most powerful and pitiless forces of destruction; and finally from our relations with other men. The unhappiness which has this last origin we find perhaps more painful than any other; we tend to

regard it more or less as a gratuitous addition, although it cannot be any less an inevitable fate than the suffering that proceeds from other sources.”
(underlining mine)

“Sublimation” as “Conceptual Space”

Doctor Freud is, also, known for his concept of sublimation of instincts, in which primitive survival emotions are converted by the ego into other motives and behaviors, thus allowing partial pleasure in an overcrowded, highly competitive world. As he says on page 63:

“Sublimation of instinct is an especially conspicuous feature of cultural evolution; this it is that makes it possible for the higher mental operations, scientific, artistic, ideological activities, to play such an important part in civilized life.” (underlining mine)

We don’t know what the reader thinks, but to us this sounds a lot like Dr. Calhoun’s “conceptual space” idea (see TOPIC 24) and as such is a necessary component to our understanding of how human populations escaped the otherwise longstanding physical territorial boundaries and single clan dominance hierarchy that had previously held

our predecessor's numbers in check and in a state of balance with the rest of nature.

Speaking of boundaries, a further discussion of this issue is currently beyond the scope of this already too far ranging work. However, we cannot help but wonder how much of the anxiety described in Dr. Freud's analysands was not, in fact, produced by their ancient barely sublimated programming motivating fighting for dominance in a status competition, which was impelling them unconsciously to leap off of the comfy analytic couch and strangle the good doctor, or, at least, rip his cigar from his lips, as he perched majestically above them puffing away on one of his 20 mandatory cigars per day. However, we believe that a more in-depth study of Dr. Freud's work from the perspectives in this book on population density stress could be very revealing of the true psychological well-springs beneath much of his work.

A wonderfully tongue-in-cheek and thinly veiled critique of Freud and his followers can be found in the preface of Dr. Cyril P. Donnison's 1938 *CIVILIZATION AND DISEASE*, in the Preface, on page ix:

“The other great group of diseases that show a close relationship with civilization (and its stressors) are the functional disorders usually classed under the heading of the psychoneuroses.

This mass of theory has built itself up largely around the psychological investigation of the psychoneurotic and normal personality by methods based on subjective inquiry, that is some method of analysis. It is becoming increasingly apparent that such methods of investigation are singularly adaptable to the needs of the inventors of theories, whilst the therapeutic results that accrue are probably more dependent on the personality than on the theories of the psychotherapist. Given a small measure of suggestibility in the patient, a preconceived idea plus a very average degree of credulity in the investigator, and out of the human mind can emerge a sufficiency of material to construct almost any theory one cares to devise.” (underlining and parenthetical mine)

We previously described Dr. Carl Whitaker’s post retirement evolved form of family therapy, multi-generational long weekend “family reunions”, in TOPIC 2. However, given our re-analysis of the “transference neurosis” of psychoanalytical psychotherapy, we must admit

that even the warm, fatherly, loving approach of Dr. Whitaker demanded a dominant status for the family therapist and a submissive status for the members of the family, who, after-all, were paying money for therapy. As Carl put it in his 1988 book, *DANCING WITH THE FAMILY, A Symbolic-Experiential Approach*, on page 59:

“This guideline of convening the clan represents an effort to create a sense of the family as a unit and to validate the value of each individual member. It also serves to avoid a powerful source of sabotage and forces them to capitulate to my belief that the whole family is the patient.” (underlining mine)

We will explore the issues of dominance and submission in relationships, the impact of such fundamental relationships on activating COASTER, and the basic structures of status hierarchies further in Topic 25.

So, Who’s (Really) In Charge?

More recently, a group of psychological theorists have carried Freud’s unconscious mind concept another step further, even speculating that human behavior is primarily controlled by ancient programs in the unconscious, and that the newer conscious “rational” mind simply makes up

stories, which we then use to explain (“rationalize”) our instinctual behaviors to ourselves and others. So much for the “will- power” of the conscious, “rational” mind. Thus, the prominence of “rationalization” and “self-justification” in human communications. Our current president is a master of these defenses for thinly veiled sexual and aggressive impulses barely prevented from full expression.

Bush on the Couch

If you wish an example of the true motivations of the unconscious mind at work, recall President George W. Bush’s rational explanation for the 2003 invasion of Iraq, consciously rationalizing that he intended to prevent Saddam Hussein’s use of WMD (weapons of mass destruction) and bring democracy to the oppressed people of Iraq, but he was, also, well-known to be furious with Saddam Hussein for an earlier assassination attempt on the life of his father, former President George H.W. Bush. Also, you may recall, that President Bush’s father had refused to invade Iraq, after U.S. Forces rapidly defeated the Iraqi army in the Kuwaiti desert, during the “First Gulf War”. From an unconscious motivational analysis, what better way to revenge his father’s attempted assassination, as

well as improve his status in his family, in the nation, and in the world?

But what about the role of Dr. Freud's famous "Oedipus Complex" in the invasion of Iraq, the reader must be asking?

Recall Freud's "Oedipus Complex", wherein the son attempts to out-compete the father for his own mother's affections, and Alfred Adler's concept of the inferiority complex, in which we "compensate" for our mostly unconscious feelings of inferiority by engaging in activities and behaviors which demonstrate our superiority.

In other words, President George W. Bush's behavior may be explained purely on the basis of ancient unconscious motives, only to be rationalized into an attractive story, on a conscious level, sometime later. This same explanation may be applied to the rarely spoken-of motive of revenge for the 9-11 tragedy, although no evidence of either WMD or al Qaeda involvement with Iraq was ever found. In fact, Saddam Hussein kept al Qaeda, now Isis, away from Iraq. Some say his disbanded army is a core command element in Isis, Isil, and certainly the Sunni Insurgency. However, the made-up story about "saving" the downtrodden Iraqi people from a vicious

dictator was a convincing rationalization for possibly more hidden motives, if we are honest with ourselves.

BUSH ON THE COUCH

Since the previous section was written, we have discovered a book written by a psychoanalyst, psychoanalyzing the former President, *BUSH ON THE COUCH*. We offer a selection from the chapter “Eight, OEDIPUS WRECKS”, particularly page 145:

“Such silence on emotional issues creates fertile ground for certain archetypal father/son patterns, most notably the father/son rivalry that Freud labeled the Oedipus complex. As described by Freud, the Oedipus complex is about ambivalence---about love and hate toward each parent, as well as toward the parental unit (and toward parental intercourse in particular), and about the strivings to obtain the desired parent (usually the parent of the opposite sex) of the other (i.e., the father’s wife—the mother). Though each oedipal configuration is different, the traditional oedipal dynamic involves the boy’s desire to surpass his father in the eyes of his mother.” (underlining and parentheticals mine)

So, then we weren’t too far off in our attempt to demonstrate the behind the scenes workings of

unconscious limbic behavioral programming at work in the second Gulf War, as confirmed by this piece from Justin A. Frank, MD., written in 2007.

The COASTER, population density stress model, described in this book, is far more comprehensive than Freud's psychoanalytic theory in explaining the symptoms of and mechanisms underlying the chronically over-active Stress Response, applies to all socio-economic classes, and is more heuristic (i.e., hopefully leads to further discoveries), but Freud's and Adler's discoveries deserve proper credit, as do the more recent "unconscious" psychologists' additions, and the early efforts to better understand our unconscious drive for novelty.

However, we must again point out that Dr. Freud's conflicted neurotic patient was, in fact, a victim of population density stress, acting under the direction of ancient limbic behavioral programming, typically filled with anxiety and fear of one form or another (i.e., all COASTER, by other names), and totally the product of an over-crowded rigidly hierarchical Vienna, or any other European/American city.

Future Shock

In concluding this section, we must mention the visionary work of Alvin Toffler, as elaborated in his 1970 book *Future Shock*. The definition of “future shock”, according to Toffler, includes, from the introduction to his book:

people “overwhelmed by change”, “the roaring current of change”; a “process by which the future invades our lives”; the “acceleration of change”; “shattering stress and disorientation that we induce in individuals by subjecting them to too much change in too short a time”; “a real sickness from which increasingly large numbers of people already suffer”, a problem of “adaptivity”; “the (rapid) pace of environmental change and the limited pace of human response....future shock grows out of the increasing lag between the two”.

Continuing through the following 491 pages, he continues to develop “the concept of future shock and the theory of the adaptive range” (underlining mine).

Many of Toffler’s concerns are repeated in the present work and others are elaborated that deserve examination by the interested reader. However, for our purposes, “Part Five” in his book, “THE LIMITS OF ADAPTABILITY” is of greatest relevance. In Part Five are two chapters, Chapter

15, “FUTURE SHOCK: THE PHYSICAL DIMENSION”, and Chapter 16, “FUTURE SHOCK: THE PSYCHOLOGICAL DIMENSION”, both of which are chocked full of pertinent insightful material, however, covered from more of an endocrine view-point in this current work.

The “orientation response”, referred to as “Part A, Phase 1” of the Acute Stress Response, in the next topic of this paper, and “life-change”, as measured on standardized scales, are covered and well referenced by Toffler.

“Adaptive Reaction”

The “adaptive reaction” is, also, mentioned by Toffler, with brief reference to the contributions of Drs. Lennart Levi, focused on work-place stress; Rene’ Dubos, quoted later in this piece; and Hans Selye, whose GAS (General Adaptation Syndrome) initiated scientific study of stress physiology in the first half of the 20th century. Following a paragraph on page 292, quoting from Dr. Selye’s later 1956 work, Toffler states the following:

“Since then (1956) population experts and ecologists have compiled impressive evidence that heavily stressed populations of rats, deer—and people—show lower fertility levels than less stressed control groups.

Crowding, for example, ...compels the individual to make

extremely frequent adaptive reactions, (and) has been shown, at least in animals, to enlarge the adrenals and cause a noticeable drop in fertility." (underlining mine)

On the facing page, 293, Toffler states, with typical insight:

"It is quite impossible to accelerate the rate of change in society, or to raise the novelty ratio in society, without triggering significant changes in the body chemistry of the population. By stepping up the pace of scientific, technological and social change, we are tampering with the chemistry and biological stability of the human race." (underlining mine)

We will return to this core subject of Population Density Stress inhibiting reproduction in later TOPICS, 22 and 26.

Sheehan's "Disease"

To conclude this topic, and put a smile on the reader's face, we have the author of *The Anxiety Disease*, David V. Sheehan, MD, who was at the time, 1983, Director of Anxiety Research of the Department of Psychiatry at the prestigious Massachusetts General Hospital and Assistant Professor of Psychiatry at Harvard Medical

School. This utterly uninformed “expert” made the following assessment of “stress” on page 109 of his book:

“Environmental stress of all kinds can make any disease worse. It is not so much a cause of disease as an important aggravator. It is neither necessary nor sufficient to cause the disease; but when it is present, it seems to make things worse. It may speed up the onset, intensify the symptoms, weaken the resistance and coping of the patient, accelerate the deterioration, and delay the healing. There are few diseases where its role as aggravator has not been described. In the anxiety disease its role may be no different, neither more nor less important. Yet, because it can play a significant role, stress cannot be ignored. To do so might spell the difference between success and failure. Just how, and to what extent, it interplays with the other forces certainly demands consideration.”

(underlining mine)

We do not believe it necessary to point out that psychiatrist Sheehan has no understanding of the subject of “stress”, the “anxiety disease” he never defines, or its now well established role in the direct or indirect causation of all human disease. Had he made any attempt to study the subject in 1983, he surely would have run

across the work of Dr. Selye, or Freud, or Jeffrey Gray, or Walter B. Cannon (who had preceded him at Harvard!), let alone that of John B. Calhoun and J. J. Christian, the early population density stress researchers, as well as the dozens of other earlier researchers, many of whom are mentioned in this book and quoted extensively. He simply did not care to look into a subject that he wrote a book on. His near total ignorance of stress physiology is typical of psychiatry, even to this day. Remember, this is the “expert” who called a normal physiological process a “disease”. Our advice: beware of experts bearing unsubstantiated opinions!

Perhaps, the reader would like a detailed definition of “homeostasis” and the 5 Part Stress Response, which is nowhere to be found in psychiatrist Sheehan’s book? If so, read on to the next topic. We know it doesn’t sound “sexy”, but it really is!

10. “HOMEOSTASIS”, “ALLOSTASIS”, and the FIVE PART STRESS RESPONSE

Homeostasis, or the ability of the body to maintain its internal environment (*milieu interior*) in a constant state, in spite of changes in the external environment (*milieu exterior*), is the concept attributed to the 19th century French father of experimental physiological research, Claude Bernard. The term “adaptation” is, also, used in this context. Bernard literally wrote the book

on *Experimental Medical Physiology* in studying and describing the process of sugar storage and release from the liver, as well as the physiological processes controlling this energy supply. Prof. Bernard was actually studying a major component of the stress response in the 19th century, without ever realizing it as such.

Walter B. Cannon, MD, Harvard physiologist, first coined the actual term “homeostatics” (literally holding a physiologic process at a predetermined “set-point”, or staying in the same place as before), in 1926, to describe this process and, more broadly, applied it to the nervous regulation of bodily function, summarized in his 1932 book, *The Wisdom of the Body*.

More recently, Bruce McEwen, PhD, head of the Neurophysiology Laboratory at Rockefeller University in New York City, has carried this concept further with his use of the term “allostasis”, to describe the development of a new baseline “set point” in the course of the body’s attempts to maintain homeostasis around a new set point. His term “allostatic load”, for the accumulated “wear and tear” (the reader may recall S. Weir Mitchell’s 1871 book by the same title) resulting from the repeated activation of the Stress Response, is useful.

However, we find this unnecessarily confusing neo-logical terminology, a perfect example of the competitive manufacture of John B. Calhoun's "conceptual space". Thus, a new idea-as-territory was formed by Prof. McKewen in order to out-compete other, older ideas and, thus, their owners, according to ancient genetic programs guiding hierarchical status behaviors dating back to our reptilian ancestors. Recall Dr. Freud's replacement of the 19th century term "neurasthenia" with his newer, more fashionable concept of "anxiety"? "Conceptual space" is further described elsewhere in this essay under TOPIC 23.

Dr. McEwen's contributions to the study of stress physiology and training of young neurophysiologists cannot be questioned, especially the concept of "allostatic load" to represent Dr. Mitchell's accumulated "wear and tear". In fairness, Dr. McEwen's books, *THE HOSTAGE BRAIN* and *THE END OF STRESS AS WE KNOW IT*, are thoroughly readable and wonderfully illustrated introductions to the field.

The 5 Part “Stress Response”

(aka “Anxiety”, “Fear”, or “Fight/Flight Reaction”)

However, we propose a return to the simpler and more historically consistent terminology of a 5 Part “Stress Response”, including :

* **Part A.** An Acute Stress Response, composed of:

* **Phase 1** , Activation of the hard-wired rapid-fire electrochemical response by the sympathetic branch of the autonomic (automatic) nervous system, which releases nor-adrenaline (nor-epinephrine) at its nerve endings, and further resulting in rapid (220 mph over 18-20”) release of adrenaline (epinephrine) from the chromaffin cells in the adrenal medulla and into the blood (also called the “alarm reaction”, “fight or flight”, “alerting response” and, perhaps, the “orienting response”) and, next:

* **Phase 2**, Activation of the slower, hormonal, blood transport phase of the Acute Stress Response, by the release of ACTH (adreno-cortico-trophic hormone) from the anterior lobe of the pituitary gland, located at the base of the skull, causing further release of Cortisol and other glucocorticoid and

mineralocorticoid steroid hormones from the adrenal cortex. (see Diagram 1, in the Appendix, inside the BACK COVER and the black stained outer part or “rind” of the adrenal gland sections on the FRONT COVER). Both of these two phases were subsumed under the first stage of Selye’s 3 stage “systemic stress” response: (1) Alarm Reaction (shock and counter-shock).

Repeated activation of the two phases of the Acute Stress Response, not often experienced in the life-ways of hunter-gatherers but common among us modern stressed-out urban and suburban dwellers, gives rise to

* **Part B.** The chronically over-activated Stress Response (COASTER), characterized by the sustained “wear and tear” of frequently elevated blood and tissue levels of adrenaline, endorphins, aldosterone, and Cortisol, which Dr. Selye termed (2) the “stage of resistance”, also described by Dr. McEwen’s “allostatic load”, and which eventually results in the hypertrophy (massive enlargement and engorgement) of the adrenal cortex and extended maximum production of the 18 adrenal steroid hormones, particularly Cortisol (as illustrated in the two middle adrenal gland slices on the FRONT COVER); and, thus, eventually resulting in the next part,

* **Part C.** Adrenal fatigue or, in Dr. Selye's terms, (3) "the stage of exhaustion", which represents progressive destruction of the adrenal cortex and, thus, loss of the ability to synthesize the 18 steroid hormones critical to life (as illustrated by the adrenal gland slice on the far right on the FRONT COVER), leading, finally, to

* **Part D.** Death of the individual by hypoglycemic shock due to total loss of circulating energy releasing adrenal steroid hormones, resulting from the destruction of the adrenal cortex, is the final outcome for the individual organism, also covered in Selye's (3) "stage of exhaustion".

However, we have added a final part for the eventual extinction of the group, Darwin's "race", or our entire species,

* **Part E.** Cessation of successful reproduction throughout an overcrowded population suffering from increasing population density stress, including disruption of parental behaviors necessary for offspring survival, estrangement from Nature, and ultimately resulting in the irreversible extinction of the entire population, once the irreversible "kill-switch" has been flipped on.

SUMMARY

Thus, in summary, the sequence of accumulated wear and tear is: (1) Acute Stress Response, (2) COASTER, (3) Adrenal Fatigue, (4) Individual death by shock, and, finally, (5) Progressive loss of fertility and successful parenting, which leads to eventual irreversible extinction of the entire population.

This sequence, which turns pathological with COASTER in our modern stressful built-world way of living, is the core concept of this book. The other important concepts included under the term “population density stress” are our state of social behavioral dissolution, environmental degradation, and our estrangement from Nature in Her original state, all resulting from over-population—all of which fuel COASTER, make us sick, and eventually kill us.

The inevitable biological conclusion being that COASTER evolved by natural selection of isolated groups most able to limit animal population growth, including humans, thereby saving the otherwise over exploited environment for future generations and preventing “overshoot”. Sadly, this process requires eliminating or “culling” vulnerable individuals before population density stress reaches the tipping point, and/or reducing reproductive rates, before extreme population density stress

initiates the kill-switch and drives the entire population into extinction.

Hans Selye pictured this sequence of accumulated wear and tear in his 1950 book, *STRESS, A treatise based on the concepts of the GENERAL-ADAPTATION-SYNDROME and the DISEASES OF ADAPTATION*. A reproduction of this sequence, in a photograph originally published in 1944 by Dr. Liebegott (trans.: “Dear God!”), composed of post-mortem sections of human adrenal glands from hypertensive (suffering from high blood pressure) German men, has been used on the FRONT COVER of this book. This sequence demonstrates the progression of wear and tear on the adrenal glands, through COASTER, and ending in adrenal failure and death.

Starting with a normal adrenal gland slice on the far left of the FRONT COVER image, it is then followed by two slices from the adrenal glands of German men who suffered from and likely died from hypertensive diseases (high blood pressure, heart attack, and stroke) demonstrating a 200% increase in overall weight and size of the glands. Dr. Liebegott used fat staining (the black pigment) to represent the increased presence of fat (cholesterol) and, thus, capacity for the production of

Cortisol and other gluco-corticoid, mineralo-corticoid, and sex hormones.

Finally, on the far right of the FRONT COVER image, the reader finds the mounted slice of an exhausted, shrunken, non-staining, non-life-sustaining shell of an adrenal gland, as an inevitable fatal result, from long periods of riding the stressful Roller-COASTER of population density stress resulting from our modern “built world”. Is our life and death mystery story being solved?

Stressed-out?

How's that high blood pressure, the palpitations, the panic attacks, those ulcers and “heart burn”, the migraine headaches, the impotence, infertility, and anxiety, the insomnia, and the nervous exhaustion? Starting to recognize the symptoms of adrenal fatigue yet? “Stressed-out”? Run down? Drinking more alcohol, in a vain effort to squelch the turmoil? Depressed? Anxious? Angry all the time? Tired? Not sleeping well? Lost your job? Afraid of everything? Can't turn off the T.V., radio, desk-top or lap-top computer, I-Phone, I-Pad, Facebook, or MP3 player? Preoccupied with money, sex, security, politics, stock-market, gambling, food, job insecurity, relationships,

children, elderly parents, family instability or illness, grades, social position at school, Facebook, etc.? Let's take a break, shall we?

Break Time?

Ok, now, how about a break from the crush of reality? Take a nature walk, with some deep breathing to activate the parasympathetic nervous system (the Japanese call this "forest bathing"), meditate for 10-15 minutes to clear your mind of worry, practice Dr. Jacobson's "progressive muscle relaxation", play some relaxing music, sip a cup of relaxing Chamomile tea, slip a relaxation DVD into your DVD player (instead of yet one more arousing, violent, stressful "suspense" or "horror" title), try "ZEN GARDEN" or "WATERFALLS" or "OCEAN WAVES", turn off all electronic devices, take ten deep breaths with equally long, slow exhalations, do some Yoga or Tai Chi, practice your mindfulness meditation (clear your mind of intrusive worrisome thoughts), and relax, if your mind-body-spirit can still remember how!

Perhaps, another quote from Dr. Weir Mitchell's 1878 book is appropriate here to conclude this topic, this one from page 7 :

“The sermon of which these words are the text has been preached many times in many ways to congregations for whom the Dollar Devil had always a more winning eloquence. Like many another man who has talked wearily to his fellows with an honest sense of what they truly need, I feel how vain it is to hope for many earnest listeners. Yet here and there may be men and women, ignoring sinning against the laws by which they should live or should guide the lives of others, who will perhaps be willing to heed what one unbiased thinker has to say in regard to the dangers of the way they are treading with so little knowledge as to where it is leading.” (underlining mine).

Scurvy and Child Bed Fever

Our greatest fear in writing and attempting to distribute the present work was eloquently stated in this quote from a well-meaning fellow physician 145 years ago. But, then, science is slow to progress into the consciousness of the average person, or the “experts” for that matter.

It took the British Royal Navy over 40 years to adopt the cure for scurvy that another one of our medical science heroes, James Lind, MD, published in 1753, under

the title of *A Treatise on the Scurvy*. Physicians were equally slow to adopt as common-sense a preventative for the deadly puerperal child bed fever as bactericidal hand-washing, before examining pregnant women internally, first recommended by Dr. Oliver Wendell Holmes in America in 1843, and Dr. Ignaz Semmelweis in Austria in 1848.

Dr. Simmelweis, whose biography, *The Cry and the Covenant*, was the first book outside of school that Dr. Miklashek ever read, was ostracized by his fellow physicians for suggesting that they lower themselves to hand-washing and eventually the good doctor died penniless in an insane asylum. I certainly fit the penniless criterion. Wait a moment, please, while I call to see if they have an open bed at the asylum.

Dr. Holmes, however, went on to be a famous author, and in his lesser known *The Professor at the Breakfast Table*, he stated:

“When, by the permission of Providence, I held up to the professional public the damnable facts connected with the conveyance of poison from one young mother’s chamber to another’s,--for doing which humble office I desire to be thankful that I have lived, though nothing else good should come of my life,--I

had to bear the sneers of those whose position I had assailed, and, I believe, have at last demolished, so that nothing but the ghosts of dead women stir among the ruins.” (underling mine)

Only you, the reader, will determine whether or not our 15 year effort writing this book was worthwhile, but I promised our patients to do it, and I have kept that promise. Now, where did I put that darned straight-jacket?

Time to move on to adrenaline? I feel my heart racing, and you?

11. ADRENALINE (EPINEPHRINE)

The physiological effects of the sudden release of adrenaline into our blood, from “chromaffin” cells in the adrenal medulla, and the release of noradrenaline, within the central and peripheral nervous systems, (Part A, Phase 1 of the Acute Stress Response) include:

release of glucose from its storage form in the liver, glycogen; insulin resistance in all tissues except brain and skeletal muscles (n.b., such that glucose cannot be absorbed into tissues not immediately necessary for fight or flight); increased heart rate, strength of heart muscle contraction, and volume of ejected blood;

vasoconstriction (narrowing) in the peripheral arteries and viscera, but vasodilatation in coronary arteries (unless narrowed by atherosclerosis!) and skeletal muscles; increased systemic blood pressure and blood volume; increased respiratory rate and bronchial dilatation resulting in increased oxygen absorption and availability to skeletal muscle and brain; release of stored red blood cells from the spleen resulting in further increased oxygen carrying capacity; breakdown (lipolysis) and release of stored fat reserves into the blood through the liver; activation of blood coagulation factors; cessation of gastric but increased bowel motility and paused digestion (thus, COASTER causes GERD: indigestion); skin vessel vasoconstriction, except for facial capillary dilation and “blushing”; increased vigilance and attention; piloerection (hair standing on end); activation of the thymus gland, t-helper lymphocytes, and pro-inflammatory cytokines of the activated immune response; automatic projection of an involuntary terrified facial expression and defensive body posture; perspiration, “cold sweat” prior to potential extreme physical exertion and the resultant overheating; thermogenesis: heating of the body core; initial involuntary freeze response; involuntary micturition or defecation (wetting or

soiling); stimulation of release of ACTH (adreno-cortico-trophic hormone) from the anterior pituitary gland, but cessation of the release of the other tropic hormones: the sex hormones: LH and FSH, as well as the thyroid activating TSH: thyroid stimulating hormone.

Still sound mysterious? Read on.

The “evolutionary significance” (or survival benefit in an earlier and more dangerous predator rich environment) of this Acute Stress Response is fairly obvious and makes perfect sense in what some authors call the environment of evolutionary adaptedness or “EEA”, in other words, the natural environment of our hunter-gatherer ancestors. In that environment, where our ancestors were often attacked and risked death from ever-present predators, these nearly instant automatic physiological reactions provided sudden energy release to power long established instinctual behaviors, which served to greatly increase our ancestor’s likelihood of survival, to prevent further injury by activating the “fight or flight” response. But weren’t our ancestors almost certain to be injured in that early predator filled environment?

Thus, once the damage of a traumatic injury has occurred, and Phase 1 of the Acute Stress Response has been rapidly activated to assist immediate survival from a predator attack, this phase is automatically followed by a time delayed hormonal Phase 2 of the Acute Stress Response, which terminates the initial rapid life-saving emergency actions of Phase 1 and, further, promotes healing and recovery from injury. So, we have a built-in automatic turn-off switches, or “negative feedback loops”, following the fight or flight response!

Whatever our religious or scientific beliefs, we must admit that this survival system is a miracle of design. Who or what the great designer was, is yet another chapter of this glorious mystery and not fully explored in this already too large and all-encompassing work. We must appreciate this miracle for what it is, while fully realizing that it was designed for a natural environment that our exploding numbers have nearly destroyed.

12. CORTISOL and THE CHRONICALLY OVER-ACTIVE STRESS RESPONSE

Fortunately, sudden electro-chemical activation of Phase 1 of the Acute Stress Response (PART A of the 5 PART STRESS RESPONSE—see Appendix), to quickly stem the life threatening effects of acute physical injury, also, leads to slow hormonal activation by pituitary ACTH of Phase 2 of the Acute Stress Response. Phase 2 is the release of the adrenocortical steroid hormone, Cortisol, which spontaneously resolves the acute physiological changes in Phase 1 caused by adrenaline, while releasing further stored energy in the healing process. Cortisol accomplishes this “negative feedback” effect on adrenaline by triggering gluco-corticoid receptors on hippocampal neurons, which further inhibit the release of CRH from the amygdala, located at the head of the hippocampus. Thus, the entire fight/flight circuit can be turned off by the negative feedback from cortisol. However, when these glucocorticoid receptors are constantly flooded with an over-production of cortisol in COASTER, then they are removed from service (down-regulated) and the negative feedback loop is broken. At this point, the stress response system runs Amok and, then, we are really in trouble. The COASTER effect

becomes stuck in the “on” position. Then we have Cushing’s Syndrome.

Feel free to Google the multiple physiological effects of Cortisol, but suffice it to say that here is another instance of that old sot: “too much of a good thing can be bad for ya”. The more formal, scientific terminology is “the inverted-U model”, or the Yerkes-Dodson Law

It is this over-production of Cortisol, constantly being re-triggered by the continuous over-activation of the Acute Stress Response (Part A, Phase 2, of the 5 Part Stress Response—see Appendix), or the lack of over-used inhibitory glucocorticoid receptors in the hippocampus described above, that defines COASTER, and is killing us through the top 10 “diseases of civilization” listed earlier under TOPIC 5.

COASTER Is Driving Increasing Infertility

This COASTER effect, stemming from the initial over-production of the master stress hormones, CRH (corticotrophin releasing hormone) in the amygdala and hypothalamus, and Cortisol in the adrenal glands, is also responsible in large part for the rapidly increasing prevalence of infertility among men and women in our

ever more crowded urban western world. The 100% increase of infertility in the US, 8% to 16.7% from 1982 to 2016, is noted elsewhere in this book. Thus, our use of the term “population density stress”, including COASTER, as the source of the “kill-switch”.

***Children of Men* and The Omega Effect**

We need to call the reader’s attention to the 2006 dystopian/utopian movie *Children of Men*, from the 1992 novel by prescient British author P. D. James. Why? This book and its subsequent movie version describe the dystopian picture of a 2027 Britain, in which all human births ceased eighteen years earlier (2009) due to the mysterious “Omega” effect (aka, our version: “the kill-switch”). The bulk of the movie, made by a director who admitted never reading the book, demonstrates a society in violent (overpopulation) turmoil due to massive immigration of (re-)“Fugees”, and the local’s mostly negative reaction, although opposed by a small group of equally violent radical pro-immigration proponents: the “Fishes”.

We cannot establish whether authoress James knew anything of the animal crowding researches referenced in our book, but she was certainly demonstrating incredible intuition, if nothing else. In the end, a last baby is born

to an African immigrant Fugee, engendering a series of heroic actions by self-sacrificing fellows soldiering through a chaotic violent revolution, the “Uprising”, and finally allowing mother and child to escape to the ship “Tomorrow” that will hopefully carry them to the Azores and a human infertility research facility. For the courageous reader, this movie is likely a fairly accurate vision of our future, if we choose not to address our potentially species ending human overpopulation problem.

For those who wish to read an explanation of the physiological effects of Cortisol and CRH, including Cushing’s and Addison’s diseases and syndromes, read on, but, otherwise, the reader may wish to jump to TOPIC 13.

More on Cortisol

The current, accessible Wikipedia entries on “Cortisol” and CRH are well done for the non-scientist reader. I recommend them. To summarize, in humans,

Cortisol is released from the middle layer of the outer “bark” or “cortex” of the adrenal glands (zona fasciculata) in response to the anterior pituitary gland hormone, adreno-cortico-trophic hormone or “ACTH”. ACTH is a break-down product of pro-opio-melano-

cortin or POMC (which, also, includes a molecule of the endogenous opiate beta-endorphin and melanocyte stimulating hormone, MSH), and is synthesized in the hypothalamus, in response to corticotrophin releasing hormone, or “CRH”. CRH, you may recall, originates in the central nucleus (“CE”) of the amygdala, and the parvocellular portion of the paraventricular nucleus (“PVN”) of the hypothalamus. Hey, don’t blame us, we didn’t make up these medieval Latin and Greek names—a function of which was to mystify the common man. Mystified yet?

Is that high school Latin coming back to you yet? Oh, oh, I just really dated myself, didn’t I?

Again, think of the amygdala (i.e., “extended amygdala”, including: hypothalamus, hippocampus, and limbic cortex: insula, cingulate gyrus and ventro-medial prefrontal cortex—VMPFC), as an ancient brain-within-a-brain. The amygdala is the “head” of the hippocampus (Greek for sea-monster or seahorse) in the middle, or limbic brain, of the three part “triune brain” model of neuro-anatomist Paul MacLean. (See the illustration on the BACK COVER, with the two anatomically distinct hippocampi facing one another,

across the limbic brain, not unlike two facing seahorses.)

The effects of Cortisol, in its role as healer and restorer of normality, in Phase 2, following an episode of Phase 1, of Part A of the Acute Stress Response, includes the necessary further release of remaining energy stores to promote healing, and production of even more glucose (blood sugar) from the breakdown of proteins through gluconeogenesis, resulting from breaking down of muscle, bone and organs and converting their amino acids into glucose in the liver.

Thus, if stress is prolonged, as in COASTER, gluconeogenesis can result in significant loss of vital tissues, including muscle, solid organs, and bone. Perhaps, the reader might now consider the epidemic of osteoporosis (bone density loss), obesity, and Type II diabetes among aging women and men, resulting in our epidemic of broken hips and collapsed vertebrae. Further, the Immune System is inhibited and anti-body producing t-lymphocytes are destroyed, having been activated in Phase 1 of the Acute Stress Response. Cortisol produces further peripheral insulin resistance, maintaining higher blood sugar

levels, and causes water retention and elevated blood pressure. Sister adrenal hormone, Aldosterone, is also released and is helpful for replacing potential blood loss resulting from injury by a predator in the EEA, but a “misfit” contributor with Cortisol in our 30-33% rate of “essential hypertension” due to COASTER. Short term exposure to Cortisol improves memory formation but long term exposure decreases it.

Further effects of Cortisol include inhibition of neuronal stem cell formation and growth in the granular layer of the dentate gyrus in the hippocampus, affecting memory and mood. To repeat, in the short term, Cortisol has a negative feedback, inhibitory effect on the hippocampus through gluco-corticoid (Cortisol) hormone receptors (“GR”), which regulate the system and shut down over-production of the Stress Response, unless COASTER has down-regulated these GR’s.

One more time, when these Cortisol receptors are exposed to excess Cortisol levels over extended periods, as in Part B of the Stress Response, COASTER, the glucocorticoid (Cortisol) receptors (GR) are down-regulated (eliminated) and, thus, lacking an “off” switch, the adrenals

run Amok and produce functional “idiopathic “ Cushing’s syndrome, with constantly elevated Cortisol, until the adrenal cortex is exhausted. This condition of Adrenal failure is illustrated on the far right in the FRONT COVER image.

Oh, by the way, this adrenal failure is a life-threatening, if not life-ending condition. We saw patients suffering from this severe Adrenal Fatigue and failure in our neuropsychiatry practice on a regular, at least weekly, basis. None of their primary care physicians ever made the diagnosis, as none of them had ever heard what you are reading now. None of this is taught in medical colleges today. More on adrenal fatigue in TOPIC 27.

Interesting to note, is the fact that modern medical science has yet to recognize such a diagnosis, at least as far as our efforts to find references with Google searches are concerned. Again, are we not missing the endocrine “forest” for the proverbial research “trees”?

In fact, tragically, especially considering the trillions of hard-earned tax-payer dollars spent on determining the causes of the diseases that are making us sick and killing us, modern scientists have yet to study Cortisol levels during stressful human activities.

Our Disclaimer

This book is based on the admittedly as yet unproven but multiply supported conclusion that elevated Cortisol levels are the direct or indirect cause of our maladies, although we measured blood Cortisol levels in only approximately 100 patients, and correlated those levels with their conditions, and their recoveries during treatment. Furthermore, our patients' diseases paralleled those of other crowded mammals and known diseases already correlated with elevated Cortisol levels. However, ours were purely anecdotal findings in unreported individual cases, and even the records of those findings have been lost in time.

In spite of the lack of controlled double-blind prospective experimental validation of our COASTER theory, the sheer weight of experimental evidence from animal studies, as reported elsewhere in this book, should be sufficient to spur further investigation into an area this deserving of further enquiry, and of such importance to our very survival.

With the current availability of inexpensive, simple Cortisol assays of saliva samples, some enterprising grad student in the medical sciences could easily measure

elevated Cortisol levels during what common-sense has told us are stressful activities: operating an auto or truck, flying an airplane or flying in one, piloting a ship, driving a train; conducting police, fire, and rescue work; various other high-stress job situations; and, then, we would only need to follow these folks over time, in order to correlate health outcomes with elevated Cortisol levels.

Why this simple, straight forward, inexpensive research has not yet been so rarely carried out baffles us. However, we felt this book could wait no longer. And what if we're totally wrong about COASTER? What possible harm could stress reduction and population reduction possibly cause humanity or the biosphere?

COASTER Is Killing Us

COASTER is killing us, but has yet to be identified as a problem in modern medical education or practice! One retired Endocrinologist we asked to read this book responded, "many of the problems which you have identified are complex and due to multiple causes". He was recovering from a heart attack and quadruple by-pass surgery. We seriously doubt that he read this book or realized the contribution of COASTER to his heart disease.

We respectfully beg to differ with our colleague. COASTER is the direct or indirect cause of all the medical problems listed in this book, no matter the specific disease or infectious agent, as is well documented within these pages. Multiple awards may await the researcher first to bring this discovery to a wider audience, most important of which will be the enlightenment of the general public as to the real cause of all their illnesses.

So far, as we can attest, the hallowed halls of academe are barred against this new knowledge, as their singular race for the next new lucrative “wonder drug” continues unabated by the generally ignored public need for research into the real causes, and means of preventing, of all our deadly diseases.

COASTER’s resulting disease symptoms are identified and treated everywhere, but almost never with a thorough understanding of the underlying true cause, and under the diagnoses of “metabolic syndrome”, the “obesity epidemic”, “type 2 diabetes”, “essential hypertension”, “the cancer epidemic”, Cushing’s syndrome, “burnout”, “nervous exhaustion”, auto-immune diseases, and the other top ten killers of modern men, women, and children. Further

support for our theory can be found in the next paragraph, as well as through-out this book.

Cushing's Syndrome

Although touched on earlier, the symptoms of Cushing's disease or syndrome (not as severe as the disease) are identical to the symptoms of COASTER and include:

(1) weight gain, especially the brown fat reserves that form around the waistline and have turned our once sleek bodies into “pear shaped” shadows of our former selves, and the number one cause of America's obesity epidemic; (2) hypertension (high blood pressure), and the number one cause of America's high blood pressure epidemic; (3) poor short-term memory and, perhaps, the number one cause of America's dementia epidemic, although vitamin and mineral deficiencies are critical as well (and are discussed elsewhere in this paper); (4) irritability, and the number one cause of America's irritability epidemic—road rage, senseless violence, etc.; (5) excess hair growth (women); (5) impaired immune system function, and the number one cause of America's epidemic of infectious diseases and cancers;

(6) red, ruddy “moon face”; (7) fat-thickened neck ; (8) fatigue (recall the current “chronic fatigue syndrome” controversy and the 19th century preoccupation with neurasthenia, or nervous exhaustion ?); (9) red stretch marks or “striae”, particularly noticeable on the abdomen; (10) poor concentration, and the number one cause of America’s attention deficit and hyperactivity epidemic; (11) irregular menstruation or none at all: amenorrhea; (12) insomnia, and the number one cause of America’s insomnia epidemic; (13) weak bones (osteoporosis), leading to unnecessary, preventable fractures, and the number one cause of America’s osteoporosis epidemic; (14) clinical depression, and the number one cause of America’s mental health disorder epidemics; (15) muscle weakness, especially noticeable in the hip and shoulder girdles; (16) swelling of feet and legs ; and, finally, (17) diabetes mellitus (remember, Cortisol is dissolving our over-stressed bodies and turning them into sugar!).

Summary

So, to summarize, recall how we learned earlier in this book, thanks to the work of two devoted physicians at Michael Reese Hospital in the early 1950’s, that coronary

and cerebral artery disease, often inevitably resulting in heart attack and stroke, are caused in lab animals by COASTER. High blood cholesterol combined with high blood Cortisol are the real culprits! We have learned that our obesity epidemic is, also, caused by high blood sugar levels, and that these high blood sugar levels are caused by the high adrenaline and Cortisol levels resulting from the very same COASTER. And in Cushing's disease, where elevated Cortisol is caused by adrenal tumors, we have seen the exact same pathology we find in COASTER.

So, COASTER is causing high blood pressure, heart attacks, and strokes, as well as our epidemic of obesity and type 2 diabetes, infertility, and all the top ten diseases which are killing us. Ok, Ok, enough with the repetition. We apologize but we're just trying to save your life!

These are simple medical facts, but have you ever heard this information from your doctor or nurse, or ever seen this information in the mass media? Perhaps the "experts" believe these facts are just too "complex" for a non-medically educated, lay audience: you! We don't agree!

Several of the early college educated readers of drafts of this book have complained that it seems directed

toward an audience familiar with biology, as well as other audiences lacking this prior educational background. They asked: “What is the audience?” Our answer is: get off your duff and get up to speed on the high school level biology behind your health and well-being, or stay comfortably ignorant and die before your time from one stress disease or another. Maybe, for some lazy non-readers, ignorance is bliss and early death will be a relief for all involved. The choice is ours. Help us prove our detractors wrong! Want to learn more, and save your life and the biosphere? Read on!

Then, when Cortisol over-production (COASTER) runs Amok long enough, potentially exhausting the adrenal cortices, it results in Part C of the Stress Response, adrenal fatigue, or, eventually, Part D, Adrenal Cortical Failure (Addison’s disease), illustrated on the far right of the sequence of adrenal gland sections on the FRONT COVER of this book, from Dr. Liebegott’s 1944 paper, as republished by Dr. Selye in 1950. Now, on to the details of Addison’s disease, in which our exhausted adrenal glands can no longer produce cortical steroid hormones, including Cortisol. We know you’re dying to find out the details, literally!

Addison's Disease

Addison's disease has the following symptoms, identical with the end-stage of COASTER, Part 4 of the Stress Response :

(1) fatigue (now that we can no longer produce Cortisol, we cannot mobilize stored sugars and we are hypoglycemic, have low blood sugar); (2) lightheadedness (we can no longer hold salt , NaCl, sodium chloride, in our blood and our blood pressure falls below normal); (3) autoimmune diseases: exacerbation (worsening) of all inflammatory conditions: rheumatoid arthritis, lupus erythematosus, osteoarthritis, muscle swelling, a whole range of inflammatory skin conditions, multiple sclerosis, etc., and America is experiencing epidemics of all of these formerly rare conditions: (4) severe clinical depression, and we are experiencing continuous rises in these rates; (5) skin darkening (from over-production of the melanocyte stimulating hormone (MSH) component of POMC, (pro-opio-melano-cortin) and (6) the entire symptom complex of "adrenal fatigue", fully described in TOPIC 27, pg. 169ff. (7) death is imminent, if not medically prevented.

Now, how about a little reproduction?

Follow the GNRH

Suppression of GNRH (gonadotropin releasing hormone) production in the hypothalamus, due to COASTER's over-production of CRH and Cortisol, and the failure of reproductive function that results, is discussed later in this essay. Growth hormone (GH) and thyroid stimulating hormone (TSH) production are, also, suppressed.

Wait a minute, the reader must now be mumbling to himself, this darn stuff is trying to kill us, shrink our growth, reduce our reproduction, or take away our energy! What the heck is going on here?! Why this mystery killer, anyway?

This is, we believe, the long evolved human reproduction inhibiting system, which, in concert with the top ten diseases killing us today (due to COASTER and already listed above), as well as the disruptions of normal parenting behaviors in crowded populations, make up the human population regulation mechanism.

PLEASE! REREAD THE STATEMENT ABOVE AND LET IT SINK-IN!

Again, the reproduction of a gorgeous 18th century hand-colored copper plate etching of a pen and ink and water

color drawing by the attending physician to Marie Antoinette, Felix vicq d’Azyr, demonstrating the limbic system, amygdalae, and hippocampi beautifully, can be found on the BACK COVER of this volume. We have always been amazed to observe the striking similarity between the forms of mammalian embryos and the hippocampi! The ancient inner brain is an evolutionarily conserved (or used over and over, again) embryonic form, is it not?

The locus coeruleus, or blue spot, buried in the brain stem, and originally named by the same Felix vicq d’Azyr who created the back cover image of this book in 1786, synthesizes norepinephrine, the release of which is triggered in Part A., Phase 1. of the Acute Stress Response. Norepinephrine releasing cells impinge on CRH neurons and trigger the further release of CRH, the master stress hormone. However, these same 1,000 CRH neurons, located in the amygdalar “heads” of the hippocampi (see the seahorses on the Back Cover), have axonal outputs that form inputs into the norepinephrine neurons of the locus coeruleus and, thus, form a loop of accelerating mutual stimulation, which we experience as a panic attack.

Serotonin Inhibits The Stress Response

The neurotransmitter serotonin, or “5-HT”, synthesized in the equally ancient brain stem raphe’ nuclei, has axonal inputs to presynaptic inhibitory serotonin hetero-receptors on norepinephrine neurons in the locus caeruleus which inhibit norepinephrine output and, thus, has a calming effect, interrupting the panic loop, already described. Clearly, there are other serotonin receptors in numerous sites in our limbic brain, which have not been fully described to date

There are, also, such inhibitory presynaptic serotonin hetero-receptors on CRH neurons in the amygdala and hypothalamus, which have a further calming effect when activated by serotonin. This may well be the mechanism by which selective serotonin reuptake inhibitors, “SSRI’s”, anti-depressants, like Prozac, Zoloft, Lexapro, etc., relieve anxiety and panic attacks. Those “dual-action” antidepressants that release both serotonin and norepinephrine (sic), including Paxil, Effexor, Cymbalta, etc., often paradoxically cause panic attacks, even though they are wrongly marketed by their big pharma creators as treatments FOR panic attacks! Bupropion (Wellbutrin) is unique in its action, increasing both norepinephrine and dopamine. Thus, bupropion taken by itself is especially

prone to causing panic attacks, but highly effective when used in combination with a serotonin releasing anti-depressant, as discussed later. Let the buyer beware, indeed!

A final point to conclude this topic on Cortisol must now be made. The field of psychological research has fragmented or parsed during the 20th century into many sub-fields, we believe, as a direct result of the competitive process of conceptual space creation in the resulting status competitions between researchers, as described elsewhere in this writing. Among those sub-fields exists a body of research on “activation”, “arousal”, “energy mobilization”, and the “energetics of behavior”. This work overlaps with other work done on “drives”, “motives”, and “emotions”.

However, the main focus of the present work is the central, controlling importance of Cortisol, CRH, and the destructive effects of their over-production (COASTER).

Critical to the activation of the central nervous system is the role of one of the most ancient and critically important areas of the brainstem, the ascending reticular activating system. The RAS is the core engine of the life-force itself and manages the release of our body’s stored

energy reserves in order to support our survival and reproduction, when required by ancient mechanisms released by pre-determined environmental signals, triggers, “releasers”, or stimuli. Very simply, our life force flows from the RAS and through the rest of the brain as we interact with our environment in the moment to moment acts of life.

Put in plain language, we now find ourselves in a built environment that is constantly demanding our ancient biology to expend our energy reserves and, in the chronically over-active Stress Response (COASTER), flooding our bodies with adrenaline, Cortisol, and unnecessary sugar and fat reserves.

Hans Selye, and Walter B. Cannon before him, was correct in identifying a non-specific fundamental energy releasing process underlying all emotion, including the fight or flight reaction, but, also, including all other states of emotional arousal and motivation, all other emotions. Dr. Freud used the term “Eros” in a very similar context. Whether we call this underlying metabolic process activation, arousal, excitation, motivation, or a state of adaptive energy mobilization, the outcome is the same: elevated blood and tissue levels of adrenaline and Cortisol—the energy releasing stress hormones.

Prolonged emotional arousal results in COASTER, ill-health, disease, and eventual death. What Drs. Selye and Cannon never identified, however, is the central role of population density stress in initiating COASTER, or Selye's GAS (general adaptation syndrome), and its evolved role in limiting the size of mammalian animal populations.

Ironically, this work experimentally defining population density stress was being carried out by the animal ecologists John B. Calhoun, Charles Southwick, and J. J. Christian at more or less the same time but in different labs and, apparently, with no knowledge of each-other's discoveries.

Bodies Like Houses

Perhaps, a familiar metaphor will clarify this topic. Suppose we think of our bodies like the houses most of us live in. The reticular activating system supplies the electric current to our house, perhaps from a near-by power station or a generator running in the garage (door open of course). Thus, electrical energy flows through the house wiring and into whatever appliance we have plugged in at the time, depending on our needs for food, heat, light, entertainment, etc. If we place too great a demand on the system, run too many appliances too hard for too

long, the wires heat up, start a fire, and burn the house down. Thus, we have invented devices to interrupt this power demand and so prevent such overload fires—fuses and circuit breakers.

So, what if we think of the power generator as the reticular activating system, blood sugar (glucose) as the power, and our various emotional systems as the appliances. Place too great a demand on all of our emotional systems, as we do with unceasing stress, wear-out the fuses and circuit-breakers, and then we risk burning down the house we live in. Unfortunately, we may not smell the smoke and realize the COASTER level of energy demand until we experience the symptoms of Dr. Beard's "nervous exhaustion and neurasthenia" and, finally, Dr. Wilson's "adrenal fatigue". By the time we recognize that we are suffering from adrenal fatigue, our "house" is fully aflame and we may already have developed atherosclerosis—heart attack and stroke, hypertension, as well as obesity, diabetes, cancer, depression, severe chronic anxiety, suicide, blood-borne infection or other infectious disease, addictive disease, dementia—"Alzheimer's disease", ulcers, auto-immune disease, osteoporosis, etc.—all the result of the "wear and tear" of COASTER.

We hope this metaphor clarifies the problem and doesn't just blow smoke. Perhaps, it may serve as your personal smoke alarm. Always remember, where there is smoke, there is fire! Now, let's all just get stoned!

13. STONED ON STRESS: “ADRENALINE JUNKIES” and STRESS HORMONE ADDICTION

Another self-made problem that drives this over-production of Cortisol, Aldosterone, Renin, Angiotensin, CRH, ACTH, endorphins, enkephlins (endogenous opiates inside the brain), endocannabinoids (?), dopamine, is stress addiction, what author Heidi Hanna has termed behavioral “stressaholism” in her 2014 book, *STRESSAHOLIC, 5 STEPS TO TRANSFORM YOUR RELATIONSHIP WITH STRESS*

We regularly rediscovered, with our patients, that we actually become addicted to our own stress hormones. When this occurs, we call ourselves “adrenaline junkies”, or “thrill seekers”, or “workaholics”, or “fanatics”, or “true believers”, or “rage-aholics”, or “extreme athletes”, or “anorexics” (extreme dieters), or bullemics, or “self-mutilators” (cutters), or extreme sports enthusiasts, or gambling addicts, or “process” addicts (see TOPIC 19), but,

actually, it is our own “feel good” bio-chemicals, resulting from the Acute Stress Response, that we become physically, psychologically, and spiritually dependent on.

As a result of this stress addiction, we are constantly compelled to keep ourselves in a high stress state or go into opiate withdrawal (i.e., anxiety, restlessness, muscle cramping, sugar craving, gastric discomfort, racing thoughts, dysphoria, and craving for excitement, or movement, or stimulation). One study has actually suggested that Cortisol itself may have opiate-like addictive properties, not to mention dopamine, endo-cannabinoids, and other neurotransmitters generated by high stress states!

One reference demonstrating a strong positive correlation between elevated plasma (blood without the cells) levels of Cortisol and beta-endorphin in clinical depression, can be found in *PSYCHONEURO-ENDOCRINOLOGY, The Scientific Basis of Clinical Practice*, Edited by Wolkowitz and Rothschild, 2003, in the paper “Neuropeptides and Hypothalamic Releasing Factors in Psychiatric Illness”, by Musselman and Nemeroff, which states on pages 41-42:

“In contrast, increased concentrations of basal plasma beta-endorphin in patients with major depression are usually observed (refs).... However depressed patients

with increased urinary free cortisol concentrations exhibit positive correlations between their urinary free cortisol and cerebrospinal fluid opioid concentrations compared with healthy individuals (ref). Such a (positive) correlation between plasma cortisol and beta-endorphin concentrations has been observed in depressed patients (ref).”

Remember that the upstream biochemical POMC (pro-opio-melanocortin) breaks down between its origin in the hypothalamus and the pituitary gland into beta-endorphin, MSH, and ACTH. So, we expect elevations of urinary Cortisol and beta-endorphin when the Stress Response is over activated. Apparently Musselman and Nemeroff weren't looking at Cortisol levels in their research. It's a fair guess that it was elevated.

So, what's the big deal, the reader may be asking? And our answer is: elevated beta-endorphin and Cortisol levels are results of COASTER and, thus, highly correlated with and suggestive of COASTER as the primary neuro-chemical cause of clinical depression.

Stress Addiction Is a Death Trip

So, we may be addicted to the very process that's making us anxious, depressed, and killing us. How big a deal is that? No wonder that so many of us love excitement, "sporting" events, fast cars, big cities, travel to foreign countries, service in the military, dangerous jobs, etc. One could say that our very culture is based on addiction to endogenous "feel good" chemicals released by the various phases of the stress response, even though it's killing us! How crazy is that?

If we continue to live high "wear and tear", stress-addicted lives, then here comes major depression (clinical depression), chronic anxiety in many forms, a multitude of potentially fatal medical illnesses, and infertility, in addition to our increased endorphin production and stress addiction.

The well-established neuro-endocrine function of endorphins and other endogenous opiates is complex, but includes pain relief, infertility, and termination of master stress hormone CRH release from the neurons of the central nucleus (CE or CEA) of the amygdala (recall the heads of the seahorses on the Back Cover). The CE was identified by the research of Dr. Candace Pert, in Dr.

Solomon Snyder's laboratory, as having the greatest concentration of inhibitory opiate receptors anywhere in the nervous system.

This maximal density of endogenous opiate receptors on CRH neurons in the Amygdala may explain the clinical effectiveness of Catapress (brand name for generic "clonidine") Patches in the medical management of opiate withdrawal, as clonidine triggers inhibitory presynaptic (i.e., up-stream) alpha 2A receptors, in the same location as opiate receptors (and with similar functions), thus inhibiting further release of the master stress hormone CRH, and norepinephrine. Thus, preventing the very unpleasant sensations, otherwise caused by excessive CRH synthesis in opiate withdrawal. Sorry, but this is pretty technical and you may have to read it a couple of times to fully understand the significance of clonidine in preventing opiate withdrawal discomfort.

There are, as well, inhibitory presynaptic auto-receptors for serotonin on these stress inducing CRH neurons, which helps explain the calming, anti-stress effects of chemical agents that increase serotonin levels, including the ubiquitous SSRI anti-depressants.

This serotonin effect includes Thanksgiving dinner. Turkey and white potatoes are both high in the amino acid tryptophan, which our bodies convert into serotonin and, thus, we increase serotonin blood levels after Thanksgiving dinner. Now, at least, we know why we were so relaxed that we fell asleep after that big Thanksgiving meal.

Jonesing

Opiate, sedative, and alcohol withdrawal may be thought of as the rebounding activation of the Stress Response. Clearly, endogenous opiates are central to the negative feedback system that shuts off Phase 1 of Part A of the Acute Stress Response, as is norepinephrine synapsing at inhibitory pre-synaptic alpha-receptors on CRH and norepinephrine neurons. Fortunately, for the reader not well versed in the lingo of neuroscience, this is about as technical as this book gets. Sorry for the jargon but we didn't make this stuff up and a few of our patients really wanted these details in their efforts to make sense of what they were feeling!

However, and here's the take-home point, when over-activated by repeated false-alarm triggering of the Stress Response (COASTER), endogenous opiates are over-produced and flood other opiate receptors through-out the

nervous system, including those responsible for system-wide numbing (anesthesia) of psychic/physical pain and pleasure, and eventually producing an endogenous opiate dependency state-- an addiction to our own stress hormones.

Hans Selye, MD, wrote about this potential for addiction to our own stress hormones in his heavily revised 1976 second edition of *The Stress of Life*, on pages 412-413, in the section entitled “On Being Keyed Up”, where he states emphatically:

“The fact is that a *person can be intoxicated with his own stress hormones*. I venture to say that this sort of drunken-ness has caused much more harm to society than the alcoholic kind.

We are on our guard against external toxicants, but hormones are parts of our bodies; it takes more wisdom to recognize and overcome the foe which fights from within. In all our actions throughout the day we must consciously look for signs of being keyed up too much—and we must learn to stop in time.”
(underlining mine)

Addicts R Us

Again, “adrenaline junkies” are not adrenaline addicts after-all but, rather, endogenous opiate and dopamine addicts. Thus, also, the addicting potential of over-exercising, over-work, preoccupation with sex, extreme dieting, bungee jumping, mountain climbing, mountain biking, skiing, sailboat or motorcycle or bicycle or auto racing, prize fighting, “extreme” sporting competitions of all sorts, anger (rage) and violent behaviors—including warfare, etc., all of which may eventually lead to clinical depression and the discomfort of anxiety-ridden opiate/dopamine/etc. withdrawal when the behavior ceases. Clearly, the motivational neurotransmitter dopamine plays a similar, parallel role, already well established in the addiction field.

Test Yourself

If you think this model might apply to yourself, try sitting quietly with a calm mind in a dimly lit, quiet room for just 5 minutes, aka meditation. If you’re addicted to your own stress hormones, you will go into a state of chemical withdrawal and need to seek out stressful stimulation through engaging in stressful activities or stream stressful thoughts to reactivate your Acute Stress Response and get the stress hormones flowing again.

More on the multiple forms of this stress addiction or “stressaholism” later, in Topic 19.

Weir Mitchell’s Stressed-out Chicago

Perhaps, another quote from pg. 30 of Dr. Weir Mitchell’s 1887 revised version of his book, *WEAR AND TEAR OR HINTS FOR THE OVERWORKED*, would be fitting here. On revisiting a rapidly growing late 19th century Chicago, Dr. Mitchell observed:

“I have seen it (Chicago) anew of late with its population of 700,000 souls. It is a place to-day to excite wonder, and pity, and fear. All the tides of life move with bustling swiftness. Nowhere else are the streets more full, and nowhere else are the faces so expressive of preoccupation, of anxiety, of excitement. It is making money fast and accumulating a physiological debt of which that bitter creditor, the future, will one day demand payment.” (underlining mine)

Stress Addiction Self-Assessment

If you’re wondering if you might be a stress-addict, and failed the 5 minute quiet test above, then answer these screening questions:

- (1) Are you always in a big hurry?, In a rush?, Always behind?, Always running out of time?, Always late?
- (2) Do you drive fast?, Reckless?, Tailgating?, Speeding tickets?, Accidents?, Running STOP signs?, Always honking your horn?
- (3) Do you often find yourself using these words/phrases: "I'll be right back!", "Wait just a minute!", "Just a sec!", "Quick as a flash!", "I needed it yesterday!", "I'm working non-stop!", "Cut to the chase!", "Miss, I'm in a big hurry!", "Here we go again!", "Just give me minute!", "I'll be right there!", "Quick as a wink!", etc.?
- (4) Are you always "wound-up"?, Angry?, Exhausted?, Sleep deprived?, "On edge"? "Overwhelmed"? "Strung out"? "Coming unraveled"? "over-taxed"?
- (5) Are your friends and family constantly telling you to "slow down!"? "You're working yourself to death"? "You can't take it with you!"?
- (6) Is your doctor telling you your blood pressure is high? Is your cholesterol elevated? Are you anxious, depressed? Do you have an elevated Cortisol blood level first thing in the morning?

- (7) You only watch violent, “exciting”, “suspenseful”, “dramatic”, “horror”, or war movies, or read similarly stressful novels, or play similar video games?
- (8) You regularly attend violent “sporting events” and become passionately engaged in the “fan culture”? Are you a “sports fanatic”?
- (9) You suffer from any or all of the medical conditions listed in this book thought to be caused by COASTER?
- (10) You are restless, irritable, and discontent?
- (11) You use/abuse alcohol or prescription “anti-anxiety” drugs to calm-down on a regular or even daily basis? You only feel free of stress when binge drinking? You are daily “relief drinking”?
- (12) You use stimulants of any or all kinds to maintain a heightened state of arousal/stress? You are dependent on caffeine and drink coffee, teas, or highly caffeinated soft drinks all day?
- (13) You have trouble sleeping because you just can’t turn-off the day’s worries?

- (14) You worry constantly “about everything” and just never feel safe?
- (15) You suffer from flashbacks and re-living nightmares resulting from previous near-death traumatic experiences? You’ve been told you have PTSD?
- (16) You are always thinking about work, working at home, or at work?
- (17) You spend way too much time obsessing about or doing: gambling, sex, church-going, performing, being angry, absorbed in politics, parenting (“helicopter parents”), focused on money, thinking about/buying stuff, focused on appearance, focused on food, WORRYING, etc.?
- (18) You avoid “boredom” (the absence of stimulation and distraction) like the Plague, because it makes you so terribly uncomfortable?
- (19) You have the cardinal features of “Cushing’s Syndrome”: elevated blood sugar, elevated blood cholesterol, elevated blood or saliva cortisol, lower abdominal fat accumulation, lowered energy level, suppressed immunity resulting in catching every bug that comes by, lowered sex drive, high blood pressure, depressed mood, and heart disease?

(20) Fill-in this blank yourself: _____ ?

(21) Make-up your own list, but stop to breathe and smile!

How'd you do? You are not alone!

Incidentalomas

One possible confirmatory finding of COASTER's existence in today's medical literature is the discovery, during the multitude of CT scans of the head being done all over the wealthy western world, that 10-20% of us Westerners have benign pituitary adenomas (non-cancerous tumors of the pituitary gland), humorously labelled "incidentalomas". Many of them have been found to be over-producing ACTH. Recall the pituitary hormone that drives the production of Cortisol by the adrenal glands is ACTH, produced in the anterior pituitary gland. Sadly, these researchers did not measure Cortisol or Beta-endorphin levels or do MRI's of Adrenal Glands.

Clearly, further research is needed to confirm this speculation, but, then, there would be no advances in any field of science, were it not for hypothetical speculation spurring future research.

14. STRESS and CLINICAL DEPRESSION (aka “Major Depression”)

Continued over-production of Cortisol during COASTER is highly correlated with the second most prevalent psychiatric condition, clinical depression (aka “major depression”), said to afflict one in five (1/5) or 20% of us Americans at some point during our lifetimes. This form of serious, potentially life threatening depression should be distinguished from normal grief, but demonstrates many of the same symptoms including:

lack of energy, lack of motivation, loss of sex drive, crying, sleep disturbance, suicidal thoughts/behaviors, disturbed eating, inability to work, withdrawal, morbid thoughts, anger and irritability, and, of greatest value for the sake of comparison, low subjective mood rating (0-3 in clinical depression but 3-6 in normal grief) on a scale of 0-10, with 10 being the happiest ever and 0 being the saddest ever in our life experience—most depressed—and normal mood on such a scale will be self-rated at 7-8/10.

Mysteriously, we have never met another physician who has used such a simple subjective mood rating scale for assessing and tracking the treatment of clinical depression! Using such a scale, which was printed on each of our assessment forms and progress notes, is a highly effective treatment tracking device, which we know from our experience in treating 25,000 patients. Our simple preprinted forms were cited by the Attorney General's office of the state of Michigan as one of the reasons for revoking Dr. Miklashek's medical license, along with omitting 8 physical exams (which psychiatrists are not allowed to perform!), after a 6 year investigation into our high number of prescriptions for controlled substances. Dr. Miklashek had retired to write this true medical mystery story and expose' 18 months earlier! The true cause of governmental scrutiny was the sheer volume of our practice, which treated 3,000 active patients at a time and with unparalleled success. Thus, we wrote many times more Rx than our solo practice colleagues. So, we must have been doing something wrong, right? Wrong. But, then, what politician can distinguish right from wrong anyway? Please excuse our cynicism but the facts speak for themselves. Let the reader of this book be the judge of Dr. Miklashek's devotion to his patients, knowledge of

the subject, and ethical practice of his profession. And, now, for more “grief”!

“Normal grief” is typically the result of a clearly defined painful loss or hurtful attack but, fortunately, it is “self-limited”, that is to say, it cures itself within 6 months, without extensive medical or psychological intervention. However, short-term “supportive psychotherapy” or grief counseling may be necessary. Subjective mood ratings in normal grief are typically not as low or prolonged as in clinical depression, say 3-6/10 versus 0-3/10 in the more severe and dangerous cases of clinical depression. Certainly, acute grief can drive dangerous self-destructive behaviors and should be cause for concern.

Clinical depression, on the other hand, typically has prolonged (i.e., longer than 6 months) lower subjective mood ratings (0-3), dangerous suicidal ideation with history, plans, means, and opportunity, as well as personal and/or family history, and requires the more extensive intervention of mental health professionals and, often, medication, to effect a full recovery.

One prominent “expert” publisher of medical science books responded to our request for publishing

consideration of an earlier version of this volume with the following, brief note:

“I won’t be making an offer on STRESS R US. While I recognize the major role that stress plays in people’s lives and their health, I thought you don’t give enough information and credence to other sources of depression and anxiety, so end up exaggerating what relieving stress can do for a person.”

My response to her was that she, apparently, didn’t actually read the book. The book clearly describes “anxiety” as the subjective experience of COASTER and presents irrefutable scientific evidence that the stress hormone Cortisol is the cause of clinical depression. We’ll let you, the current reader, decide whether she was correct in her criticism or just making up a story to cover-up laziness: lying. Want to see the proof that cortisol causes clinical depression? Read on.

Cortisol Causes Clinical Depression?

The interested reader may wish to explore the excellent published research and hypotheses of Dr. Huesseni Manji; Charles Nemeroff, MD, PhD; Ronald S. Duman, PhD; and Owen Wolkowitz, MD, et.al., from which we can

hypothesize (i.e., make an educated guess) direct causation of clinical depression by COASTER, specifically to the subsequent effect of chronically elevated Cortisol levels on the hippocampal formation (hippocampi, the seahorses facing each-other on the BACK COVER), and on the limbic system in general, including the amygdala and cingulate cortex (see the BACK COVER).

This depressant effect of COASTER operates at the level of the Cortisol receptor (“GR”) on hippocampal neurons and directly on transcription (i.e., copying) of DNA in the nerve cell nucleus, which is responsible for the synthesis of the neurotropic chemicals (“BDNF”, brain-derived neurotropic factor) that maintain the healthy functions of the neurotransmitter producing and mood regulating neurons that produce serotonin and dopamine.
OK, now what’s this new abbreviation, BDNF?

BDNF?

Recent research has demonstrated the importance of other brain chemicals called neurotrophins, including BDNF (brain derived neurotropic factor), in the growth, and health of newly born, undifferentiated, “stem” neurons in the dentate layer of the hippocampus (basal membranes of areas CA3 and CA4—beautiful colored florescent

micrographs can be seen on the net, just Google “new brain cells being born”). When this neurogenesis is suppressed by high levels of Cortisol, we find the origins of depression and memory problems. Neurotropins are encoded by genes that require additional “transcription factors” (vitamins, minerals, and hormones) to function in the transcription (or copying) process. More on these later.

Cortisol Shortens Telomeres

Another research trend deserving of mention, and for which Elizabeth Blackburn recently won a Nobel prize, focuses on the correlation between the length of the terminal elements of chromosomes (like the plastic on the tips of shoe laces), called telomeres, and the longevity of cells. Telomeres keep chromosomes from unravelling and degrading, just like that plastic on the ends of shoe laces keep our shoe laces from unravelling. This gets really interesting for a reader of our book when we add that Cortisol appears to speed the shortening and anti-depressants appear to increase, or at least maintain telomere length.

We know that Cortisol excess, COASTER, shortens life and this may be the mechanism. Much of this research is being conducted by scientists at the Osher Center for

Integrative Medicine at UCSF, University of California at San Francisco, and can be reviewed on the web.

Transcription Factors?

At this juncture, we need to expand on the critically important role of transcription factors in depression: vitamin B12, thyroid hormones, estrogen, testosterone, and Cortisol (i.e., too little, the result of burned out adrenal cortices, is as bad as too much of this vital steroid hormone, recall the “inverted U effect”). This is well-known to the OB/GYNs who have witnessed the almost immediate relief from post-partum depression and anxiety resulting from the application of a trans-dermal estrogen patch to the skin of a woman who has recently delivered a child, which otherwise results in an immediate plummeting of estrogen levels, as the placenta has been producing 100 times more estrogen than normal during the third trimester of pregnancy. It’s not the fall that kills ya, it’s the sudden stop when you hit the ground!

Please Pass The Placenta

Many mammals, after birthing, consume the placenta and some midwives advise women to freeze their

placentas, in order to make therapeutic smoothies out of them in the post-partum period. This is long known traditional method of avoiding post-partum mood and anxiety problems, including obsessive-compulsive and, even, psychotic symptoms in humans. In recent years, news stories of new mothers experiencing unwanted violent images involving their newborn babies have driven some women to murdering their own children, apparently in order to save them from suffering a far worse however delusional fate. Our always poorly informed MSM recently put out a worrisome article warning new mothers against consuming placental products due to a single case of a neonatal infection blamed on transmission through the placental supplement. Our experience in treating such women was that restoration of estrogen by means of a transdermal skin patch quickly eliminated these visions and returned these women to normal motherhood tasks. More was already said regarding these Transcription Factors in the preceding TOPIC 6.

Needless to say, untreated clinical depression is self-terminating, in suicide, end of story. Americans take their own lives at a rate of one every 40 seconds. In present day America, suicide has become the second leading cause of death among young adults. In many countries in Europe

it is number one in this age group. Obviously, this is a tragedy for all involved. It is often a preventable tragedy.

15. WHAT ABOUT ANTI-DEPRESSANTS?

The use of anti-depressant medications has become increasingly commonplace: nearly one in eight Americans had taken these medications in 2013 according to NCHS Data Brief No. 76, but nearly one in four women aged 40-59, and particularly with mass marketing to primary care providers and directly to patients. We discovered, in clinical (trial-and-error) practice, a nearly fool-proof, inexpensive, and readily available medication treatment model for clinical depression.

99%

None of our colleagues ever believed that 99% of our patients treated with this stress management plus adequate transcription factor based anti-depressant combination model, including a fixed weight ratio of a combination of two currently available generic, inexpensive antidepressant medications, were relieved of all symptoms of clinical depression in 10-21 days from treatment initiation. We believe that patients everywhere deserve to have access to

this information, which professional journals have refused to print.

The secret was to ignore the drug company marketing, which always focuses on their own one individual product per drug category, and, instead, use two anti-depressants, necessarily from two different manufacturers, in tandem, one that increased brain serotonin levels, as well as another agent that increased brain dopamine levels (n.b., NOT norepinephrine -- recall its role in increasing stress?) in exactly the correct weight ratios. This required using one anti-depressant to achieve each effect, as there exists no true "dual action" single antidepressant (i.e., releasing both serotonin and dopamine) since nefazodone (Serzone) was largely removed from the market , due to reports of liver damage with high doses in Europe. Therefore, two separate synergistic (i.e., working together) antidepressants had to be given in different exact weight ratios, for each effective combination formula. We routinely attempt to get the New York Times to publish comments with this info, but their medical science "experts" disallow their publication, as our findings apparently do not match the drug company propoganda that defines their "expertise". Too bad for the thousands of patients taking anti-depressants, with poor results and horrendous side-effects.

Neutralizing Side-effects

Our extensive experience in clinical practice was that no single anti-depressant yielded complete remission of depressive symptoms but each one produced a predictable set of uncomfortable or intolerable side-effects. Serotonin releasing agents were notorious in producing sedation, anergia, gastro-intestinal discomfort, increased temperature and sweating, decreased concentration, bleeding, and sexual problems, to name a few. Serotonin is known to block dopamine release by triggering inhibitory presynaptic “hetero-receptors” on dopamine neurons. By contrast, the single dopamine (and norepinephrine) releasing agent, bupropion (brand name “Wellbutrin”), often caused over-stimulation, anxiety, anger, paranoia, or mania. Cocaine is a dopamine releasing chemical, for comparison. According to Nature’s brilliant design, dopamine neurons have presynaptic inhibitory hetero-receptors for serotonin, as do the troublesome norepinephrine neurons that cause the Stress Response or “anxiety” experience. Thus, the calming effects of increasing brain serotonin levels, and the side-effect neutralizing action of using two agents simultaneously. Again, we have never seen this information in print and we only figured it out through trial and error clinical practice with our patients. Our apologies to the many hundreds of unfortunate early patients with whom

we followed the inadequate and inaccurate drug company instructions, approved by the FDA, in our flawed efforts at relieving the psychological symptoms of COASTER: “anxiety” and clinical depression. This is complex molecular neurophysiology and, for the non-expert reader, demands repetition in understandable language.

Again, it was our “anecdotal” clinical research, often contradicting any information provided by the drug companies, that demonstrated increasing serotonin actually inhibits both norepinephrine and dopamine release (through presynaptic inhibitory hetero-receptors). This is doubtless the mechanism by which serotonin releasing agents reduce anxiety by reducing norepinephrine (i.e., the end neurotransmitter released in the sympathetic nervous system responsible for the “fight or flight”, acute Stress Response).

“Dual Action” Fraud

Conversely, so-called “dual action” antidepressants, like fluoxetine, paroxetine, duloxetine or venlafaxine (n.b., these two are actually marketed for their “dual action”!), for instance, have the nasty unwanted “side-effect” of actually increasing anxiety due to their unwanted noradrenergic activity. Some of these are marketed as “SNRIs” for

“serotonin and norepinephrine reuptake inhibitors”, but both fluoxetine and paroxetine have this property, although not marketed for it. Naïve clinicians, doubtless following drug company instructions, simply increase the dose until the unwary patient finally cries “uncle” while literally vibrating to pieces. Remember, norepinephrine, which drug company literature improperly calls a cure for depression, is the main neurotransmitter responsible for the Stress Response! Now you know why those darned anti-depressants your family doctor, or inexperienced psychiatrist, gave you actually made your anxiety worse and just made you shake worse!

Of course, the drug companies have managed to convince general practitioners, with no special training in the use of psychiatric drugs, that they are adequately trained to prescribe psychotropic medications to their patients. When the profit motive is everything, the larger the market for their products, the better the sales and the higher the profits. Damn the side-effects and potential dangers, full speed ahead! Now, the blind truly are leading the blind, following the instructions of the ignorant. Guess where this parade will end? Anybody see where that last torpedo hit? Boom!

It Takes Two to Tango

By contrast, increasing norepinephrine and dopamine release appears to inversely decrease serotonin release through the same sort of mechanism. Thus, common sense demanded the simultaneous use of two antidepressant agents in order to achieve a balanced effect, without serious side-effects, and totally relieve the symptoms of clinical depression.

These combinations of antidepressant agents have never been used in controlled, double-blind studies (science-speak for one group of volunteer patients on treatment compared with another other-wise identical group not treated, and treatments unknown to the researchers or patients themselves). The academic psychiatrists performing the studies never personally treat enough patients in practice to accumulate hands-on clinical experience with these drugs. However, in the heat of clinical practice we were forced to carefully try the hundreds of different combinations of weight ratios, by trial and error, in order to find the exact weight ratios of combinations of anti-depressants necessary for the complete remission of all symptoms of clinical depression, and with minimal side-effects. After-all, most of these folks were suffering and at varying risk for suicide.

Untreated, or poorly treated, clinical depression is often a life-threatening medical emergency.

Only very busy clinicians, treating thousands of seriously clinically depressed patients, with hundreds of different combinations of dozens of different anti-depressant medications, and ignoring drug company single-agent marketing, can discover the necessary weight ratios of antidepressants that are optimal for the greatest efficacy (effectiveness).

All of our attempts to report these findings have been rejected by the standard psychiatric journals, newspapers, websites, and drug companies, as simply impossible to believe, not having been produced in the standard double-blind placebo controlled format for published studies, which is just not possible to accomplish in the crush of a busy clinical practice. Let the public decide who knows how to help patients, and “get out of the way”, is our advice to over-zealous self-righteous clinically uninformed and politically motivated government and corporate bureaucrats.

Anti-depressants Lower Cortisol

We have always been willing to give these ratios to any physician or patient who asked. Most of these patients, when treated, demonstrated reduced symptoms of COASTER and lowered cortisol blood levels. This finding has, also, been reported for single antidepressant use in a scientific paper published by A. K. Upadhyaya, in *the Journal of Affective Disorders*, 21:213-18, 1991, in which the SSRIs fluoxetine (Prozac) and sertraline (Zoloft) reduced serum Cortisol and CRH levels, while increasing calming prolactin levels while treating clinical depression.

This research is, however, controversial, as are our extensive “anecdotal” clinical findings. Simple logic would lead one to predict that, if clinical depression is correlated with or caused by prolonged high CRH and Cortisol levels, and anti-depressants often improve depression, then, perhaps, anti-depressants may lower these levels. For this treatment to succeed, it was necessary that the patients have adequate levels of the critical transcription factors: vitamin B12, estrogen or testosterone, thyroid hormones, and, ironically, Cortisol.

Examples of Anti-depressant Combinations

One such common, inexpensive anti-depressant combination, but not the only one, was sertraline (Zoloft) and bupropion (Wellbutrin) SR or XL, in a weight ratio of 1:3, 50mgm of sertraline in the AM, with food, for 1 week, then add 150mgm bupropion SR or XL in the AM, at the same time. If complete relief of all symptoms of clinical depression had not occurred in 10 days, then both agents could be doubled. Both were to be taken in the morning, in the middle of a meal, to avoid gastric upset.

There are many other medical considerations in the actual treatment of any given patient and this treatment must be carried out under the supervision of an experienced clinician and, additionally, with the qualification that the symptoms have not first been relieved by a course of psychotherapy. A patient with a history of a seizure disorder, for instance, is precluded from the use of bupropion.

Anyone seeking further information on the exact weight ratios for the other antidepressants on the market need only contact us and we will happily forward them, for free, at gmiklashek950@gmail.com.

However, these were the weight ratios we used until retirement 5 years ago:

Escitalopram 5-10-20mgm at hour of sleep for initiation of treatment, followed by bupropion 150SR 1-2 in the AM; weight ratio: 1:15. Start the escitalopram first and at the lower weight, then add

the bupropion SR, one tab in the morning for 10-14 days, then two in the AM if necessary for full remission of symptoms of depression.

Fluoxetine 20mgm in the AM for initiation, followed by bupropion 200SR, also in the AM, after a few days in accord with clinical condition, as it may cause agitation, as noted above; weight ratio: 1:10.

This is why balancing the effects and side-effects of one agent against another agent is so important clinically, although we've never met another physician who knows to do this or seen these recommendations on dosing in print. Now, there's a real mystery!

WARNING: Individual Psychotherapy!

We need to, also, point out that individual psychotherapy, the one-on-one bread and butter talking therapy most common in the mental health field, has its own downside. Although we have never seen an article published on the subject, we certainly collected hundreds of anecdotal reports of well-meaning individual psychotherapists inadvertently or purposely recommending

that their unhappy clients/patients consider divorcing their current spouse and seek an upgrade, with whom greater happiness might be found (i.e., one much more like the always pleasant therapist: who does not have to live on a day-in, day-out basis with the patient/client in a give and take relationship!).

Think about it. The client/patient/customer pays the psychotherapist for, typically, an hour of the therapist's time during which the psychotherapy is conducted, typically in a lovely, homey, stress-free environment. Nothing else is asked of the unhappy client/patient/customer, except for prompt payment. In return, the client receives the closest thing to unconditional love since weaning from the breast! This is a very unnatural relationship and may easily be misunderstood by the client as the unspoken new normal they might, then, seek outside the therapy room, with some idealized spouse substitute, if not with the therapist him- or her-self.

No real world, day-in, day-out marital relationship can possibly compare! In the real world, the other party in any on-going relationship is going to have their own needs and expectations for reciprocity; they want something in return. However, unless this unreal fantasy is made a conscious subject of the therapy, or the

client/patient/customer is treated with their spouse or family, then the client may unconsciously come to desire a similarly constructed relationship in their real life, leading to divorce, remarriage, and almost certain disappointment.

Thus, although anti-depressant therapy is fraught with possible side-effects, talking therapy is not without its own dangers. Let the buyer beware!

One final consideration is that, often, withdrawing antidepressant therapy is difficult, if not impossible, without causing a relapse of depression or other prohibitive withdrawal symptoms. Antidepressant medications should never be the end-all of treatment for clinical depression. Psychiatric medicine practice is as much art as science and, as in everything else, experience is the best teacher.

16. CLONIDINE

Another pharmacological approach to anxiety and stress management, which generated the largest single agent portion of the 1,000,000 prescriptions we wrote over 42 years, was the use of the alpha-2 receptor agonist clonidine (trigger of the presynaptic inhibitory monoamine

alpha-2 receptor) to inhibit the amygdalar and hypothalamic CRH releasing cells. This inexpensive and readily available (by prescription only) medication is known in general medical practice as a blood pressure lowering aid, but no-longer widely used for this purpose and almost never used for stress management or to treat anxiety.

To review, CRH is the upstream master stress hormone and causes: (1) the downstream activation of the arousing sympathetic branch of the autonomic nervous system (see diagrams in the Appendix), (2) the hypothalamic release of POMC (pro-opio-melano-cortin) and, thus, (3) the further downstream release of ACTH (adreno-cortico-tropic hormone) from the anterior lobe of the pituitary gland and, eventually, (4) the release of Cortisol from the adrenal glands. How's that for a mouthful?! This crescendo (waterfall) of stress hormones is generally referred to as the hypothalamico-pituitary-adrenal axis, or "HPA axis" for short.

The Alpha-2 Receptor

So, over-production of CRH is the root cause of sympathetic nervous system arousal and Cortisol over-production, COASTER, and both can be easily re-regulated by alpha-2 agonist medications such as clonidine, if necessary, when other psycho-therapies, nutritional therapies, and life-style changes fail or to augment them. The activation of the Parasympathetic Nervous System can achieve the same end, but is underactive in most of us, modern urban and suburban humans due to exhaustion from the constant deluge of stressors in our “built” man-made environments.

It is the alpha-2 receptor activity of “anti-psychotic” medications like Thorazine, Reserpine, Seroquel, Mellaril, and Clozaril, to name a few, that may be responsible for their anti-anxiety effect. It is fair to say that the tranquilizing activity of these drugs is the result of their clonidine-like activity, although clonidine lacks many of the troubling long-term side-effects of the “major tranquilizers”, also known for their unique “anti-psychotic” activity, which clonidine lacks.

The key to regaining anxiety symptom control for a patient is restoring that patient’s personal self-control of

his or her Stress Response, by whatever means possible, including, if necessary, safe inexpensive medications like clonidine. Once an individual is thoroughly reassured that he or she can control their own Stress Response, or “anxiety”, they can develop further strategies for self-management that reduce the possibility of an unwanted flare-up to near zero. They have, then, regained control of themselves. They are “back in control”, back in the saddle, again.

This explanation should help the reader understand the enormous appeal of alcohol, opiates, and process addictions in our culture, as they act at inhibitory, presynaptic GABA receptor sites, right next to opiate, endocannabinoids, serotonin 5-HT 1A, and alpha-2 receptors, all of which exert inhibitory control over the release of CRH, the master stress hormone, and norepinephrine, exactly like clonidine, the benzodiazepines, SSRI’s, and opiates, among others.

Thus, the prevalence of “relief” drinking, and the necessity of continuing an established alcohol, benzodiazepine, marijuana, or opiate self-treatment, or prescription anti-anxiety regime in order to “calm down” and avoid the horrendous anxiety (n.b., stress rebound)

prominent during withdrawal from an established regime of any of these chemicals.

Clonidine

We first came across this information on clonidine, not in a psychiatric journal, but rather in a 1977 British Institute of Biology publication of “Preprints of symposium to be held on 20-21 September 1977”, entitled *Population control by social behavior*, and introduced by V. C. Wynne-Edwards. The paper introducing the stress reducing properties of clonidine, “Physiological mechanisms of stress”, by animal stress researcher J. R. Clarke, can be found on pages 127-155. It must be noted that Prof. Clarke was a member of the Department of Agricultural Science, University of Oxford, in Oxford, England. However, again, clonidine is well known by practicing physicians as a blood pressure lowering medication of great value. Unfortunately, the high blood pressure afflicting 30% of the adult population of the US is still a mystery to modern American medical practitioners.

The leading cause of the most common form of hypertension, “essential hypertension” (“essential” means no cause known), is COASTER. The physiological mechanism for this has already been explained, in detail,

earlier in the essay: activation of the sympathetic nervous system and release of mineralocorticoid and glucocorticoid adrenal hormones (including Cortisol and Aldosterone) raises blood pressure. Clonidine inhibits the release of norepinephrine, as well as CRH, in its blood pressure lowering and stress reducing activity, and, thus, reduces the feeling of anxiety. Too high a dose will lead to tiredness, overly lowered blood pressure, and a dry mouth, but micro-dosing (e.g., 25-50mcg: ¼-1/2 of the smallest 0.1mgm tablet) can totally alleviate anxiety and insomnia without these side-effects, and reduce the Stress Response or “withdrawal” symptoms caused by alcohol or opiate withdrawal.

Psychiatry, to this day, led almost solely by drug company marketing, has not come to terms with the importance of stress physiology in explaining the underlying causes of psychiatric illness. We doubt that any other psychiatrist has ever used clonidine, a very inexpensive, safe, and well known blood pressure lowering drug, to treat anxiety, let alone “stress” symptoms, although it is well known and used extensively in opiate detox facilities in the form of the Catapres Patch.

A low dose, 5mgm, of a nearly pure serotonin releasing anti-depressant, escitalopram, taken at night can, also, help reduce the experience of anxiety and induce restful sleep, although dreaming may be more vivid. Standard lowest available dose escitalopram, 10mgm, may be halved (5mgm) for initiation of therapy, or even quartered (2.5mgm).

An excellent over-the-counter anxiety reducing and sleep inducing agent is the mineral magnesium, which is available in several different salts for oral administration, is non-addicting, and has almost no potential for harmful side-effects. Magnesium stabilizes Glutamate Receptors, including those on the inhibitory, calming GABA inter-neurons that inhibit our primitive survival impulses, including fight-flight (aka anxiety, fear, stress response, etc.) Thus, we are calmer and can sleep. Many of the Magnesium containing health-food store products have the word “calm” in them for this reason. Hopefully, this essay will help to correct these critical omissions in the education of psychiatrists, general physicians, and the general public. One caution when initiating magnesium supplements: this is a bowel stimulant, so start low and go slow.

Now, more on clonidine. It must be repeated that the commercially available doses of clonidine tablets: 0.1 mgm, 0.2 mgm, 0.3 mgm, are too strong for use as anxiolytics, hypnotics, and Cortisol lowering, stress regulating agents in many men and nearly all women. Our patients responded well to 1/4-1/2 tablet doses of the 0.1 mgm dosage form of clonidine, that is 25-50 mcg (microgram) doses, without precipitous decreases in blood pressure or tiredness, which often accompany higher doses and, again, particularly in women.

Clonidine is typically prescribed to middle-aged hypertensive men, in which these higher doses are needed, but may cause tiredness and low blood pressure in women and anxious individuals with normal blood pressure. We must, also, recommend that you discuss any of these suggestions with your family physician.

To quote Prof. Clarke, on page 142 of the already noted monograph:

“Further evidence consistent with this (inhibitory action of alpha-2 receptors on CRH neurons) has come from experiments using Clonidine, an Alpha-agonist. In these circumstances stress release of ACTH is prevented.”

(underlining mine)

This extremely important information has never been published in any psychiatric journal that we are aware of. A 3 month prescription of clonidine costs less than \$20., magnesium salts are much cheaper, and escitalopram is a prescription drug and is more expensive. None of these agents are addicting, nor do they have dangerous interactions with opiates, unlike the over-prescribed benzodiazepines, including Valium, Librium, Xanax, etc.

If you suffer from anxiety or stress or irrational fears or COASTER, and remember, these words can be used interchangeably, and are seeking an external pharmacologic agent (i.e., a pill) to allow you to quickly regain control over your anxiety or stress, research clonidine, escitalopram, beta-blockers (i.e., block norepinephrine receptors and the sympathetic nervous system), and magnesium, but discuss them with your physician, who probably knows their value in lowering blood pressure, as an anti-depressant, or as laxative, but has never been informed about their anti-anxiety, sleep inducing, and anti-stress potential, or dosing in such uses. A secure, well-trained holistic physician will appreciate your input.

Again, we need to point out that a course of psychotherapy with a well-trained, ethical, and experienced therapist should be the first treatment recommendation for any anxiety disorder, although many other holistic anti-stress therapies, also, exist and are often successful. There is always a potential serious down-side to any medication and this must be well understood by any patient before undergoing medication treatment.

Now, get ready for some more real world “pain”.

17. STRESS and PHYSICAL PAIN; PAIN AS STRESSOR

Pain is typically a signal of something wrong with our bodies, often initiates an involuntary withdrawal reflex, and was, prehistorically, in our native ecological environment, the result of injury by an accident, a predator, prey animal, or combatant in a territorial conflict. In current medical practice, pain is most often short-term, the result of trauma or a medical/dental procedure. Treatment with a few days of a non-narcotic anti-inflammatory drug or opiate-acetaminophen combination pain medication is traditional and adequate for pain relief in many injuries,

although the use of high dose acetaminophen by over consumers of alcohol can lead to irreversible liver damage.

However, severe chronic pain (long lasting, treatment resistant, and, often, caused by industrial accident or from a failed orthopedic medical procedure) is a huge problem in America, as well as all over a war-torn world and almost always goes untreated, other than by very expensive, rarely effective, and potentially harmful deep tissue injections. Such injections are delivered in the physician's office (interventional pain medicine), and deliver anti-inflammatory steroids (biochemical synthetic cousins of Cortisol), in combination with local anesthetics, to the site of the pain nerves and under fluoroscopy.

“Interventional Pain Medicine”

If these expensive and potentially harmful injections work at all, the relief they provide is often transient, which would be expected of such rapidly metabolized agents. However, due to their high cost (often \$1000., or more, per injection) and the restrictions placed by insurance companies, they can only be administered once every 2 or 3 months, and the person in severe pain is simply expected to “just grin and bear it” in the meantime.

Unfortunately, and more central to the purposes of this book, COASTER is triggered by chronic pain (unremitting, constant, severe pain). If the pain is not relieved, the COASTER effect will continue to generate high Cortisol levels until the adrenal glands are no longer able to produce it, and adrenal fatigue develops. Then, the final relief of death ensues.

A recent article abstracted by PubMed from the journal *Brain*, Mar; 136 (Pt.3):815-27, is entitled “The stress model of chronic pain: evidence from basal cortisol and hippocampal structure and function in humans.” The researchers found smaller hippocampi (the seahorses facing each-other on the BACK COVER) and elevated Cortisol levels associated with severe chronic pain. They, also, opined that the shrunken hippocampi in these patients might help explain the chronicity of their pain. Remember, shrunken hippocampi have already been found with PTSD, depression, and dementia.

Correlation Is Not Causation, but...

Correlation is not causation, but this study appears to offer experimental evidence of a potential causal relationship between the elevated Cortisol levels, COASTER,

in severe chronic pain sufferers, and hippocampal shrinkage. Recall that healthy hippocampal function (the facing seahorses in the brain image on the BACK COVER of this book) is known to be responsible for short-term memory, mood regulation, and the regeneration of the brain resulting from potentially 500,000-1,000,000 new brain stem cells born daily, unless poor nutrition and/or high Cortisol levels prevent. The reader will recall that these high Cortisol levels and shrunken hippocampi are correlated with clinical depression and thought to be the basic mechanism of depression.

It should be widely known by now that our nation is in the throes of a prescription opiate abuse epidemic, as well as a dramatic upswing in secondary heroin use, too often resulting in overdose, death (64,000 in 2016!), and fueling a crime wave. The main causes of this tragedy are poverty, our severe chronic pain epidemic, and COASTER. Read on for the details behind this assertion.

However, perhaps, we need to ask ourselves what forces are driving this very real problem, other than the too often assumed moral turpitude and lack of will-power. We would like to suggest several possible partial answers to this important question. More and more Americans are

developing severe chronic pain problems due to an aging population, receiving ever more, but only partially effective, care for chronic, painful medical conditions. The lucrative black market in diverted, legitimately prescribed pain pills is driven by poverty and the need of poor people to find supplemental sources of income, often for basic living expenses. A small minority of our patients diverted and sold a portion of their pain medications, or sold their prescriptions to professional black marketers, for just such purposes, although, when discovered, they were summarily dismissed from the practice. The attentive reader of this writing will, hopefully, suspect that attempts to numb the unpleasant effects of COASTER with opiates, also, drive this epidemic.

Finally, while we're concluding the subject of stress, severe chronic pain, poverty, and opiate abuse, we should high-lite the heroin epidemic sweeping our nation. Pain pills are often the gateway drugs leading to heroin dependency in modern society. Heroin is, unfortunately, cheaper and more available to the opiate dependent user than the harder to find and more expensive prescription pain pills. So, when no longer able to obtain prescriptions or to afford expensive prescription pain medicines, many legitimate severe chronic pain patients are forced to

substitute the cheaper and more available, heroin. Like so many of our social ills, we simply need to “follow the money”. Politicians too often leap without looking to the moral high ground of blaming the victims of poverty, the highly stressed, and those of us suffering from severe chronic pain. Their self-serving, self-righteous ignorance should be obvious to all.

Now, how about a near-death experience to lighten things up?!

18. PTSD (Post-traumatic Stress Disorder)

One of the most tragic anxiety disorders, which, if untreated, is certain to shorten the life of the afflicted, is PTSD. Simply put, when we are subjected to an emotional or physical experience upsetting enough to “scare us to death” (including war, auto accident, plane crash, physical or sexual assault, torture, fire and accident, natural disaster, childhood abuse, etc.), an ancient brain recording mechanism records a traumatic memory of the event (the strong emotion and a vivid multi-sensory image of the event including the surroundings). We will reflexively respond involuntarily with a “fight or flight” reaction (aka “panic”) if ANY of the recorded elements occur in a future

situation. This is, also, an excellent example of fear conditioning.

An oft cited example of a PTSD “flashback” is a war veteran who is exposed to a sudden loud noise, or meets an individual resembling a former combatant, and instinctively fights or dives for cover in a “reliving” experience, as if he or she had been shot at, and was back in a deadly wartime episode that may have occurred many years ago. Cortisol levels are often constantly elevated in such individuals, as they suffer endlessly from COASTER.

EMDR

Millions of Americans suffer from PTSD, not just war veterans. However, effective treatment is readily available in the form of EMDR (eye movement desensitization and reprocessing), discovered by California psychologist Eleanor Shapiro, PhD, a quarter century ago.

We had the honor of working with many hundreds of such suffering souls and, although not personally trained in EMDR, we were able to refer these patients to competent, well trained, and experienced trauma psycho-therapists, who treated these individuals with EMDR and, often,

guided them to full recovery in a few hours of therapy, rarely more than six hours. There is no reason, rationally, why any trauma survivor should continue to suffer from PTSD, if they are willing to give EMDR a try.

If the reader is interested in more information on this form of psychotherapy, simply Google the initials, “EMDR” and, we recommend, click on the website of the EMDR International Association or EMDR Institute, Inc., which is very informative and should answer most of your questions, as well as help you find an EMDR therapist, if you need one.

And, now, let’s really dig into the many faces of addiction.

19. SUBSTANCE and PROCESS ADDICTION: “NUMBING OUT”, NOT “GETTING HIGH”

What psychiatrists, other mental health professionals, and the general public do not understand about addictive disease is that addicts are “numbing out” psychic and

physical pain and anxiety (aka “stress”), not seeking pleasure or “getting high”.

Nor is the “dopamine” hypothesis an accurate one. COASTER regularly augmented with traumatic flashbacks is responsible for many of these uncomfortable, intolerable feelings, and, thus, the greatest single cause of our addiction epidemic, not the normal non-addict, occasional user’s goal of “getting high”. Ironically, an addict is almost certainly addicted to COASTER (remember the endogenous opiates) but struggles to control the effects with some substance or behavior.

The non-addict, casual user of pleasure inducing chemicals and behaviors uses those substances (e.g., alcohol, processed sugar and processed flour, cocaine, marijuana, hallucinogens, caffeine, nicotine, medically unnecessary prescription drugs, opiates, etc.) and numerous occasional behaviors (e.g., gambling, sex, thrill seeking, physical violence, wealth accumulation, shopping, dieting, exercising, collecting, charitable giving, self-depleting compassionate caretaking and therapy, etc.) for pleasure, mediated by the neurotransmitters dopamine, endogenous opiates, endocannabinoids (?), and others. However, over-use of these substances and behaviors can and will have

significant negative consequences, as well as lead to physical and psychological dependence.

These substances of abuse: alcohol, marijuana, opiates, amphetamines, LSD, etc., primarily inhibit the suppressive higher cortical glutamate neuronal inputs into the “lower”, more ancient, limbic, emotional brain neurons (see BACK COVER for dramatic illustration of these distinct inner and outer brains). These glutamate “higher” neurons, which synapse with and turn-on the “lower” inhibitory GABA (gamma-amino-butyric acid) neurons in the striate (stripped when cut in cross-section) ganglia, normally inhibit our primitive survival emotions. When sexual and aggressive survival drives are released from this higher inhibitory influence by drugs and alcohol, and our primitive emotions are released from higher brain control, then we feel really good (“high”) from ancient built-in pleasure circuits and the party is on! To put it simply: “I” over “E” becomes “E” over “I”, or, even more simply, we become “dis-inhibited”.

Then, we have the cocktail party, the “sports” bar, the corner pub, the tailgate party, the beach bonfire, and all their cousins. Many people are able to limit their consumption of these substances (and behaviors) and not develop the physical, mental, and spiritual dependence

which is so well known in those of us poor souls who become addicted, “dependent”, and constantly obsessed with procurement of the next dose of whatever agent or behavior that once brought temporary happiness and relief from COASTER, the suppressed painful traumatic memories that can dog us, and the built-up tensions demanded by social life. But, now, all we seek in the end is the maintenance of simple numbness, anesthesia. However, for numerous reasons, many of us are not able to maintain control of our “partying” and become addicts and alcoholics—obsessed constantly with finding the next drug or behavior.

Sigmund Freud, MD, addressed the subject of “intoxicants” in his 1930 book entitled above. On page 31 he states:

“It is not merely the immediate gain in pleasure which one owes to them (intoxicants), but also a measure of that independence of the outer world which is so sorely craved. Men know that with the help they can get from “drowning their cares” they can at any time slip away from the oppression of reality and find a refuge in a world of their own where painful feelings do not enter. We are aware that it is just this

property which constitutes the danger and injuriousness of intoxicating substances.” (underlining and parentheticals mine)

Loss of Control

The addict has lost this rational control of substance use or pleasurable behavior for the occasional “party” experience and cannot stop using the substance or repeating the pleasurable behavior when his or her fellows do. He or she is, then, obsessed with the acquisition of the mood altering substance or pleasurable behavior and is compelled to over-use it, even if the negative consequences are: jails, institutions, hospitals, and death.

Compulsive substance abusers and addicts, as well as pleasurable behavior or “process” addicts, are physically, psychologically, and spiritually dependent on substances, or excessive endorphin and dopamine releasing compulsive behaviors, in spite of the negative consequences increasingly experienced by the addict, who is forever attempting to regain the pleasurable experiences and stress relief casual use once brought: “chasing the white rabbit”.

“Process addicts” and substance dependent chemical addicts are no longer seeking pleasure and temporary

stress relief but only the numbing of the accumulating psychic guilt and shame, the relentless threatened emergence of painful memories, as well as physical pain, including withdrawal. When so trapped, we are constantly “craving” an ever more unachievable relief, while constantly being haunted by accumulating guilt and shame (“the oppression of reality”), and the increasingly difficult to avoid realization that our health is failing, as we are further and further cut off from normal social relations, education, family, and work.

Does this, by the way, not sound like the life situation of the recent “unexplainable” behavior of the socially isolated, alcohol abusing, extreme gambling addict who shot and killed 58 innocent concert goers, while wounding 489 others, in Las Vegas?

Addicts are terrified that we will die, although the good Dr. Freud might say we have a strong wish for just that final demise, if we can no longer acquire the life sustaining numbing or calming substance , or continue to repeat the life sustaining numbing or calming behavior. In this hopeless state, we stopped “having fun” or “escaping” by “getting high” some time ago, before finding ourselves “hooked” on increasingly self-destructive substances or

behaviors. As our “tolerance” to a particular dose of the drug or behavior increases, we need higher and higher doses in our frustrated attempts to regain our earlier relief.

“Tolerance” As Executioner

This phenomenon of tolerance helps explain the addict’s constant search for ever stronger drugs or more pleasure/anesthesia inducing behaviors, which tragically ends in overdose and death, including suicide. This should help the reader understand the current epidemic of fatal opiate overdose deaths, as well as alcoholic “black-out” drinking, health deterioration, and death, not to exclude increasing “accidental” deaths from dangerous intoxicated behaviors. As the reader may recall, all of these causes of death are on the rise in America, with 64,000 opiate overdose deaths reported in 2016. The naïve user continues to “chase the White Rabbit” in order to re-experience that wonderful feeling he or she felt with their very first use of the drug, without realizing that eventually the dose will be so great that it will turn off the respiratory drive and accidental suffocation follows, or, in the case of process addictions, death comes from suicide.

Turning Point or Death?

And that is the central psychological, mental, or spiritual dilemma of addiction: the expectation that certain death awaits, whether the addict continues, or stops, using the substance or behavior. For the addict, there is no way out alive and the craving for more of the life-sustaining substance or behavior is all-consuming, necessarily taking precedence over all other considerations, and in spite of all negative consequences! Our **only choices** at this juncture are humbling ourselves and asking for help, or suicide.

And, then, there is our need to escape the painful, anxious experience of “stress”, COASTER. Again, we should like to return to Gabor Mate’s *In the Realm of Hungry Ghosts, Close Encounters with Addiction*, 2008, for this summary on page 397:

“Stress (i.e., COASTER, population density stress) is salient in the ecology of addiction. Let’s quickly review some of what we have learned about it so far, so that we can apply this knowledge to the ecology of recovery:

- Stressors are the external triggers for the physiological stress reaction, a maelstrom of hormonal secretions and nervous discharges that

involve virtually every organ and system in the body.

- The most potent stressors (sic) are loss of control and uncertainty in important areas of life, whether personal or professional, economic or psychological.
- Stress interacts powerfully with the biology of addiction in the brain.
- Stresses such as emotional isolation or the sense that we are dominated by others, change our brains in ways that increase the need for external sources of dopamine (n.b., this is incorrect but widely believed)---that is they increase the risk of addiction.
- Stress is a major trigger for substance abuse (i.e., “relief drinking”) and other addictive behaviors, and is the most reliable predictable trigger for relapse.
- Stress hormones can themselves become addictive (c.f., TOPIC 13, above, in this book)”.

(parentheticals and underlining mine)

The most successful interventions are blatantly life-saving, as anyone who has ever spent time in a substance abuse treatment center, or detox unit, or an AA meeting, an NA meeting, an Alanon meeting, a Gamblers Anonymous Meeting, or any other “12-Step” based recovery meeting, will confirm. The frightening, painful withdrawal from an addictive substance or behavior often must be managed in the context of a life-saving medical, psychological and spiritual setting, which is able to present a life-saving alternative to the pained and terrified addict, and to provide support until the addict is convinced that he or she is able to survive without the self-destructive drug or behavior, and experience relief from the underlying psychic pain and anxiety through an equally effective and far less destructive alternative solution. Also, a sober life must come to provide enough joyful rewards to overcome the competing euphoric recall plaguing every addict in early recovery. Sobriety must be more fun than the misery of addiction, or why not just return to the old way of life: the misery of drug and alcohol dependence?

Dr. Carl Jung described such recovery as dependent on “vital spiritual experiences” and continued, as quoted in the AA “big book”, on page 27: “They appear to be in the

nature of huge emotional displacements and rearrangements.” (underlining mine)

One such highly successful recovery program is described in the book *ALCOHOLICS ANONYMOUS*, first published in 1939, 30 million copies of which have been printed and disseminated world-wide. The quotes above can be found on pg. 27, in the 4th edition of the book.

An Alternative Source of Relief?

In any case, an addict must experience an equally dependable alternative source of relief from his or her physical, mental, emotional, and spiritual suffering, when he or she has reached the “turning point” brought on by sheer desperation, in order to let loose of his or her dependency on self-destructive substances/behaviors and surrender to an alternative life-style. The catharsis offered in the AA recovery program is provided by just such supportive “self-help” group psychotherapy involving fellow addicts and alcoholics who have managed to acquire and maintain sobriety “one day at a time”. These “recovered” or “recovering” fellows lead by example and identification—a very powerful psychotherapeutic tool offering hope for a sober future for one and all.

A trapeze “flyer” will not let go of his or her swing unless absolutely certain of being caught by a fellow performer, and, thus, saved from a potentially suicidal fall. On page 59 of the fourth edition of the “big book” can be found:

“Half measures availed us nothing. We stood at the turning point. We asked His (the generic “Higher Power”) protection and care with complete abandon.”
(underlining and parenthetical mine)

Our ancestors did not have these problems, they were too busy with the day to day survival requirements of the hunter-gatherer life-style and they lived in a mandatory supportive small-group society, such as we have attempted to approximate in our classrooms, fraternities or sororities, social clubs, service organizations, work groups, 12 Step groups (e.g., AA, NA, OA, Alanon, etc.), “full gospel”, “evangelical”, and traditional Church communities, etc. They, also, had a mandatory direct moment to moment connection to Mother Nature in all Her glory, as well as Her fury. His or her thrills were completely natural, if mandatory for survival. It is the reader’s choice to take our references to “Mother Nature” figuratively, or literally!

A deep spiritual connection to all life and the life-processes of the world was as unavoidable in the hunter-gatherer lifestyle as it is remote in ours. E. O. Wilson has coined the term “biophilia” to describe the wonderful, joyous emotion that many of us experience, without the assistance of mind altering substances, when in a natural environment and “communing” with the miraculous biodiversity of Nature.

COASTER’S ADAPTIVE PSYCHOPATHS

An aspect of process addiction that bears mention is adaptive psychopathology. If we are in a constant numbed-out condition, as a result of the elevated endogenous opiates and cortisol associated with COASTER and possibly augmented by all manner of substance and process addictions, we lose our capacity for empathy! We become functional sociopaths (aka psychopaths), we no longer experience or mirror the feelings of others, or feel the deteriorating condition of our natural environment, or feel guilty in shooting, wounding, or killing hundreds of innocent souls.

In America, we are increasingly aware of income disparity, which leaves an ever larger segment of our

population materially less well off than a small elite fraction of our population, who have accumulated a disproportionate amount of the nation's wealth. Perhaps, our stress addiction and the adaptive psychopathology that results from a conscience numbed by our own endogenous opiates, as the result of COASTER, is the primary cause.

Conscience depends on a healthy capacity for empathy (our ability to feel what others feel), but, in a population ever more addicted to stress, ever more numbed to our own emotions, we lack empathy. Do we not increasingly ignore the suffering of the less fortunate, although presented with a constant stream of such images and reports?

We propose that stress addiction and the empathy-numbing, conscience-numbing effects of COASTER have had a profound effect on every aspect of our culture, as well as our modern life-ways, and threaten to undo our very way of life. At this point, do we even know what our emotions are trying to tell us? Do we know what we really feel about anything, or are we able to endlessly "stream" video of the suffering of our world, and, yet, feel nothing?

So, what can we do, as individuals, to stop this deterioration of our corporate psyche, this degradation of our way of life, our dehumanization?

Turn off the electronic media whenever they announce: “The following information may be upsetting to some (all!) listeners or viewers”, “listener or viewer discretion is recommended.” If a media “outlet” insists on flooding us with violent images in poorly made B movies, stop watching, cancel the subscription, walk out of the movie. There are plenty of wonderfully calming DVD’s of ocean waves, waterfalls, Zen gardens, forests, jellyfish, seahorses, and other natural visual or sound-scapes.

A recent article by Frances Weaver entitled “The mainstreaming of mindfulness meditation” and published in the online version of “THE WEEK” magazine (<http://theweek.com/articles/448250/mainstreaming-mindfulness-meditation>) cited the following statistic:

“The average American now consumes 63 gigabytes of content, or more than 150,000 words, over 13.6 hours of media use every single day—and all indications are that those numbers will keep climbing.”

Why aren’t we watching or listening to those soothing and serene images or sounds, or otherwise engaging in

mindfulness meditation? Because, we're addicted to our own stress hormones, the constant stimulation of electronic media, and the violent images and sounds that we have become dependent on to constantly stimulate their release, COASTER.

Only As Individuals

Only you and I, as individuals, can change this otherwise fatal scenario. Are we ready to change, or are we hopelessly committed to suicide by stress, violence, and the ever more numerous "diseases of civilization"?

Of course, nothing picturing nature compares with the real thing. We, in America, and through-out the world, are blessed with access to unspoiled natural environments, campgrounds, and parks, which we can visit and inexpensively stay in for a period of much needed rest and relaxation, surrounded by relaxing, rather than stressful, stimuli and naturally reintroduced to the normal daily cycling of our stress system.

If we really wish to escape the lopsided over-stimulation of modern urban or suburban life, we have the option, and our resulting period of relaxation and restoration of normal stress system cycling will pay enormous health dividends, although not yet scientifically

proven by our reductionistic “experts”. More on stress management in Part 4.

What ever happened to “common sense”?

20. OLD HABITS ARE HARD TO BREAK: HABITUATION, EXTINCTION, and NEURAL ADAPTATION ARE KILLING US

So, if allowing ourselves to be flooded with overly stressful stimuli makes us feel tense, “stressed”, anxious, fearful, and, even panicky, why do we continue to endure over-exposure to stressful environments, filled with noise, large fast moving objects, endless mobs of strangers, isolation (living/working alone), fear-mongering mass media, money worries, relationship fears, status fears, and fear of our very survival: fear in a thousand forms? Why do we suffer needlessly?

Can our very life-style, and, yes, even needless suffering, become a hard to break habit? Have we undergone a form of hypnotism by the pervasive corporate media, which has programmed us for submission, reproduction, war, and consumption, above all other considerations for each-other and the environment?

Psychotherapists actually use “exposure therapy” to extinguish phobias (“unreasonable” fears), which are actually Stress Responses to a multitude of ancient threatening stimuli: heights, airline travel, strangers’ faces, blood, etc. These automatic Stress Responses are experienced by those of us struggling to fit-into this sudden new world, filled with mostly unconscious triggering signals, warning of potential dangers in a much earlier natural environment which may or may not exist in the current “built” environment . This includes fear of such modern commonplace stimulus situations as: flying, elevators, high places, a society full of intentional danger signals at every cross-walk, emergency vehicle sirens, strangers, large moving objects, motorcycles, automobiles and trucks, etc. A scientific study of these signals has never been undertaken, so it’s anybody’s guess, but we focus on those elements of the ancient hunter-gatherer natural environment that recur in our current “built” physical environment. At least it’s a start!

This psychological phenomenon of losing at least the conscious awareness of the fear/stress response is called “extinction”. Multiple exposures to the identical feared stimulus or situation results in a progressively reduced conscious awareness of a Stress Response, if nothing

terrible actually happens to us when that stimulus is presented over and over again. “Neural adaptation” is, similarly, our sensory system numbing-out to stressful stimuli.

So, we cease to have a noticeable acute or chronic Stress Response, that we are aware of anyway, to these new built-world worrisome stimuli, even though our desensitized bodies may be cycling through the complete sequence of the Stress Response unnoticed, but for the chronic health consequences. Thus, our Cortisol levels may remain elevated without our slightest conscious awareness, although we cannot find any studies that have addressed this question. Published human Cortisol studies during a whole range of potentially stressful events are virtually unknown.

This phenomenon of COASTER can be easily diagnosed naturalistically by a fine tremor, so-called “essential hypertension”, dyspepsia (GERD: gastro-esophageal reflux disease—the direct result of a paralyzed stomach), repeated infections (due to immune suppression), and other “biomarker” manifestations of COASTER, including, if you have been reading this book, all the top ten diseases killing us, and our infertility epidemic!

1977 AMERICAN GRAND PRIX

I first noticed this phenomenon as an assistant race physician at the Watkins Glen, NY, Formula One American Grand Prix Race. When I did the mandatory brief physical exams on drivers, who had made contact with another car during the high speed dangerous race, and were, therefore, required to be checked for injury, I discovered that they could look calm, cool, and collected, in spite of heart-rates (mid-100's!) and blood pressures (hypertensive range) that would have caused anyone else to be rushed to the nearest ER. They had become habituated to a high stress state.

Needless to say, these apparently calm but actually highly aroused drivers fit our definition of stress addiction, as their life spans were being unnecessarily shortened and their overall health impaired, without knowing it, and while having “a jolly good time of it”. This is a major reason the average life-span of a professional football player is a mere 60 years. Thus, these stress-addicted individuals are not consciously experiencing the emotions we commonly associate with “suffering”.

If you wish to prove this phenomenon to yourself, go on a vacation to a quiet State Park, and notice your

body's response on returning to your urban or suburban home after a week or two of R and R. Odds are that you'll wish you were back in that quiet natural setting, because your overactive Stress Response is consciously making you feel uncomfortable, bringing back the old insomnia, indigestion, muscle tension, tension headaches, tiredness, anxiety, depressed angry mood, and conscious suffering.

However, after getting back into your initially uncomfortable stressful routine back at home, the conscious awareness of discomfort mysteriously vanishes. You have unconsciously numbed-out again, endogenous opiate and Cortisol levels are once again surging, and your own stress hormones are unknowingly shortening your life and making you vulnerable to illness.

COASTER has become a bad habit for most of us struggling to adapt to and fit-into this dramatically changed and always changing ever-new "built" environment. And we don't even realize it, thanks to another set of ancient neuro-physiological mechanisms that worked well for us in our Environment of Evolutionary Adaptedness (EEA), the ancient world we were designed in and for, but these very mechanisms are killing us now.

And, now, for the real mystery. Why are we being killed-off at an ever faster and more efficient rate? What have we done to deserve this fate?

PART 2.: STRESS AND POPULATION

21. THE MALTHUSIAN PROPHECIES FALL ON DEAF EARS

The Reverend Thomas R. Malthus (1766-1834) is known as an 18th century cleric, economist, college teacher, and the father of population research, for his pointing out that, free of restraint, human populations will increase “geometrically” (i.e., exponentially), but food supplies can only increase arithmetically (given agricultural technology current in 18th century Britain). Thus, without restraints, human populations will rather quickly outstrip the food supply, and be naturally limited only by “misery and vice”, famine and starvation, war and poverty, sickness and death-- creating a system, “which seemed to promise perpetual misery on earth” (underlining mine), according to economist Kenneth Boulding’s Foreword in the 1959 ANN ARBOR PAPERBACK, *POPULATION: THE FIRST ESSAY, by THOMAS ROBERT MALTHUS* , pg. viii.

Ironically, Malthus was totally aware that this seemingly inevitable outcome could only be prevented by voluntary population control, which, the good Rev. Malthus, always the obedient conservative churchman, opposed.

Malthus has often been criticized on the basis of “the Green Revolution” and our “cornucopian” technologically enhanced, unsustainable, petrochemical-based industrial agricultural “progress” which has been temporarily able to feed the ever expanding world populations, except for the billion or more going to bed hungry every night.

However, our current top-soil depleting, erosive, petrochemically dependent, biocidal, increasingly GMO dependent, second “green revolution” is also unsustainable, and has been for a very long time. For instance, natural sources of bird guano fertilizer, a major source of nitrate fertilizer necessary to supply the green revolution of the 19th century, have long ago been exhausted.

The mandatory fertilizers, pesticides, herbicides, and other chemicals necessary to continue to drive industrial agriculture at its current level of production are derived from petroleum, and the peak production of “conventionally” extracted crude oil was passed a few years

ago. Now, only increasingly expensive “fracking”, tar sands and shale oil extraction can temporarily maintain the crude oil production levels that we have become dependent on, addicted to.

Oil: Playing Hard to Get

One energy expert explained recently that the ratio of energy expended to energy produced in the petrochemical extraction process has fallen in the past century from 1:100, to our current 1:3. Get the picture? Oil is getting harder, and harder to extract from an ever more stingy Mother Earth. We are using it all up. And then what?

The inevitable collapse of our current industrial agricultural systems will initiate the very cataclysm of “misery and vice”, “sickness and death” that the brilliant and prescient Rev. Malthus so accurately predicted 219 years ago.

Better yet, we should let Rev. Malthus speak for himself, as he wrote in his well-known *AN ESSAY ON THE PRINCIPLE OF POPULATION AS IT AFFECTS THE FUTURE IMPROVEMENT OF SOCIETY, etc.*, 1798, wherein he states, on pp. 107-108 of the 1926 MacMillan and Co. edition, the following:

“These facts seem to shew that population increases exactly in the proportion, that the two great checks to it, misery (think: urbanization, wars, medical illnesses and starvation) and vice (think: addiction and sexually transmitted diseases), are removed; and that there is not a truer criterion of the happiness and innocence of a people, than the rapidity of their increase. The unwholesomeness of towns, to which some persons are necessarily driven, from the nature of their trades, must be considered as a species of misery; and every the slightest check to marriage, from a prospect of the difficulty of maintaining a family, may be fairly classed under the same head. In short it is difficult to conceive any check to population, which does not come under the description of some species of misery or vice.” (underlining and parentheticals mine)

Thus, without the miraculous unsustainable technological advances in modern medical care, petro-chemical and GMO dependent improvements in agricultural production, advances in public health and sanitation, and our resultant history of defeating one plague and infestation after another for centuries, Malthus’ “misery and vice” would have already severely limited our population growth. Malthus critics are simply wrong and

this book provides extensive evidence supporting his propositions.

Famine and Disease

Both my father's mother and my mother's father were among the 600,000 victims of the American outbreak of the 1918-1919 Influenza virus. Today, this potent and often deadly infection can be avoided with yet another readily available inoculation or effectively treated, thanks to modern medical science, although thousands, mostly elderly, perish annually in the US from the secondary pneumonia.

The effectiveness of disease in reducing crowded populations is summarized by George Schaller in his article "Man's Ecological Environment", published as Chapter 9 in Sladen and Bang's *Biology of Populations*, 1969, on page 125:

"It is difficult to realize how effectively famine and disease have acted in the past as checks on population growth. At least one-fourth of the European population died around the middle of the fourteenth century when the Black Death swept through. In 1832, 1849, and 1854 epidemics of cholera raised death rate in New York City to more

than 45 per thousand per year. From 108 B.C. to A.D. 1911 there were an estimated 1,828 famines in China, almost one per year. Between 1200 and 1600 England suffered a famine every 15 years.

The carrying capacity of the world for human populations is not known. In the recent past great population increase was absorbed by the opening of new land (in the colonies). For example, between 1800 and 1950 the population of Europe increased from 10 million to 55 million. But during that same time a further 60 million emigrants left Europe to settle in other places. No longer is so much new land available. If present rates of increase continue, there could be 500 billion people in the year 2200."

(underling and parentheticals mine)

However, we also see the tremendous ability of humans to reproduce and overpopulate the world in these statistics from George Schaller's 1969 paper.

Ecological Equilibrium

Professor Boulding attributes Charles Darwin (1809-1882), an ardent student of Malthus' writing, with the concept of "ecological equilibrium" (i.e., each individual

species existing in a separate population balanced against its surrounding fellow species), “in which each species multiplies to the point where it reaches an equilibrium population”, the fundamental concept in the science of Ecology.

In other words, our human population could be expected to be bounded, in a healthy ecosystem, by myriad other competing species, environmental barriers, and competing surrounding clans/tribes, as are all other competing species in undisturbed ecosystems.

However, we have managed to escape those ecological boundaries by out-competing every other species that we have encountered, primarily due to our capacity to develop new technologies and extract ever greater quantities of earth’s natural resources, which support our ever-increasing populations. We have eliminated nearly all competition from every other life-form, at every turn. Furthermore, as elaborated elsewhere in this book, we have escaped our territorial and hierarchical limits by our invention of “conceptual space”. Some noted authors have even compared our species’ over-growth to that other out-of-control growth form: cancer, or a virus, or bacteria.

Unfortunately for our fellow species and Mother Earth Herself, our species’ spectacular success has come at the

price of ever more rapacious and voluminous natural resource extraction, as well as the inevitable, accelerating, secondary production of habitat loss for competing species, pollution, and waste.

Overshoot

This phenomenon of fatal overutilization of earth's non-renewable natural resources (e.g., deep aquifers, topsoils, rare metals, natural fertilizers, arable land, sea life, extinct species, etc.) has been dubbed "overshoot", which is the title of a prescient 1980 book entitled *Overshoot: The Ecological Basis of Revolutionary Change*, authored by William Catton, Jr., sadly, recently deceased. Professor Catton was ahead of his time, a pioneer in the newly developing field of environmental sociology, and a major contributor to the companion field of human ecology. He discovered and developed many of the ideas also contained in this current work, which, however, were developed independently, as his work was only now discovered by the author of this 600plus page tome. What a wonderful legacy he has left us!

The World Wildlife Federation recently published a report, "LIVING PLANET REPORT 2014", indicating a 52% decline in the numbers of a selection of 40 other large

vertebrates on Earth between the studied years of 1970 and 2010, in only 40 years! But, why doesn't nature stop this ecological catastrophe?

However, this present work proposes that our species, along with every other known species, has developed gene-based population regulation mechanisms over eons of natural selection. These populations were selected for survival because they did not over-populate, over-utilize their natural resources, and starve to death. These necessary neuro-endocrine mechanisms naturally prevent our bloated populations from outstripping our sustainable food supplies, thus unbalancing the surrounding, resource rich ecosystem, and eliminating diversity. Thus, preventing the cataclysmic Malthusian outcomes that would otherwise necessarily result. Such mechanisms, the central topic of this book, maintain population homeostasis, unless, as in our current case, these mechanisms are overridden by short-sighted human ingenuity run amok and temporary technological "advances" defining our ever so temporary "progress".

Unfortunately for Mother Earth, so far at least, our ability to invent and produce life-saving medical technology, in order to cure nearly every life-threatening consequence of COASTER, and to provide clean water, adequate food,

and sanitation to much of the developed and burgeoning “third world” nations, has kept our populations expanding in spite of these formerly adequate limiting mechanisms.

Ironically, the amazing success of modern medical, water purification, agricultural, housing, transportation, and sanitation technologies and our endless intra-species altruism, have possibly doomed us as a species.

Recall that only ants, bees, wasps, the blind mole rat, and a handful of other species (19 total!) are as closely genetically related, with less than or equal to 0.1-0.5% genetic variation, as all living humans on earth today, which explains our extreme, self-sacrificing altruism. The world-wide numbers of Foraminifera and Hymenoptera, or ants, bees, and wasps, have been held in check by competition with numerous effective predators and environmental limitations (“vice and misery” in Malthus’ 18th century language), lacking the capacity for technological innovation and improved resource extraction, which are ours alone. Our species has overcome these obstacles to unlimited reproduction and colonized nearly every square inch of the planet, but only temporarily in the long span of earth-time.

Darwin on “*Rate of Increase*”

Charles Darwin published his epic *THE DESCENT OF MAN, AND SELECTION IN RELATION TO SEX*, in 1871. In the section by the above title, we find on pages 129-130 the following:

“If we look back to an extremely remote epoch, before man had arrived at the dignity of manhood, he would have been guided by mere instinct and less by reason than are savages at the present time. Our early semi-human progenitors would not have practiced infanticide, for the instincts of the lower animals are never so perverted as to lead them regularly to destroy their own offspring. There would have been no prudential restraint from marriage, and the sexes would have been freely united at an early stage. Hence the progenitors of man would have tended to increase rapidly, but checks of some kind, either periodical or constant, must have kept down their numbers, even more severely than with existing savages. What the precise nature of those checks may have been, we cannot say, anymore than with most animals. [...] No doubt in this case, and in all others,

many checks concur, and different checks under different circumstances; periodical dearths, depending on unfavorable seasons, being the most important of all. So it will have to be with the early progenitors of man.” (underlining mine)

Mr. Darwin continues from that point to develop his description of the “natural selection” of man’s various attributes and concludes with his statement on page 151 of “group selection” operating at the tribal level:

“In an area as large as one of these islands, the competition between tribe and tribe would have been sufficient, under favorable conditions, to have raised man, through survival of the fittest (tribe), combined with the inherited effects of habit, to his present high position in the organic scale.” (underlining and parenthetical mine)

Thus, Mr. Darwin had not lived to take advantage of the experimental results described in this book regarding animal crowding researches, epidemiological data sets, or pathophysiological researches which paint a coherent picture of the true “checks to increase”, otherwise

unknown in Darwin's time. Darwin made no attempt to explain the problem of human overpopulation, as far as I am aware, although he seems to be suggesting that natural selection should have necessarily solved this problem.

Now, on to my encounter with the esteemed environmental activist Bill McKibben regarding the human over-population problem.

Bill McKibben

To close this topic, I offer a personal note. A few years ago, the famed environmental activist Bill McKibben spoke at Western Michigan University. He was promoting his "350.org" program, particularly aimed at stopping the Enbridge XL tar sands oil pipeline approval. At the time of his well-received presentation on our increasing atmospheric carbon dioxide levels, and, apparently unbeknownst to Mr. McKibben, Enbridge Energy, under the cover of cleaning up their 800,000 gallon tar sands oil spill into the Kalamazoo River, was installing a new much larger pipeline next to its no longer used ruptured predecessor.

During the question and answer session at the end, I asked Mr. McKibben, from my balcony seat, whether the

true underlying cause of our multiple environmental crises is human over-population. He did not repeat my question for the rest of the audience to hear and quickly dismissed it as inaccurate. Over-consumption of earth's natural resources by us privileged Westerners was the chief cause, he was convinced. But, then, he is the same environmental activist who, in his book *Enough?*, on page 112 states:

“From the moment that the Reverend Malthus first advanced his theory that reproduction would inevitably outstrip food production, a certain kind of despair has informed an awful lot of what we would eventually call environmentalism. Whenever I've given a lecture on some of the ways we might mend our environmental problems, *someone from the audience has usually risen to ask if, say, global warming isn't simply a way for nature to “get rid of us,”* a species more trouble than we're worth. (italics mine)

As the reader knows from an earlier Malthus' quote in this work, environmentalist McKibben misunderstood Malthus. We, long ago, say 10,000 years ago, outstripped or “overshot” our sustainable hunter-gatherer food supply and have been over-utilizing earth's once plentiful natural

resources ever since, at the fatal expense of every other life form. We are eating ourselves out of house and home and have been for 10-14,000 years.

Rev. Malthus' "misery and vice", Mr. McKibben, have been vainly attempting to limit our numbers for 10-14,000 years, through COASTER. The good Reverend was absolutely correct, as far as his theory went. He had no way of knowing the impact of petrochemicals or the Industrial Revolution on temporarily, artificially increasing the food supply, or the advances in medical science and public health that would keep so many more of us alive so much longer than lifespans in his 18th century Britain. And many of us continue to ignore his warnings to this day. Denial is not a river in Egypt, but we are drowning in its flood anyway.

Ironically, Mr. McKibben is also the author of the 1998 *MAYBE ONE, A Personal and Environmental Argument for Single Child Families*, which is the final plea of this work as well. He did go on, in his Western Michigan University presentation, to explain that us Americans are 4% of the earth's population but use 25% of her natural resources. We need to learn to live simpler, less resource intense lives.

However, world-wide overpopulation is an equally urgent core problem and this work describes the screeching neuro-endocrine population brakes increasingly applied, in a so far vain attempt to limit our numbers by killing us off and making us infertile, whether we like it or not.

The Inadequacy of Moral Reasoning

All the Malthusian moral reasoning against our on-going overpopulation of the earth and resulting unsustainable resource extraction aside, we are not going to change our self-centered reproductive and consumer behaviors in favor of some abstraction about saving the planet. Only by facing head-on the realization firmly established in this book, describing our suicide by COASTER and population density stress, can force us to voluntarily limit our own reproductive activity and decrease our resource consumption, or else watch ourselves and our progeny perish from the face of our ever more depleted earth.

Voluntary single-child families world-wide are the only solution, if a neuro-endocrine driven dramatic population

collapse is to be avoid by conscious intervention on our part.

So, now, how about a review of the existing research on population regulation mechanisms, much of which has existed for 50 years or more?

22. STRESS and POPULATION REGULATION MECHANISMS

One of the many gifts my mentor Dr. Whitaker bestowed on me and my fellow Psychiatry Residents at the University of Wisconsin was making reference in his Family Therapy seminar to the late Dr. John B. Calhoun, ecologist, and his “POPULATION DENSITY AND SOCIAL PATHOLOGY” paper published February, 1962, in *SCIENTIFIC AMERICAN*. Every human on earth should read this short paper, which describes the behavioral deterioration, collapse of family structure, and loss of reproductive capacity of an enclosed colony of rats as their population was allowed to expand to its maximum limits. Dr. Calhoun supplied unlimited food, sanitation, water and health care, but in an artificially health optimized physically limited environment-- no migration was possible. Sound familiar? They had everything for the maintenance of life, except more living

space, their normal social behavior (an alpha male and his harem of caring females), and an escape route into the natural world.

As an aside, the reader may recall or have read that Adolph Hitler's chief aim driving his ill-fated invasion of Russia in WWII was his nation's need for more "lebensraum", living room.

My calculations indicate that the living space per individual rat in Calhoun's experiment was the equivalent of one of us living our entire foreshortened lives in their ten by ten foot enclosure, which approximates our automobiles, workplace cubicles (so wonderfully satirized in John Kastner's illustration at the beginning of this book), or 100 square foot studio apartments in metropolitan big cities like NYC or Hong Kong (where 4'X6', 24 sq. ft. apartments are appropriately called "coffin apartments"). We still have, unlike Calhoun's mice, our mobility, which allows us to move about in relative safety on commonly held public corridors: highways, but only if we keep moving and stay in our cars, as well as brief periods in publicly held natural environments, even if these escapes are rare and limited to public venues like parks, highways, and sidewalks. No loitering! However, this personal

freedom to move about in our own territory is merely an illusion!

“Camping” Trip

However, on a recent 5 day camping trip to Chenango Valley State Park in New York State, I was saddened to observe little evidence of Nature in what must be described as a trailer park with a swimming hole and a golf course. Not a single woodland hiking trail was available, although partial lakeside hiking trails were available, and at least one square mile of pristine woods was visible along every roadside. Furthermore, a near constant din of motor noise pervaded the environment, as the grounds crew constantly cut through vegetation in an incessant effort to “groom” nature to human specifications. There was no staff naturalist or any evidence of a naturalistic focus. Instead, the focus was a public swimming area, picnic pavilions, barbecue stoves, parking lots, roads, golf course fairways, and “camp sites” for huge isolating “camping” trailers and gas guzzling RV’s, in which the “campers” were totally estranged from nature. Ah, well, back to Calhoun and his mice.

So, now, let's take a look at what happened to Calhoun's mice when they reached their maximum population density.

The Kill-switch

Returning from this critical aside, a decade after his Scientific American article, in 1970, we know Dr. Calhoun repeated this experiment and allowed a mouse population to develop fully, to its conclusion. Apparently, no other animal population researcher had ever allowed their experiment to continue past the constant maximum population "plateau" phase before ending the experiment, including Calhoun and fellow researcher Charles Southwick. But, this time, Calhoun allowed his mouse population to continue, even though it had reached the stable plateau phase. To the good doctor Calhoun's surprise, the plateau phase had a previously unknown end-point and the entire population eventually perished, to the last mouse, due to a nearly instantaneous population-wide cessation of live births. Social disruption of typical learned parental behaviors had already severely limited survival of the mouse pups. A graph originally published in Dr. Calhoun's later 1973 paper, "Death Squared: The Explosive Growth

and Demise of a Mouse Population”, may be viewed as Diagram 7 in the Appendix.

The reader is asked to pay particular attention to the apex (highest point) of the curve and the annotation by Dr. Calhoun: “Last Born, 1 Mar1970” (underlining mine), as this was the point of no return for the entire population, which descended inexorably into extinction from that point forward.

We have no reason to believe that the eventual outcome for our increasingly crowded, socially disrupted, “hurried sick”, over-stressed, and increasingly infertile human populations will be any different. The ancient emotional brain of the mouse, as well as the stress system, is essentially identical to our own. We ask the serious reader to reread these short paragraphs and let it sink-in.

We mammals appear to have a built-in “kill-switch”, which, when fully on, will terminate our ecologically out of balance crowded human populations just as it did in Dr. Calhoun’s Mouse Utopia populations. If this population limiting mechanism operates throughout our populations world-wide, we may become extinct as a species. We can see this phenomenon already acting through the rapidly

decreasing fertility in Western urban and suburban societies, as described elsewhere in this book. Read on for more statistical validation of the “kill-switch”.

Comparing Mice and Men

If we compare the 26 gram average weight of an adult lab mouse with the 70 kilogram average weight of an adult human, we find that 2000 mice per 100 square feet equates to approximately 28,000 humans per square mile or one human restricted to a 10 by 10 foot cage, not unlike the one Calhoun built for his mice! . Anyone seeking the full explanation of the math should contact me directly, as it is thought to be too detailed and space consuming for this publication.

The net indicates the current population density of Hong Kong is approximately 18,000 per square mile, although another source states 58,000! In any case, the net has a site recruiting infertility physicians due to the increasing problem of human infertility in Hong Kong, up from 1/10 couples twenty years ago to the current 1/6 couples, a 40% reduction in fertility in a twenty year period. But what about the US?

100% Increase in Infertility in 34 Years

In his 2012 textbook, *POPULATION, An Introduction to Concepts and Issues, Eleventh Edition*, John R. Weeks, in Chapter 6, “The Fertility Transition”, and in the sub-section “The Biological Component” on page 200, we find this:

“In 2002, 12 percent of American women (1/8) fell into...(impaired fecundity—a measure of infertility)—an increase from 8 percent (1/12) in 1982 (refs)”. (parentheticals mine)

Demographic data from successive National Survey of Family Growth (NSFG) publications reveals 10% (1/10) of couples infertile in 1995, and 16.7% (1/6) of couples in 2016. So, that’s a 100% increase in infertility over a 34 year period, from 8% in 1982, to 16.7% in 2016. Do we really need to draw you a graph? But, what about sperm, you must be asking?

This headline can be found online in an article by Jeremy Laurance, for the “The Independent Online”. It summarizes the results under the sub-heading: “Biggest-ever study confirms drastic decline in male reproductive health”. The report, published in the medical journal “Human Reproduction” in 2016, according to Mr. Laurance’s

summary, reveals:

“Between 1989 and 2005, average sperm counts (world-wide, in urban populations?) fell by a third in the study of 26,000 men, increasing their risk of infertility. The amount of healthy sperm was also reduced, by a similar proportion.” (underlining and parenthetical mine)

But, the greatest concern raised by this study was the steady rate of decline: 1.4%/year, which, if continued, could take the entire population of Western men below the recognized fertility “low” mark within 23 years. This data is to be found in the paper entitled “MALE REPRODUCTIVE DISORDERS AND FERTILITY TRENDS: INFLUENCES OF ENVIRONMENT AND GENETIC SUSCEPTABILITY”, *Physiol Rev* 96: 55-97, 2016, authored by Dane researcher Niels E. Skakkekaek, et.al.

This comprehensive study of Danish and world-wide reproductive behavior also records a 75% increase in Assisted Reproduction procedures but 13% decrease in the actual population of women in Denmark from 2001 until 2014: 13 years! Page 81 displays five multicolor graphs of declining world-wide fertility, remarkable in North America for the 70% fall in Mexico from 1970 to 2013: 43 years. For the US, the fall in fertility has been 50% over the

same period, and for Canada 58%.

Are We Mice or Men?

Of course, a true comparison of the life conditions in Calhoun's "mouse utopia" and human urban populations is beyond the already too wide scope of this work. However, we are forced to speculate that COASTER is at least partly responsible for this falling fertility. Many animal researches have found exactly this same sperm count reduction in stressed animals with elevated Cortisol (or equivalent adrenal steroid for that species). The vast weight of evidence supports COASTER as a suppressing mechanism and points to COASTER as a major population regulation mechanism, thus, our including it in "population density stress" during the writing of this book! "Chronically Overactive Population Density Stress Response" (COAPDSTER?) just seemed too awkward! Agreed?!

A search of the net for a graph of human population growth, with an admittedly speculative extrapolation into the next century turned up Diagram 8, a copy of which is in the Appendix, and which can be overlain on the Calhoun graph from his 1971 paper, "Death Squared",

Diagram 7 in the Appendix. As the reader can clearly see, the two graphs can readily be fitted to one-another and, when this fit is accomplished, we have an admittedly very crude estimate of the end date for crowded human reproduction corresponding to Calhoun's at his maximum mouse population, which he labelled "Last Born 10Mar1970".

10.5 Billion, 2125AD

The date we get for our species' "point of no return" population density is roughly 2125AD (CE) and the corresponding world population is 10.5 billion. Admittedly, this is a very crude estimation, but the trend-line is accurate, even if we're off by a century or two on the end-point.

As fellow environmentalist and overpopulation crusader, Stuart Hurlbert, pointed out in an email after perusing a synopsis of this book, our unsustainable depletion of natural resources, production of pollution, and climatic degradation may limit our populations well before this theoretical end point is reached.

However, we are attempting, with this book, to bring together many of the strands of human overpopulation

signs and symptoms as an early warning about all the current and future negative consequences, and the potential for human diseases and, ultimately, extinction. Calhoun's mice did not have to contend with these man-made limiting factors. What he apparently did not comprehend is our conclusion that population density stress, including COASTER, is killing us NOW, through all of the top ten causes of death and infertility in modern urban societies! Time for a camping trip?

As an illustrative case study, I recently found myself stranded in my 21 yo VW Eurovan Camper with a flat tire on the apron of a 12 lane interstate highway in Hammond, Indiana, with a dead cell phone—stranded in a sea of hundreds of similarly streaming metal boxes at the beginning of rush hour and all of them containing one or two highly stressed humans. I was trapped in a sea of fellow humans ignoring my plight and just trying to survive the dangers of their own daily commute. Then it hit me! This must have been exactly what it was like for Calhoun's mice in the maximum population condition, danger in every direction when COASTER turned off their reproductive capacity and further hastened their premature deaths!

In many urban centers world-wide, we are closing in on this condition. Is this the legacy we wish to leave to our children and grandchildren? We need to bring down our populations before Mother Nature exterminates our species. Do you feel me now?! Still feel like this work has no relevance to your life, and must be for some specialist audience? I can only tell you that it felt very real to me in that dangerously crowded life-threatening traffic just outside Chicago, Illinois!

Take another look at John Kastner's wonderful satirical illustration of cubicle life, and death, at the beginning of this book, and his humorous illustrations of our love affair with the automobile later in the book.

RATS In Calhoun's Backyard

In his original naturalistic experiment in the late 1940's, Dr. Calhoun fenced off $\frac{1}{4}$ acre of his own backyard in suburban Towson, Maryland and introduced 5 pregnant Norway rats. He expected an eventual population of something approaching the 50,000 offspring theoretically possible over the following 2 years. The population in the quarter acre pen never exceeded 200! Thus, as it may have been with our clan-living hunter-gatherer ancestors,

until the agricultural revolution 10,000 years ago, inter-clan competition for territory controlled overall population density and prevented unsustainable growth, holding the total population to a steady 200.

Again, according to Dr. Calhoun's report, the establishment of physical territories of no more than a dozen individuals per territory, to approximately 17 territories total, all defended by the resident dozen rats, seemed to Calhoun to have controlled the size of the overall population. These rat families were headed by an alpha male, with a stable dominance hierarchy, and clearly defined physical territories.

Hopefully, the thoughtful reader is able to see the clear distinction between the naturally engineered stability of the open field rat population and its unstable, deteriorating, overpopulated, and, eventually extinct "Utopian" counterpart. Which would the reader prefer to inhabit, were he or she a rat, or the human analog? "Ah, this is for the birds!", the skeptical reader may be uttering. Glad you brought up birds!

GROUP SELECTION

Ornithologist and Professor of Natural History, V. C.

Wynne-Edwards, compiled his many years of population density and ecology studies of bird societies in his native Scotland into his 1962 magnum opus titled above. He is particularly well-known in natural history circles as the often attacked inventor of the term “group selection”, based on his conclusion that all vertebrates, including his much studied Scottish Red Grouse colonies, have gene based programs demanding hierarchical competitions for dominance, which inevitably produce winners and losers: dominant and submissive individuals. The dominant male winners are rewarded with the best territories and, thus, attract the female birds of their choice, have the best chance of survival, and are most likely to reproduce and extend their gene line.

Professor Wynne-Edwards correctly concluded that such gene-based mechanisms could only have evolved on the basis of inter-group competitions for resources. He reached the same basic conclusions that John B. Calhoun and J.J. Christian had reached, during the same time-frame but on opposite sides of the Atlantic ocean. Prof. Wynne-Edwards is known for the statement from page 14 of his iconic book:

“a society can be defined for our purposes as *an organization capable of providing conventional*

competition: this, at least, appears to be its original, most primitive function, which indeed survives more or less thinly veiled even in the civilized societies of man. The social organization is originally set up, therefore, to provide the feed-back for the homeostatic machine (controlling population density and ecological balance).” (parenthetical and underlining mine)

Later in his 653 page book, Prof. Wynne-Edwards addresses the population regulating function of social hierarchy. On page 139, Prof. Wynne-Edwards states, in italics:

“The function of the hierarchy, in fact, is always to identify the surplus individuals whenever the population density requires to be thinned out (due to over utilization of environmental resources), and it has thus an extremely high survival value for the society as a whole” (underlining and parenthetical mine)

Darwin Wrote About Group Selection

In his 1871 *THE DESCENT OF MAN, AND SELECTION IN RELATION TO SEX*, Mr. Charles Darwin wrote the

following explanation of group selection among competing tribes of men on pages 155-157 of Chapter V:

“Turning now to the social and moral faculties. In order that primeval man, or the ape-like progenitors of man, should have become social, they must have acquired the same instinctive feelings which impel other animals to live in a body; and they no doubt exhibited the same general disposition. They would have felt uneasy when separated from their comrades, for whom they would have felt some degree of love; they would have warned each other of danger, and have given mutual aid in attack or defence. All this implies some degree of sympathy, fidelity, and courage. Such social qualities, the paramount importance of which to the lower animals is disputed by no one, were no doubt acquired by the progenitors of man in a similar manner, namely, through natural selection, aided by inherited habit. When two tribes of primeval man, living in the same country, came into competition, if the one tribe included (other circumstances being equal) a greater number of courageous, sympathetic, and faithful members, who were always ready to warn each other of danger, to aid and defend each other, this tribe would without doubt succeed best and conquer the other.”

We have added population density stress as a regulator of population size and, thus, sustainability to Mr. Darwin's list of group selected characteristics necessary for one group to balance its size and resulting needs for sustenance with its natural environment's resources, and, thus, out-compete other groups who would have died out when they over-shot their food supplies, and perished from starvation and internal strife. Ironically, most so-called "evolutionary biologists" and psychiatrists/psychologists hold onto the false belief that competition on an individual basis determines the "survival of the fittest" and, thus, explains many aspects of human behavior. Apparently, they never read Mr. Darwin's thoroughly readable works. One more example of "experts" to be avoided in our search for the truth of human behavior, stress, human disease, and human evolution.

The role of social hierarchy and the "population density-stat", are covered in this book under TOPICS 25 and 26, respectively.

But, now, let's head for Africa with an American playwright.

Robert Ardrey Goes to Africa

The Chicago born, raised, and educated Renaissance man and author, (and another one of my scientific/literary heroes), Robert Ardrey, having made his mark writing successful screenplays in Britain for the movie industry, moved to Africa and renewed his early interests in anthropology and animal behavior, resulting in a series of well written and readable popular science books on these otherwise complex and obscure subjects.

Playwright Ardrey did an excellent job of laying out the history of scientific research into physical anthropology, ethology, ecology, animal behavior and psychology in the 4 books he wrote between 1961 and 1976, *AFRICAN GENESIS (1961)*, *THE TERRITORIAL IMPERATIVE (1966)*, *THE SOCIAL CONTRACT (1970)*, and *THE HUNTING HYPOTHESIS (1976)*, as well as others.

“Death by Stress”

Of particular relevance to the topic at hand, is a chapter in *THE SOCIAL CONTRACT, A Personal Inquiry into the Evolutionary Sources of Order and Disorder*, entitled “Death by Stress”, pgs. 199-240. On pages 200-201 he wrote the following:

“Yet the new biology provides no proposition more demonstrable than that of the self-regulation of animal numbers. Rare is the population that has ever expanded until it reached the limits of food supply. Rare are the individuals who directly compete for food. An infinite variety of self-regulatory mechanisms, physiological and behavioral, provide that animal numbers—except in the case of climatic catastrophe—will never challenge the carrying capacity of an environment. Birth control is the law of the species.”
(underlining mine)

We strongly encourage the interested reader to peruse Ardrey’s books, as they are artfully written (unlike so much of modern “scientific” research results) and filled with amazing anecdotes of his personal meetings with Raymond Dart, Robert Broom, Louis and Mary Leakey, John B. Calhoun, V.C. Wynne-Edwards, and numerous others at the forefront of their respective disciplines.

Unfortunately for us, Mr. Ardrey apparently never delved deeply into the discipline of Endocrinology or spent any time in his journalistic researches at the all-important Penrose Laboratory at the Philadelphia Zoological Society, where John J. Christian and colleagues worked, and where John B. Calhoun was trained.

A Christian at the Philadelphia Zoo

In studies conducted by John J. (“Jack”) Christian in the Penrose Lab. at the Philadelphia Zoo in the 1940’s, through the 1960’s, the Cortisol producing layer of the adrenal glands of crowded mice were found to be greatly enlarged on post-mortem examination, and determined to be turning off reproduction.

The biochemical mechanism has been more recently determined to be due to the later discovered suppression of hypothalamic GNRH (gonadotropic releasing hormone) release in the brain, caused in turn by elevations of the master stress hormone, CRH (cortico-tropin releasing hormone), and its adrenal end product, Cortisol, as diagrammed in Appendix 6.

In other words, COASTER, activated by population density stressors, was turning off reproduction. We may speculate that the rodents were so anxious (n.b., fearful, stressed) and worried that they were incapable of reproduction, as we know can occur in highly stressed, high density urban human populations. Drs. Calhoun and Southwick, however, postulated that the behavioral disorganization associated with over-crowding, especially the disruption of normal parenting behaviors, was the chief cause of reproductive failure. Both are likely making

important concurrent contributions to reproductive failure in over-crowded mammalian populations. More on this later.

Mention must be made here regarding the work of George Chrousos and his group in Bethesda, MD. In an article in his 1988 collection of papers from a 1986 NIH “Symposium on Mechanisms of Physical and Emotional Stress”, entitled “STRESS AND REPRODUCTION: PHYSIOLOGIC AND PATHOPHYSIOLOGIC INTERACTIONS BETWEEN THE STRESS AND REPRODUCTIVE AXES”, Dr. Chrousos and his team state the following:

“MECHANISMS OF STRESS-INDUCED SUPPRESSION OF REPRODUCTIVE FUNCTION”

Activation of the hypothalamic-pituitary-adrenal (HPA) axis in stress can effect reproductive function at all three levels of the hypothalamic-pituitary-testicular/ovarian axes as well as at the end organs for the sex steroids. Suppression of reproductive function by concomitant activation of the HPA-axis or by exogenous administration of CRH or glucocorticoids (Cortisol) has been well documented (refs). Examples include the suppression of hypothalamic GnRH by CRH and glucocorticoids and of pituitary gonadotropins (nb,

FSH and LH) by cortisol." (underlining and parentheses mine)

Again, Diagram 6 illustrating these endocrine controls, whereby elevated stress hormone levels (i.e., CRH and Cortisol), generated by Population Density Stressors, directly inhibit the production and release of the master reproductive hormone, GnRH (gonadotropic releasing hormone) from the hypothalamus, may be found in the Appendix as Diagram 6.

Critical Mass

The behavioral abnormalities typical in such overcrowded conditions, so well described by John B. Calhoun in his 1962 *SCIENTIFIC AMERICAN* article and others, and actually demonstrated by Calhoun himself in the "Youtube" video *Critical Mass* (play on demand, \$2.99), directed by film-maker Mike Freedman in 2013, clearly played a significant role as well. Dr. Calhoun was convinced that social disruption was THE cause of the demise of his mice, due to the total breakdown of the family unit, parental caretaking, and the resultant infant mortality. We must thank Dave Gardner, Executive Director at World Population Balance, for telling us about this video.

Unfortunately, the otherwise thorough researcher was not able to autopsy his mice as they died and were removed for sanitation maintenance. Had he been able to do so, he would have found Selye's triad of the General Adaptation Syndrome: shrunken thymus (and absence of t-lymphocytes) , enlarged adrenal glands, and peptic ulcers, as did his contemporary, J. J. Christian.

The final demise of the entire population was the total failure of successful reproduction, no doubt a combination of infant mortality and COASTER turning off reproduction. And had they not stopped reproducing, deterioration of their over worked adrenal cortices would have caused death through "shock disease" (i.e., adrenal exhaustion resulting in death by hypoglycemic seizure), which has been recorded in physically isolated island populations of Japanese red Sika deer and in Dr. Hans Selye's experimentally stressed rats, as reported in his ground breaking 1025pg. book, *STRESS*, first published in 1950.

As reported elsewhere in our book, University of Wisconsin researcher Charles Southwick, PhD, was a staunch supporter of Calhoun's conclusions that disruption of parental behavior, resulting in pup mortality, is the primary cause of population collapse in crowded rodent

experiments. However, in Chapter 20 of the previously noted Sladen and Bang *BIOLOGY of POPULATIONS*, Dr. Southwick stated on page 287:

“When confined populations living on a limited food supply reached the stage where the daily allotment of food was consumed, a sudden decline in fecundity occurred. Reproduction in both sexes ceased. The reproductive organs of males and females involuted, so that males no longer produced spermatozoa and females went into a prolonged anestrus. Hence, the population ceased to grow, but the existing mice remained in good physical condition (ref).”

It is not clear to me, when I read Dr. Southwick’s work, that he realized the cessation of reproduction would have led to the eventual extinction of the entire population, had he allowed the experiment to play out to its inevitable conclusion. Once again, we must admit just how easy it is for even the best of scientists to miss the proverbial forest for the trees. Let’s face it, we often see only what we were expecting to see, and nothing beyond. Why did it take so long for European ocean navigators to realize that the earth was round? What do you see on the FRONT COVER of this book? Can you see the real mystery here?

Dr. Selye's re-publication of Dr. Liebegott's 1944 photos of sections of human adrenal glands from deceased hypertensive men, reproduced on the FRONT COVER of this work, show the same process of adrenal cortical hypertrophy (i.e., the physiological cause of the over-production of cortisol during COASTER) leading to the eventual atrophy and loss of the entire adrenal cortex (normally responsible for the manufacture of 18 life-critical steroid hormones), resulting in the death of an overstressed animal, including hypertensive men. Again, this left to right sequence is illustrated on the FRONT COVER of this book.

It must be pointed out that Dr. Christian appears to be the first to have made all these connections and demonstrate them experimentally, as summarized in his 1961 paper, "PHENOMENA ASSOCIATED WITH POPULATION DENSITY", in the journal *ANTHROPOLOGY*, VOL., 47, pgs. 428-449, currently available to read/print on the internet for free. He first published his hypothesis in the *Journal of Mammology*, 31, 247 (1950), the same year that Hans Selye, working in Montreal, published his monumental 1025 page *STRESS*, in which he describes similar pathological findings but solely on the basis of laboratory stressors

applied to individual animals, irrespective of population issues.

In fact, Dr. Selye expressed his reservations regarding Dr. Christian's conclusion that the G.A.S. could be viewed as a population regulation mechanism in his 1976 book, *STRESS IN HEALTH AND DISEASE*, by stating in a section considering the stress of "Crowding", on page 258, that "allegedly (a thinly veiled critical reference to Christian's work), crowding can help to maintain normal population density" (underlining mine). And that was after suggesting in a 1936 paper that he had found a "shift" in pituitary gland function, in his experimental stressed animals, in which production of gonadotropins was sacrificed for the increased production of the "life-maintaining" ACTH.

Resistance on the part of medical scientists to interpret their researches in terms of human overpopulation and as possible population regulation mechanisms is not new and continues unabated to this day.

Dr. Christian Summarized

Dr. Christian summarized his experimental findings in the prestigious journal *Science*, 146 (December 18, 1964), 1550-1560, stating:

“In experiments with mice in the laboratory, progressive adrenocortical hypertrophy (enlargement) and thymic involution were observed to occur with increasing sizes of population. Somatic growth was suppressed and reproductive function was curtailed in both sexes. Sexual maturation was delayed or, at higher population densities, totally inhibited. Spermatogenesis was delayed, and the weights of the accessory sex organs declined with increasing population density. In mature females, estrous cycles were prolonged and ovulation and implantation were diminished; intrauterine mortality of the fetuses increased.” (underlining mine)

Ironically, the “problem” of human infertility, including reduced male sperm counts, has only been addressed by the medical community as just that, a problem in need of medical treatment. Apparently, no-one in the medical community, including Obstetricians and Gynecologists, have ever heard of or read any of the animal crowding studies,

nor been made aware of the reproductive ill-effects that result from crowding, cited here.

One author, the daughter of a human infertility doctor, Elaine Tyler May, invited “individuals who had experienced childlessness at some point in their lives” to send her letters describing their experiences with this “problem”. She received over 500 replies and needed an assistant to process and categorize them. Prof. May admits that “stress affects infertility but never cites one reference in her 318 page book, *Barren in the Promised Land*, 1995, to substantiate her assertion, let alone any of the extensive animal studies cited in this current work, which appear to be totally unknown to her. She is typical of the gaping divide between the work of animal population researchers and their critically important discoveries of nearly a century, and the modern medical community.

Thus, it should come as no surprise to anyone familiar with these extensive animal population studies, and the reproductive effects of crowding in animals, that Prof. May incorrectly believes the causes of human infertility to be limited to “poverty, disease, and poor health”, which are only the surface effects of the real problem: population density stress, COASTER, and the effect of crowding on parental behaviors and concurrent endocrine function.

These may well be secondary factors, Prof. May, but the animal researches, including those done by Drs. Christian, Southwick, and Calhoun in the 1950's and on through the latter 20th century, clearly suggest a much deeper neurophysiological story. Population density stress, including COASTER (CRH and Cortisol) suppression of the master reproductive hormone, GNRH, and the reproductive/parental behavioral disruptions found in crowded populations, are the primary hidden causes of the Western world's epidemic of infertility and childlessness.

This epidemic of infertility is in spite of anyone's "choice", and in spite of the elaborate and very expensive medical interventions to the contrary. There is much more to this story than simply "poverty, disease, and poor health", although these are hallmarks of low socio-economic status, the impact of which is known from Robert Sapolsky's work correlating lower social status with elevated Cortisol (and CRH) levels. It is much more stressful at the bottom of the social hierarchy and infertility is a greater "problem" for those of us stuck there.

However, in his 1931 book *ANIMAL AGGREGATIONS*, W. C. Alee, in the chapter "RETARDING INFLUENCE OF

CROWDING ON THE RATE OF REPRODUCTION”, presented extensive research on the reduction of egg production among crowded chickens and stated on page 129 the following conclusion:

“...we are here dealing with the physiological effects on the reproductive system produced by physiological effects on the nervous system of the order usually spoken of as ‘psychological’.”

“Persistent Unpleasant Feelings”

Paul MacLean, the originator of the three-part or “triune brain” concept in neuroanatomy, wrote a wonderful essay entitled “The paranoid streak in man”, included in Arthur Koestler’s 1969 *Beyond reductionism*, and we now quote from his “Final comments”, on page 274:

“What are some of the conditions that generate persistent unpleasant feelings among society? Today, illustrations abound on every side. Perhaps the most generally prevailing disturbing factor is the pressure arising from overpopulation. Evidence is accumulating with respect to several animal species that aggressiveness increases with increasing density of population. It is often stated that man is uncommonly aggressive, and he is compared unfavorably with lower

primates because of his propensity to kill. But the peaceful co-existence of groups of sub-human primates in the wild is possibly attributable to an abundance of living space and food; under conditions of captivity, crowding has been observed to result in violent and deathly struggle. Among animals, however, it is usually not death from combat that reduces population density to tolerable levels. Rather, nature appears to have ruled that aggression should take its toll indirectly through wasting diseases and loss of fertility.”

He continues in the next paragraph:

“For the youth of today crowding means swimming in a school of mackerel and having the uncomfortable feeling of a loss of personal identity. In our teeming American universities it means the transformation of one’s personality into the punched holes of an IBM card (in 1969) and the inability to stake out a little piece of intellectual territory of one’s own. For the man on the street, it means a squeeze for living space, a squeeze for food, a squeeze for recreation, a squeeze in getting work, a squeeze for one’s job. For those in the establishment it means the threat of riot, revolution, and disestablishment. For the world it

means the fear that some chance altercation will result in hydrogenic holocaust.” (underling and parenthetical mine)

Perhaps a final word from Dr. Freud’s 1930 *Civilization and Its Discontents*, which only seems appropriate given the morose, if accurate, tenor of Dr. MacLean’s ominous assessment above. The good doctor is, also, known for his proposal that we harbor two opposed primitive drives or forces named after Greek mythological figures: Eros, the life force, and Thanatos, the death drive.

What if COASTER leads to Thanatos and our activated death wish, when inwardly directed, or “clinical depression” in modern terms, is part and parcel to our population regulation mechanism? After-all, what does “submission” feel like anyway? If we are to believe the previously cited work of Paul Gilbert and Leon Sloman, *Subordination and Defeat*, clinical depression may be seen as our experience of the loss of a status hierarchy competition. The rates of clinical depression have been doubling every ten years for a number of decades now. Currently, one in five of us in America may expect to suffer at least one episode of clinical depression (aka “Major Depression”) in our lifetime, including the suicidal thoughts that nearly always

accompany such an episode, on which about 50,000 of us act annually, with a fatal outcome, but not including the 60,000 opiate overdose deaths currently occurring.

New data published by J. Breslau, et. al., in *Translational Psychiatry* (2017) 7, e1139, on the incidence of clinical depression during adolescence (aged 12-17) in the US is instructive and frightening: 1/4, 14% of boys and 36% of ALL girls are developing depression in adolescence!

So, now, the whole picture of “mental illness” as the consequence of gene-based human population regulation programs comes together in all of its many sobering parts. The reader must recall that we have reached this conclusion after a lifetime of working to reverse this outcome through medication, psychotherapy, and stress management. Reaching our conclusions about the true biological/ecological function of “mental illness” has been as shocking to us as it must be for you!

Population Density Stress

Population density stress, including COASTER, was the cause of the thousands of cases of severe clinical depression that we treated in our offices and hospitals over 40 years, and is virtually synonymous with Beard and

Weir Mitchell's 19th century "neurasthenia", Hans Selye's General Adaptation Syndrome, Alee's population regulator, Sapolsky's elevated Cortisol levels in subordinate baboons, Freud's "anxiety" and Thanatos, the mysterious force ending reproduction in Calhoun's mice, status competition loss in dominance hierarchies, Christian's elevated Cortisol inhibiting reproduction, V. C. Wynne-Edwards' death by status competition loss, George Chrousos' elevated CRH and Cortisol inhibition of reproduction, Jeffrey Gray's population "density-stat", Robert Ardrey's and Paul MacLean's hypothesized population regulators, and, now, our "population density stress" lead-up to the "kill-switch".

The attentive reader, if any are still with us, can't say we haven't been drawing our attention to the parallels between each part of the puzzle and our descriptions of population density stress and the ultimate "kill-switch".

For a diagrammatic explanation of the endocrine mechanism of human population regulation, the central theme of this work, the reader is referred to Diagram 6. in the Appendix. Again, as you can see, excess production of the master stress hormone, CRF or CRH and its parallel overproduction of the adrenocortical hormone Cortisol, both inhibit the production and release of the master

reproductive hormone GnRH (gonadotropin releasing hormone) in the ancient hormonal control center in the floor of the brain, the Hypothalamus

The hypothalamus is the oldest part of our emotional brains, the foundation of behavior, if you will allow, and can be found in animals with whom we share a common ancestor dating back 350 million or more years. Only the brain stem is older, which we share with worms and other invertebrates.

Thus, it is fair to speculate that population density control was hard-wired into our ancestors' nervous systems, and passed on to us through their genes, from a very long time ago. Why this fact has never found its way into our general education is a mystery to us, although our general cultural taboo against even addressing anything associated with human overpopulation is obvious to one and all. After-all, we can't even honestly address the effects of human overpopulation on our climate: "Climate Change".

Sadly, the branch of the biological sciences that might be most helpful in clarifying the physiological mechanisms of population regulation among mammalian species, "Ecology", has more recently become lost in its own

irrelevant conceptual mathematical battles and culture wars.

Obscure Ecological Science

To close this lament, as an example of obscure ecological science at its worst, we present the following quote from the web publication “Population Regulation: Old Arguments and a New Synthesis” by Peter Turchin, apparently Chapter 2 from a paper publication that is not identified, page 35:

“To summarize, novel approaches, influenced by recent developments in nonlinear dynamics, give us quantitative tools to probe the structure of population regulation. These approaches rely on fitting time-series data with models explicitly incorporating nonlinearities and delayed density dependence. Such analyses can yield insights into possible mechanisms that may impose regulation. They allow us to quantify relative contributions of endogenous versus exogenous factors and presence and strength of periodicity, and to classify dynamics into stable, quasi-chaotic, or strongly chaotic oscillations.”

For those critics of the largely well written and comprehensible historical material presented in the

foregoing topic of this effort, who would have preferred a more rigorous “scientific” approach, we suggest that you Google the topic “population regulation mechanisms”, as we did, and examine the many references available on the Net, including the contribution from Peter Turchin, quoted above.

However, for us practically minded readers, the essential solution to our over-population problem is our own voluntary reduction of family size to 3 or less—mom, dad, and one child, but within the social context of small-town America or some similar supportive quasi-clan social environment, allowing for shared child-rearing and extra family supports.

Cornucopian?

We should, also, note at this juncture that flat-out over-population and environmental destruction deniers, aka “cornucopians”, are at work, as in the case of *POPULATION MATTERS*, written in 1990 by University of Maryland business administration professor and self-anointed population expert, Julian L. Simon. In his totally misleading and inaccurate treatment of the subject, he “challenges the doomsayers”, like Malthus, the UNIPCC, and other internationally accepted authorities, arguing that unsustainable resource extraction is a figment of the

“doomsayers” imaginations. He asks us to believe that the earth’s resources are infinite and that the environment is being improved by our presence. Perhaps Mr. Simon lives on another planet, as he clearly has little awareness of the earth.

But, let’s allow the reader to make his or her own judgement regarding Mr. Simon’s grasp of his subject by a couple of lines from page 3 of the Introduction to his book:

“Why Is the Popular View So Different?”

One inevitably wonders: How it is that, if the views advanced here (i.e., overpopulation does not exist) are scientifically sound (which they are definitely not!), belief in the opposite set of views is so widespread?”

“A first partial explanation is that there is in all of us a built-in intellectual weakness (sic)—understandable, but lamentable-- that predisposes us to believe in Malthus-like ideas about population-induced scarcity.”

“Lacking the economic habit of thought (as is particularly true for Mr. Simon apparently!), laypeople tend to be susceptible to Malthusian thinking that takes into account only the obvious negative effects of

additional persons, and that presents these ideas in the seductively fascinating context of exponential growth and “the law of diminishing returns (nb. not to mention the exhaustion of necessary natural resources)”. (underlining and parentheses mine)

We imagine that this totally unsupported over-population denial strategy sells well in the Business Administration curriculum but is laughed at in the science departments at his university.

Lest we be totally dismissive of the academic ecologists, we need to mention this 1969 collection of ecology essays by the above title, edited by Paul Shepard and Daniel McKinney, and with “editorial advice” from Aldo Leopold. On page 9 of Paul Shepard’s lead essay, he writes what for some earlier ecologists was their defining paragraph:

“The ideological status of ecology is that of a resistance movement. Its Rachel Carsons and Aldo Leopolds are subversive (as Sears recently called ecology itself). They challenge the public or private right to pollute the environment, to systematically destroy predatory animals, to spread chemical

pesticides indiscriminately, to meddle chemically with food and water, to appropriate without hindrance space and surface for technological and military ends; they oppose the uninhibited growth of human populations, some forms of “aid” to “underdeveloped” peoples, the needless addition of radioactivity to the landscape, the extinction of species of plants and animals, the domestication of all wild places, large scale manipulation of the atmosphere or the sea, and most other purely engineering solutions to problems of and intrusions into the organic world.”

Where are these honest, ethical, well informed ecologists, truly deserving of the title, when we need them most?

For those of us who prefer less obscure, more readable, more understandable language than that provided by Mssr's. Turchin and Simon, with well documented references and with a focus on human illness due to population density stress, please continue to the next very pertinent topic, and further material on this subject in TOPIC 24.

Shoot, another mystery pops up, and just when we thought we had this population density control thing worked out! So, on to “conceptual space”.

23. STRESS, “CONCEPTUAL SPACE”, and OUR GREAT ESCAPE FROM REAL(-ITY) TERRITORY

Perhaps, Dr. Calhoun’s greatest contribution to our understanding of why our species has escaped all of the previous territorial and hierarchical population boundaries, was his discovery of “conceptual space”. For eons, our hunter-gatherer clans/bands contained individual clan groups of our species within discrete, non-overlapping physical territories and stable dominance hierarchies. This arrangement controlled and maintained optimal populations well balanced within their ecosystems and prevented over-utilization of the natural resources nature provided. But, then, we took the proverbial bite out of the apple of knowledge in the Garden of Eden, and evolved the mental capacity for conceptual space, as a substitute for real physical territory. This leap opened a Pandora’s Box of conceptual space competitions and this allowed a population explosion.

In his 1971 paper, "SPACE AND THE STRATEGY OF LIFE", Dr. Calhoun speculated that we had evolved (i.e., developed over time) the capacity to treat ideas or concepts with the same instinctual, emotional, limbic, territorial, and hierarchical importance as physical space in the finite natural landscape that our ancestral clans competed. And compete we did: a preferred campsite perched above a water source, a favored cave during the ice age, a prime hunting ground, a secure hilltop, a semi-permanent clan settlement, and, eventually, a permanent town of settled agriculturists, etc.

Our pre-agricultural ancestors competed for prime physical real-estate, social position in their status (aka "dominance") hierarchies, and physical natural resources, just as we now compete for the most valuable ideas or highest ranking "memes" to gain social status and the material rewards (i.e., money) resulting from those valuable ideas or memes. Now, let's consider the jump from our ancestral competitions for physical territories to our current modern competitions for ideas, so often represented in technological innovations.

The written history of modern man is largely the story of ever larger, better organized, and better equipped groups competing for control of ever more physical space

and natural resources. We battle for national territories with our Military Industrial Complexes. However, within our held territories, we proliferate on the basis of increasingly productive agricultural technology and form social status hierarchies, based on ritualized ideational competition: battles over ideas. The more dominant winners are rewarded with higher status, money and the increased winner's access to resources that money allows. And, then, the stock markets, hedge funds, and flash traders form yet new hierarchies of the winners and the losers.

BEYOND PHYSICAL TERRITORY AND HIERARCHY

Thus, the formerly successful terrestrial and hierarchical population boundaries of our ancestors have largely been put aside , allowing us to increase our numbers unbounded, exponentially, as long as the money machine keeps turning out endless rewards for ideational victors. In this way, our unlimited fiat money supply is partly responsible for human overpopulation. We just keep inventing new conceptual territories to battle over, for higher social status, more money. Look at the hand-held gizmo market, with a newer gadget or game every moment. What could possibly go wrong?!

However, current theories in any conceptual area, any industry, any academic discipline, any new game or gizmo has the vulnerability of all ideas: a better, newer idea lurks around every corner, in the minds of potential usurpers, and the relentless stream of new patents and trademarks for technological “advances” and consumer products is evidence. Which i-Phone, laptop computer, i-Pad, Windows or Apple Operating System, electronic gaming system playing the latest e-game, tax form, textbook, automobile, airline, hotel room, job, apartment, political leader, or clothing item, etc. are we supposed to be using, defending, and competing for status with this week? And, even more importantly, how can we make more money, or other form of social capital, by adopting any particular new technology or consumer product, any new idea that has potential for increased social dominance, increased social capital for those who adopt it?

Thus, our desperate need to always be right and in possession of the dominant consumer brands, have or be marketing the latest technology, accept no challengers, and not lose status, not lose face, not lose money, not lose time, not lose conceptual territory, but rather “make hay while the sun shines”. Keeping up with the Joneses? Sound familiar?

The Formula for Ceaseless Stress and Worry

Is this not the formula for ceaseless stress and worry constantly reactivating COASTER? The corporate battles fought daily, as represented moment by moment on Wall Street or a political campaign, are a window on the culture of stress we have created. Anyone not at the top, however temporarily, of these evanescent human status pyramids is dying from constant stress, sometimes quickly, sometimes slowly. The lower our social rank, the less money we have, the greater our risk of premature death. This is a proven fact, documented in TOPIC 25 and further on in this topic.

We ask the reader to use his or her own imagination in applying this population stress physiology or population homeostasis model to the dot.com era, which we currently inhabit. Or, we can choose to abstain.

A Google search does not reveal evidence of Calhoun's brilliant "conceptual space" discovery, but only use of the term in art, architecture, and aesthetics. Someday, hopefully, we will be able to trust the integrity of electronic media to have stored all human knowledge somewhere in a "cloud", but not yet.

Who decides what's important in the millions of books and scientific papers published to date, and what should, therefore, be up-loaded to the electronic storage vaults and libraries, and, in keeping, who then comes along with yet a "better idea" about what should be preserved for posterity? Enter the knowledge police? The "Records Department" of the "Ministry of Truth", as in the dystopic future (now?) of Orwell's *1984*? The winners of dominance competitions do, indeed, get to write the history of those battles, as they glory in their well-documented enhanced positions in our status hierarchies.

Beyond The Selfish Gene

The interested reader may wish to explore the "meme" concept invented by the passionately anti-religious evolutionary biologist Richard Dawkins, also, author of *THE SELFISH GENE*. Dawkins applied his concept to explain cultural evolution, a parallel to gene-based biological evolution, but failed to extend his concept of "meme" to include conceptual territory, as Calhoun had described it, in the evolution of territorial competitions and the development of ideational status hierarchies. Dawkins has never addressed hierarchies of memes and the relative status of the people who invent and stack them, although

his invented idea of the meme has elevated his personal status and increased his monetary status: made him money. What is the relative value of a given meme? Now, that is the right question. Basically the selfish gene concept (meme) only makes sense, if we have different genes and they are competing with each-other. But the attentive reader knows that our genes are 99.9% identical, so only groups competing with each-other for limited resources makes sense and drives overpopulation: bigger groups have bigger armies and win bigger wars for limited resources. Right? Individually, our genes are being selected for success in conceptual competitions, but, also, for altruism. We can ultimately only survive as members of successful groups, and, then, only with optimal populations for the available natural resources in any given environment. Right?

Robert Sapolsky, PhD, noted ethologist, neuro-endocrinologist and stress physiologist at Stanford, has studied the Cortisol and Testosterone blood levels in East African baboon troop members during various transformations in their troop status hierarchies and published his findings, in the thoroughly readable and highly informative *WHY ZEBRAS DON'T GET ULCERS*, currently in its third expanded edition.

In mammalian groups, stable hierarchies allow an overall lowering of stress hormone levels, except, of course, for those animals at the bottom of the hierarchical status pyramid, who die young from coronary artery disease and other COASTER generated pathology. However, as soon as a high ranking member is lost, a burst of status competitions ensue to provide a replacement. Cortisol levels soar during these periods, and, hopefully, the reader is beginning to understand the destructive potential of COASTER.

Konrad Lorenz on “HUMAN DENSITY PROBLEMS”

Nobel laureate ethologist Konrad Lorenz published a two volume collection of previously published papers in 1973, including this 1965 piece. In the subsection entitled “HUMAN DENSITY PROBLEMS”, he made many of the points covered in our book, but in the following subsection, “MAN—THE TERMITE?”, on pages 137-138 he stated the following:

“I do not want to oversimplify matters. There is no question of hierarchical antagonism (i.e., social status competition) being the one and only agent of human history. All I wish to stress is that it has been

one agent, and that the fact it has a biological foundation and forms an indispensable and indestructible part of human nature has hitherto been utterly neglected. The shift of balance between the two orders of dominance (i.e., “territorial behavior” and “absolute hierarchy”) is only possible within limits. The range of such a shift is species-specific and represents the density tolerance of a species as defined by this particular mechanism. Unfortunately, as will be shown in greater detail below, the density tolerance limit is not written clearly on our foreheads for everyone to see. In combination with the other ecological factors it may all too easily be ‘outvoted’, unobtrusively overstepped, without the resulting damage being dramatic or easy to diagnose (sic). What we lack are adequate scientific investigations into where the tolerance limits lie in man’s case and what could be regarded as “optimum density of habitation” and optimum world population of our species. The only thing that is certain is that we have long since overstepped all tolerable limits.”

(underlining and parentheticals mine)

In a later paper reprinted for his 1973 collection, “On the Natural History of Fear”, on pages 270-271, Prof. Lorenz states:

“The constant small annoyances of everyday life, with one’s neighbor, one’s superior at work, the small worry whether one will be caught parking in a prohibited area (often simply unavoidable), the frustration and envy when another gets the job one thinks should by right have been given to oneself, the small triumph when one wins some dispute with officialdom and thus annoys someone else, all this adds up and, slowly but surely, ruins the mental and finally also the physical health of the individual.”
(underlining mine)

In modern human status hierarchies, based, as they are, on the vagaries of conceptual space competitions and ever-shifting alliances with our fellows, stability is increasingly rare and the status competitions are driving the increasing complexity of everything, driving COASTER. Thus, again, high Cortisol levels have become the norm and are killing us. More about social status hierarchies and their role in population regulation will follow in TOPIC 25, below.

Endless Conceptual Space Hierarchies

An obvious example of this out-of-control process of endless conceptual space hierarchy creation, embodied by

technological innovation, is the constant complexification of writing: the typewriter was a complex machine, then along came the electric typewriter, then the word processor, then the computer, then the portable laptop computer, and, now, ever more complex and, therefore, less user friendly word processing programs, like this one, with its horrifically complexified frequently “updated” WORD rules and spell checker. Status competitions in our unstable conceptual hierarchies are driving this complexification of everything, making us sick, and killing us, as we crawl over each-other in an endless scramble for higher positions, or retreat to the relative safety of anti-competitive ignorance and ritual!

More about hierarchy in TOPIC 25.

And now, for those who think this whole book is “for the birds”, let’s meet Scottish ornithologist V. C. Wynne-Edwards.

24. POPULATION HOMEOSTASIS and POPULATION REGULATION MECHANISMS

The important 1962 book by one of our greatest science heroes, the Scottish ornithologist V. C. Wynne-Edwards, *ANIMAL DISPERSION IN RELATION TO SOCIAL BEHAVIOR*, in 653 pages, describes the population regulation process he carefully observed in Scottish red grouse. On page 554, he summarizes:

“It seems reasonable on these grounds, and consistent with our previous findings, to suggest that the general adaptation syndrome (described by Hans Selye), as yet known only in vertebrates, is another of the numerous group-adaptations evolved in the higher animals to aid in population homeostasis. Like the others it is a device for suppressing surplus adults, if necessary, on the spot, when it benefits the population to do so.”
(underlining and parenthetical mine)

The interested reader may wish to preview TOPIC 26 on the “population density-stat” at this juncture.

The only plausible explanation for the evolution of such altruistic population regulation mechanisms was first

put forward by Charles Darwin in his often quoted, *ON THE ORIGIN OF SPECIES BY MEANS OF NATURAL SELECTION, OR THE PRESERVATION OF FAVORED RACES (i.e., SPECIES) IN THE STRUGGLE FOR LIFE* (underlining and parenthetical mine), so often shortened to “THE ORIGIN OF SPECIES”, 1859. Wynne-Edwards had the courage and foresight to call this mechanism “group selection”, but it was first clearly described by Mr. Darwin as preserving “favored races”, where a “race” was meant to describe any competing group. More on Wynne-Edwards coming in TOPIC 25.

We pay an intellectual and societal price for survival in a world filled with competing conceptual space hierarchies. They give rise to near constant inevitable rank determining status competitions, all constrained and propagated across populations and generations by culture, Dawkins’ “memes”, constantly reflecting back cultural norms: the masses of “shoulds”, protocols, rules, licenses, laws, regulations, oversights, inspections, taxes, disclaimers, and guidelines, written and implicit, that bind and define our groups; our vicarious “sporting”, religious, military, educational, business, political, and various other social rituals we are obliged to follow on a daily basis.

In a recent typically brilliant *New York Times* piece by David Brooks, Mr. Brooks reviews the ideas of the late French sociologist Pierre Bourdieu on the form of “social capital”, which includes several categories of Dawkin’s cultural memes. Mr. Brooks further identifies these as “forms of wealth you bring to the social marketplace”. He, then, describes our personal cultural identity as our “habitus”. Then Mr. Brooks summarizes Bourdieu’s view of society as follows:

“Every day, Bourdieu argued, we take our stores of social capital and our habitus and we compete in (the status hierarchies of) the symbolic marketplace. We vie as individuals and as members of our class for prestige, distinction, and, above all, the power of consecration—the power to define for society what is right, what is ‘natural’, what is ‘best’.

The symbolic marketplace is like the commercial marketplace; it’s a billion small bids for distinction, prestige, attention, and superiority (or higher status in one or another hierarchy).

Every minute or hour, in ways we’re not even conscious of, we as individuals and members of our class are competing for dominance and respect. We

seek to topple those who have higher standing than us and we seek to wall off those who are down below. Or, we seek one form of capital, say linguistic ability, and convert it into another kind of capital, a good job.” (underlining and parentheses mine)

We suspect that the careful reader is shaking his or her head right now, as we said the exact same thing earlier, but in different words and from our study of John Calhoun’s discovery of “conceptual space”, as well as dominance hierarchies automatically formed in groups of animals and men/women. We have arrived at the same conclusions, but by very different paths, and we have applied these findings to the key issues of human diseases, the health of the world’s environment at large, and population regulation. Feeling motivated yet?

Lorenz on Population Density Control

As referenced elsewhere in this book, founding ethologist Konrad Lorenz and co-editor Paul Leyhausen edited a collection of Dr. Lorenz’s papers and published them in 1973. In the chapter “On the Natural History of Fear” and in the subsection “THE SOCIAL FUNCTION OF

THE ANTAGONISM BETWEEN FEAR AND AGGRESSION”, Dr. Lorenz posits the gene-based “instinctual” vertebrate mechanism for population density control: “the counteraction between fear and aggression”. Recall that Dr. Lorenz won a Nobel Prize for co-establishing the science of animal behavior, along with Ernst Mayer and Niko Tinbergen, since referred to as “ethology”.

On page 270 of his book, Dr. Lorenz summarizes his life-long studies of animal and human behavior in regard to population density regulation:

“...the counteraction between fear and aggression has a further biological function in all animal species having a social form of life: The balance between the two establishes itself only when any two individuals keep a particular species-specific distance between them. In this way, the number of individuals which can inhabit a particular area is automatically limited. This, in conjunction with other internal and external factors (sic), regulates the individuals’ rate of reproduction and population density remains constant over long periods of time (Wynne-Edwards 1962). In man’s case this regulation of the reproduction rate has become upset, and meanwhile the concept of the

“population explosion” has become common knowledge. People live increasingly close to one another, but their intra-specific counteraction between fear and aggression is fundamentally the same as it was at the time of Neanderthal Man. High density multiplies the areas of friction, the vicious circle already mentioned causes the two instincts to inflame one another mutually, and people simultaneously become increasingly irritable and increasingly anxious.”

(underlining and parenthetical mine)

However, as we have come to define our dominance status in conceptual space hierarchies by identification with dominant groups and ideas, rather than physical territories or dominance hierarchies, we can find ourselves defending totally antiquated and simply wrong ideas about what is real. These mutually held dominant ideas are adhered to by our profession, our political party, our family of origin, our clan, our tribe, our company, our team, our town, our church, our class, etc., allowing us to claim the precarious status position we have been able to achieve in the conceptual space competitions. Thus, our precarious status is the result simply of our membership in a group sharing and defending a common conceptual space, a common culture. We do this in groups such as military veterans, the

climate change deniers or advocates, the Masons, religious groups, political parties, football or other sports team and fan groups, etc. Time for a football break?

Modern Gladiators

The reader need only observe a gladiatorial American football game to see this scenario in action, the ceremonial “attack” and conquest of another teams “turf”, the vicarious identification of the audience with its symbolic “team”, etc. Is this not a ritualized competition between the champions of one population set against another? In the ancestral world the winners would have doubtless acquired territory and plunder as their rewards. But now, such groups competing for conceptual space often charge too high a price for conformity, and result in too little purely symbolic reward, as a player or as a vicarious observer. However, at least the “fans” are allowed to let off long held emotional tension in the stadium or arena, which is permitted in few other venues. And, of course, the “players” are allowed to commit assaults that would cause them to be arrested and jailed in any other social situation.

Personally, as a former Ohio high school football hero, I suffered a broken neck, 3 cervical and 1 thoracic ruptured discs, a fractured sternum, totally sprained ankles that were taped to the knees, and multiple concussions, all for the improved status of the coach, school, and team in a league of competing teams. “Coach”, a former Ohio State player, transported me to the Ohio State football trainer, Ernie Biggs, who dutifully devised one partially protective-corrective device after another, so that I could return to battle-on.

At my 50th H.S. reunion, the broadly grinning 80-something Coach showed-up and was surprised to find that any of us had “had our bell rung”, as the subject of neurological impairments, including but not limited to CTE (chronic traumatic encephalopathy), from such head, brain, and neck injuries is evermore in the news. Clearly, he was not paying attention and cared little for our well-being. Standing next to me at this reunion was my best friend and team full-back, tremulous from head to toe from the late stage Parkinson’s disease he developed as a direct result of multiple concussions incurred in high school and college football “games”. I was the only former team member present for this reunion who chose not to honor

our coach. The apparent continued loyalty of the other team members was a testimony to the staying power of conceptual space allegiances. How easily we can be played, literally.

Thus, the title of one of my favorite recent books: *Fitting in is OVERRATED, The Survival Guide for Anyone Who Has Ever Felt Like an Outsider*, by Leonard Felder, PhD, 2008. Take home message: don't be afraid to be an outsider when recruited to join un-thinking, abusive, violence-addicted peers, and when recruited by selfish, self-centered status seeking "coaches" and vicarious status seeking coat-tail grasping "fans".

As I engage in this particular umpteenth re-edit of this manuscript, the late great boxer, Muhammad Ali, is being eulogized, as he should be, but no-one is mentioning the elephant on the couch: his eventually fatal Parkinson's disease was almost certainly the result of multiple concussions suffered during his pugilistic competitions, all of which catapulted him to the top of the boxing hierarchy and, no doubt, satisfied the aggressive status advancement fantasies of millions of stress addicted vicarious on-lookers, "loyal fans", one and all. "Yeah, kill the bugger!"

Ah, yes, the reader is correct, we have allowed our counter-cultural treatment of practical examples of stress addiction to carry the reader too far afield from the central topics of this book: human population regulation, human disease, and our destruction of the natural environment.

Back to Population Regulation Mechanisms

So, forgive the digression, but population regulation mechanisms must have evolved for the good of the reproductive unit, the isolated group, the species, the “race” (Darwin, 1859), even though this process may involve the early death of individual members, even in the thousands, even in the millions, even in the billions.

The survival of any species depends on its capacity to maintain an optimal population number, fitted into the natural environment that feeds it, rather like a jig-saw puzzle piece, and balanced against the mutual inter-dependent survival of all of the rest of the species in that “ecosystem”, including those on which it feeds.

Our desperate, end-of-time acts of sacrificing every other living thing on earth and, yes, even Mother Earth herself, just to treat, entertain, house, and feed our ever sicker, exploding, bored, homeless, starving numbers would have Thomas Malthus nodding his head in the “I told you so” affirmative.

Man Adapting

Another prominent, if paradoxical, figure in the development of our understanding of human population regulation was the French-born American microbiologist, pathologist, environmentalist, and Pulitzer Prize winning scientist, Rene’ Dubos. In his 1965 book, *Man Adapting*, he examines “The (Human) Population Avalanche”, Chpt. XI, side-by-side with “The Evolution of Microbial Diseases”, Chpt. VII, evidently without ever identifying a direct cause and effect relationship between the two. He often speaks dismissively in not always accurate references to the work of Selye and Calhoun, but can also soar to Pulitzer prize level prose in such passages as the following paragraphs, from page 300:

“There is a paradoxical aspect to the view that the homeostatic regulatory mechanisms discussed above are a form of adaptation since their result is that many members of the group are deprived of the ability to

reproduce or even sacrificed altogether. The Darwinian individual fitness must be subordinated in such situations (high population densities) to a higher order of fitness in which the whole population is considered as the biological unit; its (the group's) future is more important than the welfare of its individual members. It is in this regard that the growth of the human population is so completely out of line with that of most animals. The innate biological and social wisdom that keeps animal populations from multiplying to the extent that they destroy their habitat no longer seems to operate in man (i.e., due to agricultural, medical, and public health technologies; conceptual space--territorial competitions; and myriad status hierarchies). Yet the time has come when he too finds himself in the absolute necessity of regulating his numbers."
 (underlining and parentheticals mine)

On page 301, Dr. Dubos continues:

“Despite what might be inferred from the rapid increase in the world population, it is certain that self-regulatory processes based on social patterns of behavior operate at least to some extent in human societies. It is even probable that the biochemical and physiological regulatory mechanisms that exist in

animals still persist in man (i.e., COASTER, population density stress), even though they are usually inhibited (often by the medical advances of well-meaning researchers like Dr. Dubos!) or masked. Although the so-called rural-urban fertility differential is usually attributed to social, economic, and cultural factors, high population densities (i.e., population density stress) may still exert a subtle biological influence (sic) that accounts in part for the lower reproductive rate of city dwellers. [...]

Thus, the problems posed by the internal self-regulatory mechanisms that control population dynamics in animals (sic) are of direct relevance to the future of mankind. For this reason, it is urgent to determine not only how animal populations in the wild manage so often to maintain their size at an optimum level, but also why these regulatory mechanisms fail to function in other cases. Man is one of the species in which homeostatic population control is obviously failing at the present time (i.e., due to altruistic medical and public health technology). More extensive knowledge of animal life might help him to avoid the biological disaster exemplified by the exodus of the Norwegian lemmings, and by other types of population crashes."
(underlining and parentheticals mine)

This prescient quote from Dr. DuBos is as good a summary of what this current book is about as anything else we might conjure up, at least to the extent that it defines the mystery our book has set out to solve. We believe that we have solved Dr. DuBos well stated mystery. Does the reader concur? Not yet? Read on!

John B. Calhoun

A final quote from John B. Calhoun's 1971 paper, "SPACE AND THE STRATEGY OF LIFE", contained in *BEHAVIOR AND ENVIRONMENT, The Use of Space by Animals and Men*, can be found on page 365:

"TO SUMMARIZE: Man stands unique among animals in learning how to by-pass the strictures placed by limitation of physical space on further population growth. He has made this escape by discovering how to create conceptual space, the total information pool generated by man from which rules, codes, and theories may be condensed which permit more effective coping with the physical and social environment. [...] To continue enlarging conceptual space requires involving more and more individuals in a common communication network. [...] Such union

will continue until the entire world population becomes incorporated into a single network. This point will arrive when the world population reaches nine billion.“ (underlining mine)

Amazingly, the good doctor seems to have realized the very truth of “conceptual space” superseding physical territories and, thus, removing previously existing physical limits on the expansion of human populations explained in this work. Unfortunately, the ever philosophical Dr. Calhoun waxed mystical and left science behind, as he made-up “just-so stories” about the eventual formation of a “single network” of world-wide conceptual space in a mystical fantasy of an idyllic world of 9 billion humans.

Entertaining this optimistic illusion no doubt alleviated the real angst our good doctor would have otherwise felt when regarding the future of humanity, which would necessarily have followed from his honest consideration of the uncontested outcome of his mouse universes: total extinction.

This prediction predated the social media explosion of today and ever more monolithic mainstream mass media. Neither did he demonstrate in his writing any serious

knowledge of Selye's GAS, or any other population biologist's work, for that matter.

However, Dr. Calhoun did mention, in passing, in an undated video excerpt from a panel discussion from the 1970's, that, although animals had population limiting mechanisms involving the adrenal and pituitary glands (i.e., reference to Selye?), there was no evidence of humans having such mechanisms (sic). This filmed panel discussion is excerpted in the on-demand youtube movie *Critical Mass*", and the panel discussion occurs at 1hr.24min. We thank Dave Gardner, again, for this reference.

We are, also, unable to find evidence that Dr. Calhoun routinely autopsied his dead mice, or ever mentioned their cause of death, although in the movie he did note their increasing frequency of pelt injuries sustained in aggressive status "dominance" battles between males as the population increased and stabilized in the "equilibrium" phase—the horizontal line at the apex of his population versus time graph (c.f., Diagram 7, in the Appendix).

In the discussion of his 1973 paper "Death Squared: The Explosive Growth and Demise of a Mouse Population", *Proc. Roy. Soc. Med., Volume 66, January 1973*, Dr. Calhoun is

asked a question by Prof. Mellanby, and replies: “that density *per se* was not the major factor, that the rate and quality of social interactions were paramount issues.” And, then, he cited several references by other investigators and stated: “the fact that reproduction could be affected by density had been dealt with by Dr. Thompson in Indianapolis (Thompson, JF, (1969) *American Journal of Obstetrics and Gynecology* 105,1215-1221)”. Unfortunately, a thorough Google Scholar search could not find this article.

Apparently, Dr. Calhoun held little stock in the propositions stated in our book, but, had it not been for his ground-breaking population studies, this book would have never come to be. Now, let’s take a look at our sanity, or lack thereof.

Lost Touch with Reality?

We have lost touch with nature’s reality, our reality, as a direct result of our construction of a thoroughly unnatural “built” physical reality, which is the time-tested operational definition of insanity. We are, by long held definitions of sanity and insanity, insane, “out of touch with reality”. At the risk of repeating, the WWF (World Wildlife Federation International) recently published its assessment of the percentage losses of 10,000 monitored

fellow vertebrate species, which averaged a 52% decline in numbers of individual animals living on earth, in a recent 40 year period, 1970-2010!

We are, as a species, totally out of ecological balance with our fellow creatures on Earth, and out of touch with the bioethical responsibility and ecological necessity to share Earth's resources with all of God's living world. If that isn't "out of touch with reality", this old psychiatrist doesn't know why not. This formerly existing ecological balance, between ourselves and all other species competing for the same resources, was a major contributor to maintaining our ancestral populations within sustainable limits and preventing overpopulation. Our technologically fueled success in dominating competing species has allowed for our massive population increase.

Now, the reader must be asking about social status or "dominance" hierarchy, as we have touched on this subject several times already, and our knowledge of its function in other vertebrate societies. Ok, it may not sound "sexy" yet but just wait until you read what's coming! And it all started with a curious Scottish bird expert studying a flock of Red Grouse in the Highlands of his native Scotland.

25. HIERARCHY: STATUS, DOMINANCE, and SUBMISSION

In the previous sections, the ground breaking work of V.C. Wynne-Edwards was cited but not fully explained, especially his observations on how a flock of Scottish red grouse distributed themselves on a heather feeding ground in a hierarchical array. The males establish a vertical dominance status “pecking order” (first described by the Dane Thorlief Schjelderup-Ebbe in 1921, among barn-yard chickens), ranked according to the winners of a series of one-on-one physical or ritualized status competitions in a designated arena, and continue to maintain that rank throughout the year. The female grouse mate with the highest ranking male that will have them and, thus, share the privileges of his rank.

The higher the rank of a mated pair of Scottish red grouse, the more central their assigned territory in the circular nesting formation of the colony, thus providing greater protection from predators, less stress, greater life expectancy, and greater reproductive opportunity, as well as prime access to a preferred food source. Those unfortunate males who lose their status competitions, reside on the periphery of the colony, remain unmated,

and, thus, are at greater risk for predation, malnutrition, and premature death, without progeny. However, they are a ready reserve (same term as used in the military for members no-longer on active duty) should death come to a higher ranking member of the colony, whose place they promptly fill.

Wynne-Edwards summarized his findings in the journal *Science*, 147 (March 26, 1965), 1543-1548, as follows:

“Population growth is essentially a density-dependent process; this means that it (growth) tends to proceed fastest when population densities are far below the ceiling level, to fall to zero as this level is approached, and to become negative, leading to an actual drop in numbers, if ever the ceiling is exceeded. The current hypothesis is that the adjustment in numbers in animals is a homeostatic process—that there is, in fact, an automatic self-righting balance between population density and resources.” (underlining and parenthetical mine)

In the potentially physically dangerous status competitions described by Wynne-Edwards and others, long evolved less dangerous stereotyped dominant and submissive behavioral rituals serve the function of defining

the winner: dominance behaviors, and the loser: submissive behaviors.

These behaviors have their close equivalents among mammals, including primates, as studied in the 1920's by psychologist Abraham Maslow, at the Vilas Park Zoo, in Madison, Wisconsin, who invented the term "dominance feeling". Dr. Maslow observed behaviors he thought indicative of emotions, as apparently experienced by the displaying, strutting, gloating winners, and us humans, like the football player who just scored a touchdown, and including the thousands of screaming chest-thumping vicarious "fans" celebrating in kind. Human ethologists, like the Austrian, Irenaeus Eibl-Eibesfeld, and psychiatrist Albert Scheflen, studied and identified the human versions of dominant and submissive behaviors, as published in their books.

Mr. DARWIN's "PRIDE"

Interestingly, Charles Darwin, in his 1873 American edition of *THE EXPRESSION OF THE EMOTIONS IN MAN AND ANIMALS*, never knowingly considered hierarchical behaviors or their associated emotional states, although he did describe "Pride" as follows, on page 263:

“Of all the above-named complex emotions, Pride, perhaps, is the most plainly expressed. A proud man exhibits his sense of superiority over others by holding his head and body erect. He is haughty, or high, and makes himself appear as large as possible; so that metaphorically he is said to be swollen or puffed up with pride. A peacock or a turkey-cock strutting about with puffed-up feathers, is sometimes said to be an emblem of pride (ref).” (underlining mine)

Mr. Darwin, also, discusses submissive behaviors and their attendant emotions, but nowhere does he interpret his findings in terms of our hierarchical social order, or ever consider stress, as we understand the subject today.

The Status Seekers

A still relevant examination of status hierarchies in American society, and our life experience in them, is Vance Packard's *The Status Seekers, An Exploration of Class Behavior in America and the Hidden Barriers That Affect You, Your Community, Your Future*, 1959, which concludes on pages 357-358 with the following:

“This book began as an exploration of the class behavior in the United States in this era of

unparalleled material abundance. One of the most insistent themes that developed was that status seekers are altering our society by their preoccupation, in the midst of plenty, with acquiring evidences of status. The people of this country have become increasingly preoccupied with status primarily because of the impact on their lives of big housing developments, big advertisers, big trade unions, and big corporate hierarchies. As a result, democracy is still more of an ideal than a reality.

The forces of the times seem to be conspiring to squeeze individuality and spontaneity from us. We compete for the same symbols of bigness and success. We are careful to conform to the kinds of behavior approved by peers. We are wary of others who don't look like our kind of people. We tend to judge people by their labels. And all too often we judge people on the basis of the status symbols they display. “

(underlining mine)

Professor Packard, a sociologist, did a wonderful job of describing the phenomenology (how it feels) of life and striving for higher status in status hierarchies in 1959 America. He appears to have known nothing of stress

research or medical illness as a direct cost of these status battles at the time, or, at least, he did not write about these subjects. In every status competition there is a winner and a loser, a dominant and a submissive.

What is the life experience of the loser, as we have already described Dr. Maslow's "dominance feeling" in chimpanzees and Mr. Darwin's "pride" experienced by the winner in animal and human status competitions?

Psychiatrists and psychologists, including Russell Gardner, MD, and his British counterpart, John Price, MD, developed a model of clinical depression as an unconscious pre-programmed submissive behavior syndrome or "Involuntary Subordinate Strategy (ISS)". In their 2000 book, *Subordination and Defeat, An Evolutionary Approach to Mood Disorders and Their Therapy*. Leon Sloman and Paul Gilbert changed the name for this loser's behavior to "Involuntary Defeat Strategy (IDS)".

Sadly, Dr. Gardner, a former friend and colleague, was apparently so scandalized by my theory that his "ISS" might be part of a long evolved human population regulation system, that he refuses to correspond with me today. In any case, I respect and appreciate the work that he and Dr. Price, who I also met at an Evolutionary

Psychology conference on Cape Cod in 2000, have done. Dr. Gardner is unwilling to consider the wider ramifications of his own work, perhaps out of concern for the significance for his own grandchildren. In fact, it is for those very youngsters that this book is written!

George Engle, MD, who I had the pleasure of knowing at the University of Rochester School of Medicine and Dentistry, in Rochester, NY, from 1974 through 1976, called this behavior “conservation and withdrawal”, a variant of the old “licking your wounds” and “lying low for a while”.

Professor Martin Seligman, at the University of Pennsylvania, developed the concept of “learned helplessness” and cognitive-behavioral therapeutic solutions that provide “resilience”. The interested reader may wish to refer back to TOPIC 14, STRESS AND DEPRESSION. We do hope the reader is able to see the battle for conceptual space ascendancy raging in the area of naming, and constantly renaming, clinical depression!

The reader may recall Prof. Robert Sapolsky’s work with Baboons in East Africa, in which he compared Cortisol levels and social hierarchy rank, including the other health deficits associated with low rank, especially peptic ulcers

and coronary artery disease, all of which correlate with the high Cortisol levels in lower socio-economic ranking humans. As the reader should know from his or her reading so far, this GAS (General Adaptation Syndrome) triad is well described in rodents in Selye's experiments. Further evidence of this phenomenon was, also, found in humans in the widely publicized Whitehall Studies of health problems in civil servant employment hierarchies in England, and clinically in our patients.

Life and death, in rarely clearly defined well established status hierarchies in contemporary Western urban and suburban populations, is fairly well understood from an endocrine point of view. However, we, also, know that it's a very different story in traditional hunter-gatherer societies, who must maintain a sustainable relationship with their natural environment and its inherent ability to house, clothe, and feed them.

Competition R Us

Our problem is that our status hierarchies are rarely stable or long-lasting, and, in fact, are constantly unstable and changing, retriggering the Stress Response over and over, again, and reactivating COASTER. These constantly impinging, shifting, often invisible overlapping status

hierarchies and their often unconscious demands for a steady stream of status competitions are the source of myriad stressors and are one major component of our cumulative population density stress. Remember that in our hunter-gatherer clans of origin, we literally knew our place, much as in modern military organizations, where each member knows his or her exact rank, its responsibilities, and its privileges.

A central theme of John B. Calhoun's interpretation of his mouse universe experiments was his belief that the increased quantity of disruptive, stressful social contacts, including injurious status competitions in crowded conditions, the lack of learned parental behaviors protecting newborn pups, and the deteriorating quality of nurturing contacts with their beleaguered parents, was the central cause of the decrease in reproductive success, live births, and pup survival in his studies.

We, however, believe that our neuro-endocrine COASTER mechanism is an equally important direct cause of decreased normal reproductive behaviors and live births in in all over-crowded mammal populations, and we believe that we have amassed an adequate weight of supportive data, although other terms have and will be invented with exactly the same meaning.

But, what did noted scientists and educators Carl Sagan and Ann Druyan have to say about social hierarchy, dominance, and submission?

In Carl Sagan and Ann Druyan's 1992 book, *SHADOWS OF FORGOTTEN ANCESTORS, A Search for Who We Are*, in the chapter "Dominance and Submission", page 216, we find the following:

"To play the hierarchy game, at the very least you must be able to remember who's who, to recognize rank, and to make the appropriate responses, dominant or submissive as circumstances dictate. The ranks are not fixed in time, so you must be able to reassess and revise facts of central importance. Dominance hierarchies bring benefits, but require thinking and flexibility. It's not enough to have inherited nucleic acid instructions on how to threaten and how to submit. You must be able to apply those behaviors appropriately to a changing array of acquaintances, allies, rivals, lovers---whose dominance status is situational and whose identity and current circumstances cannot possibly be encoded in the nucleic acids." (underlining mine)

This analysis by Sagan and Druyan was intended to apply to relatively small groups in stable populations. But their emphasis on the sheer brain power and huge energy requirement necessary (recall Cortisol mobilizes energy stores) to place ourselves in a small stable group of fellows, also applies, even more so, to our current huge, urban, and suburban, constantly changing, multiple, overlapping status hierarchies, in which we are never certain where we stand vis a' vis our myriad fellows, and which keep our stress hormones roiling and COASTER going non-stop.

For the truly devoted student of animal behavior, get ahold of a copy of evolutionary biologist and neuroanatomist Paul MacLean's 672 page *The Triune Brain in Evolution, Role in Paleocerebral Functions*, 1990. Dr. MacLean described three functional anatomical divisions within our brains: (1) Reptilian (brain stem), (2) Paleomammalian (Limbic System or "emotional" brain), and (3) Neomammalian (neocortex). We will spare our reader the details, which can be had by slogging through the good doctor's eminently readable, if lengthy, magnum opus.

However, important for our understanding of the

stresses we experience in our multiple, constantly changing, overlapping status hierarchies, is the section in Dr. MacLean's book on reptilian behavior and corresponding brain structure. Simply put, hierarchical behavior is hardwired into our ancient limbic brains and can be traced back to the evolutionary history of lizards, or at least 250 million years.

We literally have no choice but to react automatically to unconscious status challenges, and just as automatically engage in status battles, or submit to and follow a higher ranking fellow, unless we refuse to make eye contact with a potential competitor, in order to avoid triggering our automatic competitive response, such as urban citizens do on passing a constant stream of strangers on a city sidewalk.

Although Dr. MacLean spends dozens of pages describing these dominance and submission behaviors in his lizards, as well as in monkeys, particularly in their amygdalae (see the heads of the sea horses on the BACK COVER), he only has one or two paragraphs referencing human equivalent behaviors, and does not even have a listing for "hierarchy" in his otherwise extensive index.

Amygdalar Survival Programs

Other amygdalar, genetically programmed, automatic behavior patterns in reptiles, and humans, include the previously discussed “fight or flight” response, hierarchical dominance competitions, sexual behaviors, food acquiring behaviors, aggressive responses, affiliative attachment behaviors, friend/foe facial recognition, withdrawal following status loss (i.e., shame), elation following dominance establishment (i.e., pride), grooming, hoarding, maternal and paternal behaviors, nesting, sexual displays, routine enactment, territorial defense, and others.

These ritualized behaviors that are necessary for individual as well as species survival likely number at least as many as the 18 anatomically distinct cell groups identified in the human amygdala to date, as well as the elaborate connections to other ancient structures encompassing the “extended amygdala”.

Smith College Professor Seymour Itzkoff listed Paul MacLean’s limbic brain pre-programmed behavioral reactions on page 267 of his essay “EVOLUTIONARY AND PHILOSOPHICAL ISSUES IN TRIARCHIC THEORY”, found in editor Gerald Cory and Russell Gardner’s 2002 *THE EVOLUTIONARY NEUROETHOLOGY OF PAUL MACLEAN*:

“MacLean’s discourse involves a highly technical analysis of the morphologies (structures) of the human brain as they impact on the above typically sociobiological, limbic system behaviors: laughing, yawning, courtship, submissive behavior, territoriality, challenge displays, deceptive behavior, routinizing behavior, reenactment behavior, perseverative behavior, epilepsy, dejection, fear, desire, anger, gratulant (gratifying, triumphal, successful, ecstatic) exultation, affection, searching behavior, protective, aggressive, or caressive behaviors: handedness, sound communication and speech, weapon and child carrying, the evolution of tearing, play, and laughter.” (uncorrected copy; underlining mine)

Anyone interested in joining in on the theorizing about which preprogrammed limbic survival behaviors are which, please refer to the Cory and Gardner book, books by Joseph LeDoux, Whalen and Phelps, or John P. Aggleton. An excellent recent (2013) summary, “RETHINKING THE EMOTIONAL BRAIN”, by Joseph LeDoux, can be found on the net, thanks to HHS Public Access.

Capitalism Is a Limbic Drive

We have avoided political references in this work so far. However, a bright seminar participant recently brought up an obvious conclusion regarding political hierarchies when we were discussing the amygdalar programming for hierarchy: left unregulated, political hierarchies aligned with financial interests can only result in two outcomes: a totalitarian state or revolution. Why? The function of hierarchy is to provide maximum resource availability to the most dominant members of the group in order to assure the very survival of the group over time. So, we can think of the function of hierarchy almost as a continuous conveyor belt of resources flowing to the most dominant elite: “the rich get richer and the poor get poorer”. This is a native function of our brains that can only be adjusted by over-riding regulation by an independent governing agency, who’s motive is dampening this otherwise inevitable process in order to guarantee at least the minimum resource availability to those lower down the hierarchy, as necessary for survival.

Without this over-riding agency guaranteeing the well-being of the lower socio-economic class, we must either form an oppressive police-state, like North Korea or Russia for instance, or risk a popular revolution, like Syria or Cuba for instance.

Understanding the operation of the human brain can allow us to understand not only the necessity of population reduction but, also, the very nature of human social order and disorder. Thus, we Americans might be genuinely concerned by our current political trend toward totalitarianism and further unregulated Capitalism, which is driving ever greater income disparity. This may not end well, if we continue on our present course unabated by rational government intervention and at least minimal income redistribution, however much hated by our fellow Libertarians and Free-market Capitalists.

All we really need to understand the true forces at work in modern society, and throughout history for that matter, is a fundamental understanding of the working of the human brain. We can only hope

that our reader is gaining just such an understanding from this book.

Conclusion

To conclude this topic, we offer the following description, published in 1915 by renowned surgeon and co-founder of the equally renowned Cleveland Clinic, George W. Crile, MD, in his still highly relevant pre-WWI anti-war classic, *A MECHANISTIC VIEW OF WAR AND PEACE*, in which, on pages 50-51, he stated the following:

“The most powerful activator of man to-day, therefore, is his fellowman. He is at war with him in business, in education, in philosophy, in the fine arts, in the professions, in the pulpit, in politics, in winning mates! In all his waking hours and in his dreams he exerts himself against his fellows. The savage stalks or ambushes his enemy or his prey in direct personal effort and settles the issue by physical prowess; civilized man stalks, ambushes, and attacks indirectly through the media of trade and commerce. The savage settled his issue in one physical bout; indirectly through the organized community civilized man may hurl himself against his rivals with every atom of his strength for months and years, and though this civilized combat

draws no blood and tears no tissue, nevertheless the indirect battle is waged to its finish in bankruptcy, want, suffering, broken health, and premature death (i.e., submission and defeat due to COASTER?). “
(underlining and parentheses mine)

Beyond the Eugenic Medical Model

The interested reader may, also, wish to review the material presented previously on stress and clinical depression, TOPIC 14, and on stress and “conceptual space”, TOPIC 23. Otherwise, take a breath and, then, let’s move on to the research on COASTER as our gene-based population regulator. No, really, you’ll be as amazed as we were when we first stumbled onto this notion, which, by the way, our patients much preferred over all the other eugenic (i.e., “bad genes”, “bad parents”, just bad protoplasm) theories given to them by physicians stuck in the classical “medical model” of disease causation.

How about you? Would you rather think of yourself as “diseased” with “anxiety”, or over-stressed by our new modern “built” world and the crowding it necessarily entails? We prefer to understand our maladies as the results of human overpopulation and face the choices this

model forces us to come to terms with. You choose.
Want to read on?

We wrote this book for our patients and you. It was not an easy task. Join us for more new learning, or stick with the old, familiar “habitus” and fatal diseases. You choose.

26. POPULATION “DENSITY-STAT” of JEFFREY GRAY

As far back as the early 20th century, biological and social scientists have been studying the effects of crowding on population growth and reproductive activity. Prominent among them were Raymond Pearl, as in *THE RATE OF LIVING, BEING AN ACCOUNT OF SOME EXPERIMENTAL STUDIES ON THE BIOLOGY OF LIFE DURATION*, 1928, and W. C. Alee, author of *ANIMAL AGGREGATIONS, A Study in General Sociology*, 1931, both of which were instrumental in spurring on the work of John. B. Calhoun, which is mentioned numerous times in this present work.

Now for a real Pearl!

Raymond Pearl’s work is noted for his experimental proof of an optimal population level determining the

longevity of fruit flies and the negative effect of crowding on female reproductive function, or reduced “fecundity”. He, also, demonstrated the “kill-switch” effect, by transferring flies from a crowded population into a normal population, which caused their demise in short order in spite of the new roomy environment, and far sooner than expected. Their reproductive capacity had been permanently turned off! This can be seen in Fig. 15, on page 65 of Pearl’s 1928 book. Finally, he demonstrated what he called “inherent vitality”, and explained on page 145: *“In general the duration of life varies inversely as the rate of energy expenditure during life”*. We argue that he was actually observing the effects of population density stress and COASTER, but in crowded fruit flies.

Death Rates Three Times Higher in Cities

Prof. W. C. Allee’s 1931 work is quoted elsewhere in this book, but deserves mention, again, especially the eighth chapter entitled “CROWDING AND INCREASED DEATH-RATE”, which contains a “Table IV” on page 143, from demographic work by J. Brownlee, 1915, “Studies in the meaning and relationships of birth and death rates”, wherein Brownlee compared human death rates in 19th century rural and crowded urban settings.

The death rates for crowded American cities were three times higher than comparable rural areas in 1861-70 and 1891-1900. Recall the observations of “nervous exhaustion” (neurasthenia) in urban dwellers alarming the two 19th century neurologists, Charles Miller Beard and Silas Weir Mitchell, which we referenced earlier in this book.

Jeffrey Gray, PhD

However, we need to give credit, at this juncture, to a late English psychologist and renowned polyglot linguist/philologist, Jeffrey Gray, PhD, who published *The Psychology of Fear and Stress* in 1971, reprinted 1978, and greatly updated a 2nd edition, 1987. Dr. Gray summarized the animal population density and individual stress experiments of Drs. John B. Calhoun, Hans Selye, J.J. Christian and V.C. Wynne-Edwards, as well as others, in Chapter 6, entitled “An excursion into social biology: fear and sex”. He put forth, for the third time that we are aware of, the first having been J.J. Christian in a series of experiments during the 1950’s, then Wynne-Edwards in his magnum opus in 1962, the hypothesis that Dr. Selye’s general adaptation syndrome or GAS (i.e., the triad of 3 parts) of post-mortem pathologies including: (1) hypertrophy of the rat adrenal gland, (2) shrinking of the

thymus gland and lymph nodes , and (3) gastric ulcers),
“has the function of restraining or reducing population density when this gets too high.” (underlining mine). It should be noted that J.J. Christian apparently did not look for the gastric ulcers in his mice, as described by Selye in his GAS triad, although ulcers must surely have been there, with the enlarged adrenal glands and shrunken thymus glands that he did report.

Dr. Gray coined the term population “density-stat”, akin to the “thermostat” to describe this mechanism. We refer the interested reader to this revolutionary chapter in his 1971 1st edition, but the reader is referred to further development in his 1978 2nd edition for details.

Wynne-Edwards Agrees

However, in 1962, V. C. Wynne-Edwards, in his oft cited iconic 653 page *ANIMAL DISPERSION in relation to Social Behavior*, had already cited Hans Selye’s GAS (i.e., the physiological negative consequences of extended exposure to physical stressors) as a regulator of reproduction. On page 505, we find the following:

“The physiological changes that bring about regulation of the reproductive output are mediated by

the mammal's endocrine system. Selye himself (1939)...early showed that various damaging forms of stress could affect the female rat's sex organs. His later work, in revealing the vast significance of human adaptation to stress-...-has demonstrated the intimate relationship between stress and the adrenal glands (ref.)." (underlining mine)

Then, in the next paragraph and on into page 506 he continues:

"The significance of the stress syndrome will appear even more forcibly in the next chapter, in connection with induced mortality. Cortical hormones (including cortisol in humans) are specially concerned with the body's ability to adapt itself to new situations, with its reaction and defense against injury, with general reproductive activity—and, most significantly, with preserving a steady state *within the body* (physiological homeostasis). It may be strongly suspected that the adrenals, coupled with the closely-linked pituitary, play a key part in guiding the individual animal's responses, in accordance with the homeostatic needs of the social unit to which it belongs (i.e., population regulation)."

And, finally, on page 554, he states unequivocally:

“It seems reasonable on these grounds, and consistent with our previous findings, to suggest that the general adaptation syndrome, as yet only known in vertebrates, is another of the numerous group-adaptations evolved in the higher animals to aid in population homeostasis. Like the others it is intrinsic and density-dependent in its action. This particular one provides a device for suppressing surplus adults, if necessary on the spot, when it benefits the population to do so.” (all underlining and parentheticals mine)

To repeat: “a device for suppressing surplus adults...”!

Face the Truth?

As shocking and painful a realization as it has been for those of us driven to this conclusion by our various researches, we must face the truth and change our lifeways, or be culled by the many “diseases of civilization”, which is the central theme of this book.

As well as I can recall, I reached the same conclusion as Dr. Gray, independently, and wrote two papers on the subject in 2002 and 2003, published in the now extinct *ASCAP BULLETIN* (ASCAP = across species comparisons and

psychopathology), before discovering Dr. Gray's revolutionary book, or finally finding a copy of Wynne-Edwards' massive tome from 1962, or any of the other 100plus references cited in this book, except John Calhoun's seminal 1962 article. Dr. Whitaker gave us a copy of that paper in 1971, if I remember correctly.

Dr. Gray mentioned the equally fatal condition of adrenal fatigue or adrenal failure, "as part of the 'exhaustion' stage of the GAS" in his 1978 re-write, although Hans Selye, J. J. Christian, Charles Southwick, and John B. Calhoun had identified and published this pathology much earlier without much fanfare. However their clarion call had fallen on largely deaf ears, as this current one may as well.

No-one to date has ever drawn all these disparate researches together in one volume, let alone tie them conclusively together with the true extent of population density stress on human health, and eventual death. Furthermore, none of these prestigious researchers ever thought to apply Raymond Pearl's and John B. Calhoun's accidental and not previously reported discovery of a "kill-switch" to human populations, as the grave predictive instrument we believe it to be. Our rapidly rising rates of the increasingly sickening and ultimately fatal diseases of

civilization are truly a portent of disaster already well underway, with more to come, if we continue thoughtlessly along on our current path of more-growth-or-bust and 212,000 per day net overpopulation.

Anyone want to raft down the river of denial into a megacity?

Apparently, we humans do not wish to honestly face the fact that we have vastly over-populated the earth, or that our species has, as do all mammal species, built-in neuro-endocrine mechanisms to control our otherwise strong tendency to over-populate, and that these mechanisms are working overtime at present to reduce our numbers by means of both increased mortality and reduced reproduction.

Selye in Denial?

In his herculean 1025 page, 1950 work entitled *The Physiology and Pathology of Exposure to **STRESS**...*, on page 380, Dr. Selye stated:

“We have already mentioned that the gonads tend to undergo atrophy upon exposure to stress as part of the “shift in pituitary hormone production”. It is reasonable to assume that a diminution or cessation of sexual

functions is a useful response during systemic stress, since it helps the organism to concentrate all its efforts upon activities immediately concerned with the maintenance of life."

We can find no evidence that the Montreal based Dr. Selye was familiar with the work being carried out nearly simultaneously at the Penrose Lab, by Dr. Christian and his colleagues, demonstrating similar post-mortem pathological findings to Selye's GAS, but correlated with population density stress. Nor was the good doctor Selye apparently familiar with the simultaneous researches of Charles Southwick and his colleagues at the University of Wisconsin. So, Dr. Selye simply never drew what to us is an obvious objective biological conclusion: stress, in the form of COASTER and population density stress, is a population optimizing mechanism. Now for proof from the Philadelphia Zoo.

Credit Jack Christian?

However, the first comprehensive research report and literature survey on the topic was published in 1961 by Dr. John J. Christian, with a preliminary publication as early as 1950. This report was the result of work done on mammals at the Penrose Research Laboratory, located at

the Philadelphia Zoological Society, associated with the Department of Pathology, University of Pennsylvania Hospital. As mentioned earlier, the Penrose Lab was a center for research on the pathological effects of high population density on a variety of commonly available laboratory animals and similar wild living varieties.

Basically, several researchers working at the Penrose Lab. found Selye's GAS pathologies correlated with increased population densities and defined numerous other characteristics of the reproductive inhibitions correlated with high population densities in a number of mammals, which carried across generations. Dr. Christian's seminal paper, "Phenomena Associated with Population Density", *ANTHROPOLOGY, VOL. 47, 1961*, pgs. 428-455, is available on the Net as a free PDF file, and is a true classic. His paper concludes with:

"The evolution of the social regulation of population growth could be considered a marked developmental advance over direct environmental regulation (n.b., starvation, war, and disease), and coincides with the greater development and importance of the higher central nervous system and warm-bloodedness in mammals in contrast to the lower animals."

(underlining and parentheticals mine)

Only time will tell if his assessment of our nervous system was merited.

We believe Dr. Christian summarized his life's work best in the following two paragraphs from a later work, "ENDOCRINE FACTORS IN POPULATION REGULATION", pp. 55-115, in Cohen, Malpas, and Klein's *BIOSOCIAL MECHANISMS OF POPULATION REGULATION*, 1980, pp. 85-86, as follows:

"Inhibition of Reproduction

Partial or complete inhibition of reproductive function is a common correlate of increased (population) density, or subordinate rank, in natural and experimental populations. In this regard, increased density depresses reproductive function as it (increases) many other kinds of stress. Aggressive interactions result in diminished secretion of gonadotropins and increases adrenocortical activity (ref). These responses are much more pronounced in subordinate than in dominant animals.

In experimental populations of mice, reproductive function is inversely related to the logarithm of population size (ref). Inhibition of reproductive

function is a graded response that may involve all levels of reproduction function from maturation and gametogenesis through lactation. At peak densities, there may be total inhibition of reproductive function in voles, lemmings, and mice (as well as primates, including humans?) of all ages, but at lower densities inhibition of maturation may be the primary effect, usually accompanied by inhibition of growth, whereas mature animals are only partially affected. In addition, the degree of inhibition varies with social rank within a population. The dominant animals may be unaffected, ... the lowest ranking animals may experience total inhibition." (underlining and parenthetical mine)

Ironically, John B. Calhoun, mentioned a number of other places in this work for his "mouse universe" studies that gave rise to our concept of the "kill-switch", appears to have had limited familiarity with Christian's or Selye's work on the stress response, and, instead, remained focused on the individual behavioral changes in his crowded mice and rats, but with reference to humanity and especially urban environments. Yet a further irony, Calhoun and Christian were in close proximity and even fellow PhD students and colleagues at Johns Hopkins!

Ready for a change of pace and a video?

“Critical Mass”

In a You-tube video mentioned earlier, “Critical Mass”, Dr. Calhoun is interviewed in a number of different situations, and explains his findings at some length. He uses the word “stress” on a number of occasions, but only in its generic and very general sense, as when describing the increased violent, aggressive interactions, which were increasing with increased population density.

At no time in this video does he seem to make the connection between population density stress, Selye’s GAS triad (increased adrenal size, peptic ulcers, thymus gland shrinkage and lymph node involution) or Wynne-Edwards’ theory of social structure fitting Red Grouse populations to their food source. Neither does Calhoun mention Christian’s work on endocrine suppression of reproduction, or Calhoun’s own fundamentally important observation of the final total loss of reproductive activity, and inevitable extinction, of all members of the mouse universe population. Ironically, Calhoun even ignores the parallel rodent population crowding studies being carried on during the same time frame by ecologist Charles Southwick and

colleagues at the University of Wisconsin. Southwick drew the same exact conclusions from his researches as did Calhoun: population collapse was due totally to the disruption of parental behavior as the result of a general collapse of social structures in an over-crowded society.

As the observant reader already can guess, a central purpose of this book is to bring together seemingly disparate researches on animal populations and human health, all of which are attempting to explain the mechanism by which over-populated societies eventually experience a population collapse or even extinction.

Jeffrey Gray's Brilliant Discovery

We know of no other source, to this day, that has brought all of the important discoveries of these parallel works together in one place, except for this book and Jeffrey Gray's 1971, 1987, effort, *The Psychology of Fear and Stress*, mentioned elsewhere in this book, and in which he invents the term "population density-stat" for the effect of Selye's GAS on members of an overcrowded population.

In the section titled “The general adaptation syndrome as a density-stat”, in his 1987, 2nd edition, Dr. Gray states the following on page 81:

“Wynne-Edwards has suggested that a great diversity of physiological, behavioural, and social mechanisms have evolved in different species to provide intrinsic homeostatic control of population density. These include territorial behavior in birds, dominance hierarchies or “peck-orders”, and many other forms of social behavior, cannibalism, and, most importantly for our present purposes, the general adaptation syndrome. The argument over these suggestions is likely to be long and heated. Here I intend only to consider the evidence that in mammals, the general adaptation syndrome (GAS) may act in the way required by Wynne-Edwards’ theory. Note that if it does, we have an immediate explanation not only for the suppression of reproductive behaviours, which is part of the (GAS) syndrome, but also for the decreased capacity to cope with tissue-damage and infection, which is an even more puzzling feature of it. For these changes are exactly what to expect, if the GAS has the function of restraining or reducing population density when this gets too high.”

(underlining and parentheses mine)

Dr. Gray's statement here summarizes our conclusions as well. However, we hope to have drawn greater attention to the enormous contribution overpopulation has made to human misery, caused by the "diseases of civilization", which is well beyond Dr. Gray's brief reference to "the decreased capacity to cope with tissue damage and infection". We believe that we are telling, as the late newscaster Paul Harvey would say, "the rest of the story".

Stephen J. Gould's "Exaptation"

The late, well-known evolutionary biologist and natural historian, Stephen Jay Gould, and his colleague Elizabeth S. Vrba, published a scientific paper in the journal *Paleobiology*, 8(1), 1982, pp. 4-15, introducing an entirely new term into the lexicon of evolutionary biology, the creation of a brand new piece of "conceptual space"—"exaptation". The term was suggested to describe the transformation of an evolutionary adaptation, like the Stress Response, originally useful to the individual, but later "coopted" to serve yet another distinct biological function, useful to the group and species or "race", namely population homeostasis. So, population homeostasis may, now, be thought of as an "exaptation" of the Stress Response, which helps explain its origin.

W. C. Alee's "Population Adjustment"

A final reference or two are necessary to close this topic. First, we need to mention the work of the sociologist-ecologist W. C. Alee at the universities of Chicago and Florida. On page 185 of his 1951 second edition of *Cooperation Among Animals, with human implications* he states:

"One can deduce from general biological experience...that the population almost automatically adjusts numbers within its physical and biological limitations. Doubtless eventually this mysterious process of population adjustment will be analyzed. At present (1951) we have made some progress toward an understanding of the factors involved in nonhuman populations, but have little objective knowledge to report where men are concerned. (underlining and parenthetical mine)

The great irony in Dr. Alee's life-long research effort was that he, a sociologist, had apparently never heard of Hans Selye or read his research results, let alone the work being done at the Penrose Labs in Philadelphia by J. J. Christian and colleagues, or by Charles Southwick and colleagues in Madison, Wisconsin.

For another lengthy discussion of the interwoven relationships between these men and their work, we suggest the 50plus page essay by Edmund Ramsden and Jon Adams, “Escaping the Laboratory: The Rodent Experiments of John. B. Calhoun and Their Cultural Influence”, 2009, *Jl. Soc. Hist.* We recommend, particularly, the 7 page section starting on page 9, “Scientific and professional influences”.

To this day, the greatest hindrance to the advancement of scientific knowledge is the relative fragmentation of research efforts and the near total lack of communication between the myriad competing researchers ever more separated by reductionistic over-specialization, let alone independent scientists like myself—we can’t stop competing with each-other for status long enough to consider one-another’s discoveries.

What Price We Pay?

Finally, we end this topic with a quote from the “Epitome” of a book published in 1953 by the American Neurologist Harold G. Wolff, MD, entitled *Stress and Disease*. On pages 150-151 may be found the following final warning at the conclusion of his book:

“Whether appropriately or inappropriately used, adaptive and protective patterns (i.e., the Stress Response) operate only in the present, in a manner determined by the past, and often with dangerous consequences for the future.

In all events, there is help in our knowledge, since now we begin to know what price we pay for a (highly stressful) way of life. There are many things more important than comfort and a few even more important than health. But a man should appreciate what his actions and goals are costing him. Then, if he chooses, he may pay for them in pain and disease. Often he will decide that his values are poor, that he has been confused, and thence change his direction and pace.”

Or not.

So, what the heck is “adrenal fatigue” anyway? Tired adrenal glands? Read on, oh weary traveler.

27. ADRENAL FATIGUE

In our psychiatric practice, we often identified the symptoms and signs of adrenal fatigue, or “adrenal cortical

failure”, or “Addison’s syndrome” in our patients (see the adrenal gland slice, far right on FRONT COVER), and lab testing confirmed they could no longer produce even minimal blood levels of life sustaining Cortisol, nor, quite likely, aldosterone, DHEA, and the other 15 adrenal steroid hormones, which we did not measure due to expense and insurance restrictions.

Therefore, we referred our patients to Dr. James Wilson’s wonderful 2001 self-help book *ADRENAL FATIGUE*, which gives excellent step-by-step advice on rebuilding the adrenal cortex with improved nutrition, multiple nutritional supplements, and life-style changes. Dr. Wilson has, among a number of academic degrees, a PhD in nutrition and a clinical practice in Tucson, AZ.

This self-help approach was necessary, as none of their primary care “providers” had any knowledge of adrenal fatigue, how to recognize (diagnose) it, or how to treat it. In fact, we need to point out here that it is rare indeed for a primary care provider to be familiar with the material in Dr. Wilson’s book, or this current work. Why? Medical schools don’t teach this material and doctors often do not believe that their patients have the capacity or motivation to understand this material. Our fellow physicians are often amazed to hear that our patients were

more than willing to do a little homework in order to truly understand their illnesses and the holistic care for these illnesses.

What Audience?

When often asked by readers, professional and non-professional, what audience this current book is aimed at, we respond: "our patients". They often seem dumbfounded by our reply. Perhaps they need to raise their expectations of the capacities and motivation of their patients to understand the medical science behind their diagnoses and the scientific rationale for their treatment recommendations. At least, this was our experience.

Sadly, all our data collection was done in a purely clinical setting and no effort could be made to organize it in anyway other than "anecdotal" reporting in the working medical record. However, even letters to medical journals with these anecdotal reports were ignored by those journals. We are as gridlocked in clinical medicine as pretty much every other aspect of the so-called knowledge society. It's not what you know, as much as who you know. Now, back to the specifics of adrenal fatigue.

Symptoms of Adrenal Fatigue

The symptoms of adrenal fatigue include, but are not limited to, the following:

fatigue not relieved by sleep or even a week's vacation; stimulant craving (coffee, tea, tobacco, amphetamines, etc.); sugar and salt craving; low blood pressure, especially light-headedness on rising quickly; auto-immune diseases, including all forms of arthritis, lupus erythematosus, inflammatory skin conditions including psoriasis, relapses of multiple sclerosis, and fibromyalgia; decreased stress tolerance; decreased cognitive functions, including memory; dependent edema or swollen ankles and lower legs; muscle weakness and muscle wasting; cold intolerance; and clinical depression.

All in all, we feel like crap, can't do much, can't even stand up without fainting, and are pretty hopeless.

As very few American medical school trained physicians have knowledge of the material being presented in this current work, we encouraged our patients to become their own best physicians, which books like "Doc" Wilson's *Adrenal Fatigue*, 2001, will facilitate. He, also, has a website by the same name.

The FRONT COVER of this book shows histological sections (“slides”) of human adrenal glands in progressive stages of over-work and, finally, fatigue or failure. However, this process is reversible and complete restoration of adrenal health is possible. We know this from personal experience, as well as observing the full recovery of many of our patients. Prevention, however, is preferred

28. SEX WITHOUT REPRODUCTION, REPRODUCTION WITHOUT SEX, and POPULATION DENSITY STRESS

Need we point out the rapid rise in human infertility in the developed world (100% increase in 43 years; from 8% in 1982, to 16.7% in 2016), or the 340% rise in the self-reported number of homosexual American households in the past 65yrs., as reported in demographic data available on Wikipedia and elsewhere? A recent article in the on-line version of *SMITHSONIAN MAGAZINE* quoted a survey finding of 20% of the American or British population (article is vague) admitting sexual attraction to the same sex. Recall that Dr. Calhoun’s mice were increasingly involved in same-sex contacts as their population density increased in their “behavioral sink”.

Elevated levels of the master stress hormone, CRH (corticotropin releasing hormone), and the adrenal stress hormone Cortisol, cause several reproduction inhibiting effects. Their actions, including suppressing the hypothalamic sex hormone releasing hormone GNRH (gonadotropin releasing hormone), can result in infertility in both males and females. This may explain the soaring rates of infertility in developed Western urban/suburban populations and the booming market for in vitro fertilization (IVF) and embryo transplantation, in order to achieve pregnancy when traditional methods fail. Diagram 6 in the Appendix of this book, shows the multiple biochemical pathways by which this can occur.

Falling Sperm Counts

A recent review published in the *Human Reproduction Update, 25 July 2017*, “Temporal trends in sperm count: a systematic review and meta-regression analysis”, concluded that sperm concentrations among Western men had declined from 99 million per milliliter in 1973 to 47.1 million per milliliter in 2011, for a 52.4% decline. Of greatest concern to the authors was the constant annual rate of decline, 1.4%, over the 38 year period. Data on

non-Western men was too limited to draw a comparison. The authors point out that sperm counts are only considered “low” when they go below 15 million sperm per milliliter. However, at current rates, this could occur in 23 years! The lead author, Hagai Levine, expressed concern that his his study’s results might foretell “the extinction of the human species”. Dr. Levine expressed bafflement and stated that further research into causes was urgently needed. He hypothesized that smoking, obesity, synthetic estrogens in plastics, and our sedentary lifestyle were possible causative factors. In a personal email, Dr. Levine agreed that “stress” was a factor, although he did not elaborate on his use of the term, as we have done extensively in our book.

Scattered throughout this book, the vigilant reader will find multiple, intentionally over-lapping parallel references to COASTER inhibiting reproduction, including lowering sperm counts, in crowded populations, which is a core theme of this book.

Interestingly, we recently found an article by Dr. Len Lopez, apparently an exercise expert, posted on the Christian Broadcast Network website, and entitled “The

Stress-Infertility Connection”, which proposes that elevated Cortisol production in the adrenal cortex hijacks progesterone production, a female hormone necessary for pregnancy. The parallel hijacking of reproduction by increased synthesis of ACTH in the pituitary gland was first described by Hans Selye in the 1930’s.

The synthetic pathway for progesterone production in the adrenal cortex leads to the ultimate production of aldosterone or Cortisol as well. So, over-production of Cortisol demands a reduction in progesterone synthesis and reduces reproductive potential. There is no reference in this brief report from Dr. Lopez to substantiate the good doctor’s claim, but it can help explain our current urban infertility epidemics.

In an important 2006 paper, “Population Density is a Key Factor in Declining Human Fertility”, by Wolfgang Lutz, et. al., Dr. Lutz explains on page 71:

“There have been few studies that explicitly addressed the relationship between (population) density and reproduction in humans, although they have generally found a significant negative relationship, even in very different settings (5 refs.)” (underlining mine)

The good doctor Lutz continues:

“And yet, over the past two decades mainstream demographic analyses have generally ignored density as a possible determinant of human fertility.”

As early as 1938, E. E. Anderson conducted research into the effect of fear (aka “stress”) on reducing the reproductive behavior of male Norway rats. Needless to say, the more fearful, the less general interest in reproduction.

Who Do We Love?

Sex object attribution, the sex of the person we are attracted to, as well as the development of our own secondary sexual characteristics and personal sexual identification, may well be determined by a similar parallel mechanism of stress hormone effects on sexual development, but operating at an early stage of brain development.

We must now pretty much all agree that homosexuals and trans-sexuals are born, not made, at least those of us in the scientific and practicing medical communities. We had no conscious choice in the sexual equipment we were born with, or the sex of those who we are attracted to. We’re just born that way. And the numbers of people

born with non-traditional sexual identities and bodies are growing alarmingly rapidly, although finding statistics on these politically sensitive issues is very difficult. If all else fails, just look around, listen to and watch mass media, go to a movie, etc.

Haven't heard about the raging bathroom controversies, or that there are now 15,000 transsexuals serving in the US Military?

Many of Dr. Calhoun's male and female mice described in his 1962 *Scientific American* paper were increasingly born exhibiting the absence of heterosexual reproductive behaviors, exhibiting non-reproductive mountings of same sex mice of inferior status, and increasingly restricting their range to the "behavioral sink" in the middle of their otherwise highly congested and contested living space. Dr. Calhoun famously named their successors, the "beautiful ones", as they never fought or engaged in traditional heterosexual behaviors and preferred to spend their time preening in a neutral central area of their enclosure. So, eventually, these successors to the "highly stressed" inhabitants of the behavioral sink lost their capacity for normal status ranking and reproductive behaviors of any sort and, eventually, became totally non-

aggressive, non-sexual, non-parenting isolates intent only on self-grooming, avoiding all confrontations, and never receiving a single injury to their pelts. They truly were the “beautiful ones”.

De-masculinized Male Rats of Stressed Mothers

Experimental evidence supporting this hypothesis can be found summarized in the book, *Psychobiology of Reproductive Behavior, An Evolutionary Perspective*, 1987, in chapter 7, “A Functional Approach to the Behavioral Endocrinology of Rodents”, by Martha K. McClintock, who wrote on pages 197-198:

“The external environment can modulate the temporal pattern of neuro-endocrine function with dramatic consequences. For example, the sexual behavior of male rats is de-masculinized if their mothers are stressed during the first trimester of pregnancy; as adults these animals have difficulty mating and ejaculating (ref.) Development of normal adult male sexual behavior requires a rise in testosterone that organizes the brain in a male pattern on days 17-19 post conception, when the fetus is still *in utero*. The temporal pattern of fetal testicular (development) is disrupted when the mother is

stressed, either behaviorally by physical restraint or physiologically by increased body temperature.... Thus, prenatal stress disrupts the normal ontogenetic (i.e., developmental) pattern of hormone secretion, which organizes the brain in a male pattern, with long-term consequences for adult behavior.” (underlining mine)

All the population ecologists previously reviewed, and yet to be mentioned in this paper, are in agreement that high mammalian population densities result in higher death rates, lowered reproduction rates, and profound effects on brain and behavior development, whatever the exact mechanisms.

The increasing COASTER driven morbidity (sickness) and mortality (death) of members of our species has already been mentioned and documented. Our opportunities to correct the errors of our life-ways, and the catastrophic impacts of our exploding populations on the entire world-wide ecosystem, are rapidly running out. Psychiatry's meager biochemical band-aides are insufficient to correct the damage being done to “mental health” by human overpopulation.

Drastic action will either be taken by mankind or Mother Nature will solve the problem for us, which She has been attempting to do since the agricultural revolution and beginning of urban population density stress and COASTER, 10-14Kya.

More Than Our Share?

We modern humans contain 38.7 billion gallons of fresh water and weigh 251 million tons. We and our “domesticated” meat animals make up 98% of the animal biomass on Earth today. That leaves 2% of the total animal biomass on earth made up of wild animals, struggling to survive in the tiny fraction of our shared biosphere not already occupied by us, and even that 2% is under constant threat of total eradication by hungry humans, whose “biophilia” has been numbed by COASTER.

All current environmental degradation is caused by our population increase over the past 10-14,000 years. If we’re honest with ourselves, the only way to decrease our environmental impact is to stop our population increase and begin a voluntary world-wide population decrease.

Many experts set the ideal sustainable target number at 50 million, or a 7,230 million person population reduction in order to restore balance to the ecosystem and save the planet. We realize that this is a shocking suggestion, but we are only the messengers.

The one-child families recommended in this book will only bring down world-wide human populations to the 1950 levels of 2.5 billion, not 50 million, and only to that number by 2100, and only if instituted world-wide TODAY. Even this seemingly extreme measure may be far too little and far too late to prevent a COASTER and population density stress induced massive die-off of our children and ever sicker, infertile grand-children. And that's only if all the damage we've done to the ecosystem by our selfish overabundance doesn't destroy our species first! It will not be a pretty picture in our family album, and, in the next generation or two, all the pages may be blank. The choice is ours.

29. CARRYING CAPACITY, POPULATION “OVERSHOOT”, THE “KILL-SWITCH”, and *THE COMING POPULATION CRASH*

But what possible model can we use to approach a restoration of the essential features of our ancestral life-ways?

One thing is absolutely certain, to repeat, from all measures of sustainability, we are massively overpopulated: 1233-1850 times, compared with our hunter-gatherer ancestors, at or before 10-14,000 BCE (before current era, same as BC, the earlier “Before Christ”), who numbered 4-6M (or less!), and 21X, compared with year 1 CE (AD), when human populations had reached 350M. Our world populations are constantly expanding at the rate of 212,000 net per day, or 80,000,000 per year, as our death rate is only 57,000,000 per year, and we produce 136,000,000 new copies of ourselves per year.

According to demographers and E. O. Wilson’s wonderful little 2002 book, *THE FUTURE OF LIFE*, we reach the maximum carrying capacity of Mother Earth (i.e., the maximum ability of earth’s resources to feed the human population, if we are all vegetarians!) at a maximum

human population of 9.3B in the year 2045.. That's only 28 years from now, one more generation!

As William R. Catton's iconic 1980 book, *OVERSHOOT*, so convincingly pointed out, we have already multiplied beyond the capacity of the earth's renewable natural resources to support current world-wide human populations living our extravagant meat and energy rich Western lifestyle. One environmental organization calculated that August 8, 2016 was "Overshoot Day", beyond which we were exhausting renewable natural resources for the rest of the year, dipping further into natural resource "capital" reserves, and over-shooting earth's carrying capacity for humans. Thus, Prof. Wilson's prediction that we will only be able to feed all 9.3 billion humans on earth in 2045, if we are ALL vegetarians!

"Misery and Vice"?

We may choose to just sit by and watch our offspring, and their offspring, subjected to the inevitable and ruthless biological constraints imposed by Malthusian "misery and vice": resource wars, starvation, global warming, climate change, sickness and death due to population density stress, and eventually mass infertility due to the "kill-switch", resulting from COASTER.

Otherwise, we need to take concerted world-wide action to educate couples world-wide about the importance of voluntarily limiting future family size to one child, encourage men to support women seeking higher education and meaningful work, as well as under-going vasectomies, and ASAP!

Population Crash?

THE COMING POPULATION CRASH is actually the title of a recent 2010 book by a British author, Fred Pearce, “honored as UK environmental journalist of the year, among his other awards”. Unfortunately, Mr. Pearce sarcastically dismisses his fellow Brit as, “Bob Malthus, a morose eighteenth-century vicar spooked by two revolutions—the French and the Industrial—counting his stunted parish flock and imagining our demographic doom.”

Actually, some authors believe that Malthus was concerned by the plight of starving Irish men and women, as well as the exploding population of the “new world”.

A devotee of modern demography (the mathematical study of population numbers and trends), Mr. Pearce optimistically assures us that we need do nothing else to prevent an over-population catastrophe, as the falling birth

rates among wealthy nations will somehow save us from ourselves and save the planet.

However, Mr. Pearce admits:

“We will need all our ingenuity to get through that (climate change resulting from the peak natural resource extraction and peak population), and to find ways to feed the eight or nine billion people who will inhabit the earth by 2040.” (parenthetical and underling mine)

Sadly, Mr. Pearce mentions none of the research described in this essay, which explains the manner in which the Grim Reapers, CRH and Cortisol, in the form of COASTER, population density stress, the current top ten fatal diseases of mankind, and adrenal fatigue are already limiting our numbers, by the diseases elaborated elsewhere in this book, let alone the quickly approaching flipping of the kill-switch: a true, massive population crash due to our epidemic of infertility.

Every machine in a modern factory has a “kill-switch”, which allows the operator to stop it in the event of an unforeseen emergency. We are rapidly approaching a sudden “kill-switch” die-off of 90-100% of our current

populations (see Appendix Diagram 7 for Dr. Calhoun's graph published in 1973), if a rational system of fair and equitable population reduction and biosphere restoration is not undertaken world-wide, starting today.

A campaign for voluntary world-wide human reproduction averaging one-child per family is the only possible preventive solution, short of a world-wide epidemic or nuclear war, although reducing our excessive consumption of natural resources in the "developed" nations is, also, necessary for a "softer" landing.

A Binary Choice

This problem will only fix itself through two agents: population collapse, which, Mr. Pearce correctly notes, is already underway, or a world-wide voluntary population reduction program of one-child families, natural resource consumption reduction, and restoration of ecological balance and biodiversity.

Ok, ok, let's take a break and do a little time travelling, back to a simpler time, when COASTER was not yet a problem.

30. ARCHEOLOGY, or WHAT WE KNOW of THE LIVES of OUR ANCESTORS

So, again, what models can we use for at least a partial reconstruction of the naturalistic, ecologically balanced, COASTER-free, “diseases of civilization”-free life-ways of our ancestors? The answers lie in the annals of prehistory and our direct route to the past through the painstaking archaeological “digs” of past and current archaeologists, the museum collections gathered in these efforts, the 200 plus painted caves, and the earlier prehistoric artifact collections of the curious and dedicated amateur archaeologist/collectors of the 19th century, if crudely done by today’s standards and unpublished.

The earliest Europeans to set foot on the North American landscape were witness to a human occupation of the continent in complete balance with its environment and totally sustainable, but with only 2,000,000 inhabitants: the Native Americans. Unfortunately, the Native American populations we encountered after 1492 had already been decimated by European diseases, for which native peoples had no immunity, and were likely only a small fraction of the original stable number of their pre-Columbian numbers, perhaps as few as five percent.

Let's face the truth of American archaeological collecting: New York banker George Heye's privately collected 4,000,000 Native American artifacts form the core collection of 750,000 items for the Museum of the North American Indian at the Smithsonian National Museum on the Capital Mall in Washington, D.C. These items are the remnants of a former successful, sustainable pre-industrial way of life now largely abandoned. Also, there are 600 known hunter-gatherer societies still extant in the world today and anthropologists have been studying and writing about the lifeways of these small clan groups living their traditional lives just as they always have. These remnants of our ancestral lifeways are under tremendous pressure and many face immanent extinction due to our exploding modern human population.

Kids in Caves

Let's face it, most of the European palaeolithic "cave finds" now in private collections or museums were collected by curious French, Italian, and Spanish teenagers and, then, sold to local collectors, who later sold them to museums and wealthy Americans, who collected them for American museums in the early 20th century. Probably only

1% or less of their valuable collections of prehistoric artifacts are viewable by the general public in museums and, tragically, over 99% over-flow in dark, nearly forgotten public-excluded museum basements and storerooms.

The only archaeological material receiving notoriety and, thus, vetted today are those objects found relatively recently by “professional” archaeologists and published in their carefully edited and controlled journals. The major auction houses who feature such material rely on a tiny clique of “experts”, who rely on an even smaller clique of academic “professionals”, to certify the authenticity of these objects. Unfortunately for us all, these “experts” weren’t even born when the most important early finds were collected from yet to be officially “discovered” ice-age caves by curious European farm boys, only later to find their way into the hands of wealthy private American collectors and museum basements.

In America, vast collections of Native American artifacts were assembled in the 19th century, including items salvaged from burial mounds on which many river-side cities were built. In Nashville, TN, H. L. Johnson and his father collected so much material from the local Indian burial mounds that they needed to build a riverboat to hold and display them all. They amassed a small fortune

charging the general public 5 cents to view their extensive collections. When a part of this collection was put up for auction in 1916 Boston, it brought well over \$1,000,000. In Grand Rapids, MI, there stands the original Art Deco museum building, which is no longer open to the public. A new public museum now stands on the other side of downtown Grand Rapids. The old museum contains thousands of Native American artifacts found in the sixty-six burial mounds levelled for the foundations of modern downtown G.R. in the 19th century. These are off-limits to the public. The reader should have a general picture of the truth about museums by now, so we'll move on.

Ancestral tools, utensils, weapons, cave paintings, and art objects go far to defining the life-ways of people who fit into their natural physical environment, as we no longer do. By studying the clues they left behind or are still using, we are able to approach a reconstruction of the life-ways of our ancestors and, perhaps, design a living environment that restores, as much as humanly possible, the natural, sustainable, and diverse order of all living things. We are a very long way from achieving that goal currently, driven ever on to greater and greater levels of programmed consumption by greedy corporate interests, for whom neither the truth of our existence or the health of

the biosphere represent anything but an impediment to ever greater profits. Caveat emptor indeed!

PART 3 and PART 4 of the rest of this book attempt to lay out practical analyses and suggested solutions to COASTER based on our accumulated knowledge of ancestral and current Hunter-gatherer life-ways.

31. U.N. IPCC (INTER-GOVERNMENTAL PANEL ON CLIMATE CHANGE)

So, how might we escape a seemingly inevitable sixth extinction event, including a human population collapse, and a world-wide environmental catastrophe? And, if the reader doubts the validity of our dire predictions, please refer to the latest, 5th report of the United Nations IPCC (Intergovernmental Panel on Climate Change), available on the net. We humans are by nature optimistic, creative, and resilient; and remediation is possible, but only if we face the reality of this on-rushing overpopulation and overconsumption disaster now!

So far, over the past two years, we've sent out over 50 paper copies of early 95pg., and later, revised, 212, 235, 532, and, now, 600plus page versions of this essay-become-book, as well as inviting internet readers to download and view the free PDF version, for thoughtful

friends and respected colleagues. We are describing the extensive evidence of our overpopulation problem and referencing the animal models predicting dire consequences to us and our environment. We have attempted to network with every population expert and organization world-wide, but to little avail, as they are all competing for monetary contributions and status, but apparently have little time for serious reading and seem to view our work as just more unwanted competition. We believe that the truth should always deserve serious consideration.

To date, we've received one really thorough, thoughtful hand-written review from an art teacher; four brief, cursory responses; two partial if more thorough reviews, a welcomed "Foreword" by Karen Shragg, three marked-up review copies, but the overall response has been "just too depressing", "I'm too old to do anything about it", and a plethora of uninvited editorial recommendations, all totally lacking any comment on the content—the oncoming catastrophe for all life on earth.

In a recent seminar on the book presented to a Madison teaching and learning organization, ten brave souls signed-up, seven showed up, and three stuck it out for five, two-hour discussions. Two of the last brave three participants were experienced retired academic physicians,

who were generally shocked by this book but positive in their reviews. I am very grateful for their questions and critiques, as well as overall positive assessment of the core elements of this book.

However, it is clear to us now that we no longer, in this Twitter, Facebook, and Instagram age, read much of a serious nature, as previous scholars did from the Enlightenment until recently. If democracies truly depend on an educated populace, we're in a lot of trouble, which the current political campaigns seem to prove.

We have done our "due diligence" for our fellow man and Mother Earth, Gaia, and our better angels. Our job has been done as well as we are able.

We do not agree with our pessimistic readers, but we may have to face the possible reality that we really are not salvageable, that our time as a spectacularly but briefly successful species has passed, that we are incapable of an honest appraisal of our situation; that we are driven solely by blind, short-term self-interest and raw greed cloaked in our myriad anonymous hoarding corporations; and that we are unable or unwilling to change, to adapt. Certainly, there are more than adequate biological alternatives to our

version of life, our species, only one among millions of competitors, the true e unum pluribus.

And, if we've learned nothing else from our 20 years of reading and clinical research, it is that all species on earth have an optimal population in a global ecological context, balanced over against every other species and the natural resources provided in our environments, and that every species has a built-in population regulation mechanism. We have attempted to describe our population regulation mechanism, including references to every other researcher we could identify.

We must make reference here to one of our favorite movies, "THE DAY THE EARTH STOOD STILL". For those of us unfamiliar with the movie, an alien ambassador representing a consortium of advanced intergalactic civilizations is sent to Earth, in order to deliver an ultimatum to mankind: clean up our act or face extermination as a dangerous, overpopulated, mutated life-form—potentially dangerous for all of creation.

In the movie, a properly chastened mankind agrees to the alien ultimatum in the 11th hour, 59th minute, and Armageddon is forestalled at the very last possible moment.

The Infertility Epidemic

Time may very well have already run out for our species on earth. The reader may have seen a recent widely publicized well documented scientific report, “Temporal trends in sperm count: a systematic review and meta-regression analysis”, describing the 50-60% decline in viable sperm production since 1973 in the developed world. The scientist author further predicted that, at the current rate of decline, much of humanity will no-longer be capable of reproduction in 38 more years, 2055. Another widely distributed report noted the dramatic decrease in overall fertility in the advanced Western world: 100% in 34 years: from 8% in 1982 to 16.7% in 2016. Don't say we didn't try to warn you! More about the scientific evidence for the true extent of our impact on earth's environment and oceans in TOPIC 44. But, now, let's look at some alternatives to our current path to otherwise inevitable extinction.

PART 3: IS THERE AN ALTERNATIVE?

32. IS THERE AN ALTERNATIVE?

If we are not willing to passively accept the inevitability of this realistically pessimistic version of a near future of cataclysmic human over-population, COASTER, population density

stress, environmental degradation, and population collapse due to the triggering of our internal kill-switch, then we must make major life-style changes on an individual, day by day basis.

What follows are a few suggestions on how each of us, as individuals, starting immediately, might change our habitual behavior in order to save ourselves, our species, and the rest of the biosphere from, otherwise, certain disaster. Of course, this must include a dramatic reduction in birth rate, as a direct mathematical result of one-child families.

The stress physiology, prehistory, and archaeological research cited earlier can guide our changed individual behavior, if we will learn from it. Historically, many “rational”, “cognitive” therapists have believed and taught that all we needed to do was simply stop worrying, calm ourselves, and refocus our thinking on calming thoughts. Recall that “worries” are simply Pavlovian conditioned triggers to the chronically overactive stress response, COASTER, the central element in “population density stress”. Avoiding worrisome ideas in order to maintain serenity, avoid COASTER, and avoid stress diseases is not rocket science, but it’s nearly impossible in our “built” world, filled as it is with ever present commodified conscious and unconscious stressors. Sometimes, it seems like the whole world we’ve created is working against us!

CALM YOURSELF

The interested reader may wish to seek out one of early 20th century Harvard neurologist George Lincoln Walton's wonderful little books, all intended to help the "fretting" student reader "cultivate emotional poise in a strenuous age". In his works, Dr. Walton cites numerous classical authors, including Marcus Aurelius and Epicurus, all of whom counsel against worry as a "faulty mental tendency". Dr. Walton summarized his work in the following passage from his 1913 book, *CALM YOURSELF*, on pages 21-22, as follows:

"Our aim is to cultivate emotional poise in the struggle for survival in a battle of wit (viz., conceptual space) and wile rather than pike and pistol; our concern is not so much for our physical safety as for our morals, our ideals, our social, business, or professional standing, and, with most of us, I fear, with the question whether we are getting and holding our share of that enormous wealth which, it seems, foretells the doom of civilization." (underlining and parenthetical mine)

Were stress management only so simple! Other popular 20th century "self-help" authors with similar messages

included the Australian physician Claire Weekes, MD, Rev. Dale Carnegie, and more recently Albert Ellis and his followers.

Redirecting our thought patterns and attention away from conditioned worries that set off the stress response repeatedly and incessantly, if we allow it, through prayer, mediation, and religious ritual, is not a new idea and continues to play an important part in anyone's successful stress management program.

However, consciously redirected thinking patterns are not nearly enough, if we wish to survive COASTER, population density stress, and the kill-switch, let alone save humanity and the biosphere.

Clan Social Groups

We need to continue to reorganize ourselves into clan social groups, building on Carl Whitaker's earlier reconstitution of healing "family reunions". Most of us already have made multiple conscious and unconscious attempts at recreating these archetypal social units, and many of our generation can remember however brief residencies in voluntary "communes" during the social experiments prevalent in the 1960's and 1970's. Ours was

a wonderful group of University of Wisconsin grad students and postdocs in an old farmhouse in the countryside outside nearby Madison, as temporary an experience as it unfortunately was. The sense of true belonging is unforgettable, just as in social organizations like the military.

In author/journalist Sebastian Junger's 2016 book by the above title, the subtitle is *On Homecoming and Belonging*. The author addresses our common need "to belong to small groups defined by clear purpose and understanding—"tribes"", further noting that this primal inter-personal connection and sense of belonging "has been largely lost in modern society, but regaining it may be the key to our psychological survival".

The following excerpt begins on page 94 and continues on page 95:

"One of the most noticeable things about life in the military, even in support units, is that you are almost never alone. Day after day, month after month, you are close enough to speak to, if not touch, a dozen or more people. When I was with American soldiers at a remote outpost in Afghanistan, we slept ten to a hut in bunks that were only a few

feet apart. I could touch three other men with my outstretched hand from where I lay. They snored, they talked, they got up in the middle of the night to use piss tubes, but we always felt safe because we were in a group. The outpost was attacked dozens of times, yet I slept better surrounded by those noisy, snoring men than I ever did camping alone in the woods in New England.

That kind of sleeping has been the norm throughout human history and still is commonplace in most of the world. Northern European societies are among the few where people sleep alone or with a partner in a private room, and may have significant implications for mental health in general and for PTSD in particular.” (underlining mine)

Four!

It is common in sub-urban America for men (and women) to join into small hunting groups, “foursomes”, and search for invariably lost golf-balls on the myriad naturalistic, if highly stylized and chemically sustained, energetically irrigated, “fairways” and “greens” of golf-courses and “country clubs” that form a vast array of carefully maintained green spaces in developed countries. On the course, we compete for accuracy and efficiency in

the stressful effort to hit the ball, with a “club”, eventually, into the targeted “cup”. Some reward, often monetary or alcoholic, awaits the “player” (hunter) with the lowest total number of “shots”.

Men and women have, historically, formed into similar more cohesive and enduring hunting groups in the military, in business ventures, in sporting events, in clubs, in fraternities or sororities, in churches, in civic organizations, etc.

However, our ancestors only had to perform such stressful tasks necessary for membership in such social groups, on a much more limited scale, in stable hierarchies, and, thus, were subjected to much less competitive stress on a day to day basis. Again, their status hierarchies were stable, once created, and each man or woman knew where he or she “stood” in his small hunting or gathering group, and in the women’s status hierarchies which developed in parallel, and defined each child’s status from birth. Thus, Cortisol and CRH levels were lowered, COASTER was infrequent unless the leader was lost, in which case a new round of status competitions would be necessary to determine relative rank in the new hierarchy.

Unstable Overlapping Status Hierarchies

We beg the reader to bear with the necessarily simplified, idealized, and stereotyped nature of this discussion. Unfortunately for modern man, woman, and child, he or she must compete anew, often dozens of times a day, in a whole array of over-lapping status hierarchies, in none of which are we likely to find ourselves high ranking, except, perhaps, in our isolated suburban homes, or in our mandatory automobiles, and only on that rare uncontested straightaway, with its temporary illusion of ownership. God forbid, if we should allow ourselves to be passed by a faster driver on our endless super-highways, or move to an apartment, or look a stranger in the face while walking down the sidewalk, or “downsize”, or get a “D” on a test, or not get picked for whatever competitive group in school, or buy a small TV or auto, or marry “below” us, or lose rank in any fashion, including “net worth” or credit rating, or choose not to marry, or have only one child, or choose to have no children. Maintaining our status and deep sense of belonging in all these myriad, overlapping and constantly changing hierarchies in our endlessly mobile urban society is our necessary life goal and guarantees COASTER, along with the diseases of civilization. Do we lose status if we

only have a single child or no child at all? Not in our book!

If we wish to survive COASTER and population density stress, we need to reduce the number of status competitions an individual man, woman, or child is exposed to on a daily basis. Knowing where we belong and are needed, in as few stable status hierarchies as possible, will reduce COASTER and population density stress. We need to untie the Gordian Knot of overlapping status hierarchies and constant fitting-in struggles we've created for ourselves.

However, there will always be status competitions, even though many now are vicarious and conducted from the couch or Lazy-boy (i.e., someone else does the actual competing, but we share the emotional experience of that other person): our school defeats your school on some assigned temporary turf, "arena", or court, etc.

Subordination and defeat will always be emotional experiences we will have to deal with, but, hopefully , not as frequently as is so often our experience in the "modern" built world. Our desperate loneliness frequently necessitates our resorting to intoxication with anesthetic

substances or equivalent behaviors and, even, suicide, such as plague our societies today.

The reader must be longing for more information on subordination and defeat at this point, right?! Unfortunately the narrowly focused psychologists who literally wrote the book on this subject hadn't considered the last few paragraphs you just read, regarding the density of overlapping status hierarchies in our uprooted built-worlds. But, in their defense, this book hadn't been written yet. To their credit, at least they normalized the discussion of clinical depression, moving it along past the medical "disease" model and toward a broader ethological perspective, but that was only one small step down the path we've laid out before you in this book!

Subordination and Defeat,...

An excellent book on this subject already cited earlier, *Subordination and Defeat, An Evolutionary Approach to Mood Disorders and Their Therapy*, Edited by Leon Sloman and Paul Gilbert, 2000, contains a chapter entitled "Major Depression and the Involuntary Defeat Strategy: Biological Correlates". On page 98, the following can be found:

“In summary, several lines of evidence point to dysfunction at one or more levels of the HPA axis (i.e., COASTER) in both low-ranking or defeated primates and individuals with major depression. In both cases, the changes are consistent with failure to turn off these otherwise adaptive fight or flight mechanisms. If humans who react to competitive defeat in a particularly maladaptive way also experience these fundamental changes in HPA-axis activity, this might render them more vulnerable to subsequent major depressive disorder (not to mention death).”
 (underlining and parentheticals mine)

We can always create our own victorious outcomes by inventing a new piece of conceptual space (territory), by simply taking pen to paper, fingers to keyboard, paint brush to wall or canvas, fingers to musical instrument, actor to stage, etc., as we are this very moment! This is certainly the origin of all great, and not so great, art and literature.

However, the reader should be warned that the always dominance-seeking editors, jealous colleagues, critics, and web hosts, will do everything in their power to dismiss your efforts in order to retain their own dominant

positions. Our advice is to ignore them, publish your material privately, on a small scale, and hand deliver it to those few inquiring minds who may be truly interested in what you have to say—the publication and distribution plan for this work.

Women at The Base Camp

Women, again as a stereotype, have an even greater problem, as their ancestral order was keeping the “home fires burning” in the “base camp”, driving back predators with constant loud conversation, never working alone, always sharing in the base camp chores of looking after the children and the sick or elderly, inventing and conducting multiple craft activities, and analyzing the past endeavors of the clan as well as planning for the future.

A core group of esteemed senior women were, of necessity, the planners for the entire clan, and, accordingly, held in high regard by all, including the men.

Archaeological research has uncovered extensive evidences of great reverence for women and the earliest known human representational art consists of small finely done mammoth ivory, bone, and soft rock sculptures of women and animals, whereas similar sculptures of men are

extremely rare. Over 400 of these beautifully and painstakingly carved soft stone and Mammoth ivory female figurines are known to date and are often found buried in a corner of the dwellings of early Mammoth hunter encampments, especially in present day Russia.

The ancestral clan social group was led, by necessity, by a group of senior women, as are numerous Native American clans today, and supported by the hunters of meat, and the gatherers of vegetables and herbs. These ancestral women would only have been able to raise one child at a time per woman, due to their nutritionally sparse nomadic existence, inability of a woman to successfully breast-feed more than one child at a time, and the incessant need to move-on to greener pastures in order to find new food sources, all the while attending to a helpless infant, and in a very dangerous, predator rich environment.

So, it looks like we've arrived at that most important subject, from which all human life originates: women!

33. WOMEN ALONE; WOMEN UNITED

Psychiatrist's offices, when I commenced my career 45 years ago, were primarily utilized by troubled women:

stressed, anxious, over-extended, and depressed. At some point, men started seeking help for similar problems, but years ago women were the mainstay clients of psychiatry. Why? The answer is clear to us today: isolation from the prehistoric norm of constant companionship and the support of other women in the clan social unit. An historical switch from matriarchal to patriarchal social organization occurred approximately 5,000 years ago in Eurasia and flowed into all of Europe, when Central Asian pastoral men domesticated the horse and discovered its potential as a weapon of inter-group territorial domination: war. These Kurgan warriors, then, rode into today's Europe and conquered the matriarchal, relatively peaceful undefended semi-sedentary agrarian peoples, changing the course of history.

The brilliant and courageous work of the late Lithuanian-American archaeologist, Marija Gimbutas, describes this event with undeniable clarity. The isolated, depowered women of the modern world are the direct result of this late Neolithic invasion. Women may regain their prehistoric authority and power but they can only do it through cooperation with other women.

Women need to reconstruct the core clan groups of our ancestors, in their living environments, and limit their

family size to one child, thus protecting themselves from the multiple dangers of childbirth, multi-tasking adrenal exhaustion, and saving the planet. This, of course, requires a close proximity or common residence and common facilities for cooking, crafting, conversing, analyzing and planning.

Men need to honor this need of women for female cooperation and one child families, and take-in another 18 holes, go back to the hunting camp, go fishing, find a job, write their own book or poem or essay, take a hike, go camping, take the kids to a park, walk the dog, rake some leaves, retreat to the “man cave”, build a cabin, work on a team project with other men, etc.

So, are we the only ones following this story who see that we need to reconstruct our social lives to approximate the social structures of our ancestors, including their one-child families, for which we are neuro-physiologically fitted and in which our health will be fully restored?

The World Until Yesterday

Polymath and geography Professor, Jared Diamond, known for his numerous publications highlighting the influence of environments on behavior, has written the

above titled 2012 book reviewing his personal knowledge of life-ways in New Guinea, and, particularly, in comparison with our modern Western urban lifeways. Ironically, he writes extensively about the “epidemic” prevalence of non-communicable diseases, “NCD’s”, in modern “advanced”, Western or “Westernized”, societies, and attributes these diseases to the “misfit” in diet and exercise between our ancient Hunter-gatherer ancestors, with the relative inactivity and poor diets of those of us living in our modern built-world.

However, he never mentions exploding modern population numbers (1233-1775 times as many as our hunter-gatherer ancestors!) as a possible contributor to, let alone chief cause of, these NCD’s. Nor does he mention fertility comparisons, aside from a section on infanticide, for which women are noted to be solely responsible in traditional Hunter-gatherer societies. Prof. Diamond goes into this sustainability or “carrying capacity” issue and many other child-rearing comparisons at great length, while never addressing, at least knowingly, any other aspect of population regulation, or any of the rest of the 100plus references in our book.

Apparently, the good Professor missed the forest for the trees: the most striking physical distinction between the traditional “world until yesterday”, and today’s modern “built” world is the sheer number of humans, then 4-6 million and now 7.4 billion, and the response of our ancient neuro-endocrine systems to this population explosion, not to exclude our horrific impact on the rest of the physical and biological environment. Is this not obvious, or is it just us?

Now, what about that sacrosanct institution of motherhood, from the mothers themselves?

Motherhood, Maybe Not So Sacred

Louis Genevie, PhD, has written a book compiling extensive survey questionnaire responses from 1,100 women conducted by National Family Opinion, Inc. from their diverse opinion pool of 350,000 respondents. The book was published in 1987 and received little national publicity. Perhaps, it was dismissed because it did little to support the prevalent myth or cultural meme of the modern suburban woman as the endlessly loving, devoted, dedicated child-care worker. In the Introduction, Prof. Genevie states the following summary of his findings:

“How Do Mothers Really Feel?”

About one in four women reported having very positive feelings about motherhood. These women viewed themselves as more loving and patient than other mothers, tended to have supportive spouses, close families, and children who generally fulfilled their expectations and reciprocated their love.

On the other end of the continuum, about one in five women viewed motherhood in predominantly

negative terms. These women viewed themselves as relatively short on love and patience, had unsupportive spouses and children who were less loving and more problematic. These women felt that the rewards they received were not worth the effort they put into motherhood.

The majority, however, described motherhood with a great deal of ambivalence. For most, the good outweighed the bad in the final tally. But their positive feelings about motherhood did not negate the tremendous difficulty, pain, and heartache of the role." (underlining mine)

On page 22 of this myth-exploding but scientifically sound book, Prof. Genevie also states:

"Other women had different sentiments entirely. While the more experienced mother is likely to have an easier time dealing with the day-to-day stress, more experienced does not necessarily mean more children. As we have seen, for some mothers more children does translate into less stress. But for more than half the mothers in our study, every additional child resulted in more stress. Indeed, the more children underfoot, the more these mothers sounded like the "old woman who lived in a shoe"." (underlining mine)

The reader is reminded that this revealing report was published in 1987 and did not consider the looming overpopulation issue, which is never mentioned. The word “stress” is used extensively, but never defined. We believe the terms COASTER and “population density stress” could have been used. The living environments of the women in this survey were not described but we suspect the majority were living in apartments or the ever-popular suburban ranch house—almost totally isolated from other women and raising their children in virtual isolation, so very unlike their Hunter-gatherer sisters.

The reflective reader might well recall the deteriorating life-ways of Calhoun’s mouse mothers, which included decreasing fertility and fecundity (i.e., carrying a pregnancy to full term), increasing exposure to danger from marauding males, and increasing loss of basic very necessary maternal behaviors including nesting and pup protection. All of which must make motherhood increasingly unpleasant for Mrs. Mouse. We wonder how Calhoun’s mice would have answered Prof. Genevie’s survey.

34. HABITATION

All over the United States and elsewhere in the world, forward-looking residential developers are constructing dwellings that mimic our earlier life-ways. The modern condominium, apartment complex, assisted living facility, school, or church approximates ancestral clan structures, many with their shared grounds, shared kitchen and dining halls, shared clubhouses and swimming pools, shared laundry facilities, shared parking and driveways, shared landscaping, shared social events, etc. However, many thoughtless all-about-the-money apartment complexes reinforce the antagonistic nature of our lonely isolated life-styles by not providing group use facilities for socializing, laundry, recreation, games, parties, cooking, meeting, etc. Unfortunately, our incessant mobility, decried earlier in this work by the Gordon's researches, constantly uproots us and forces us to start all-over again in a new location. This is certainly true for military families and those of us seeking higher education or career advancement.

It is the isolated one-family "modern", sub-urban ("disturbian") "ranch house" or, even, McMansion, that so separates us from our fellows, especially women from

women. We have allowed ourselves to become a nation of one-spoke, one “felloe” wheels. No wonder that we are going nowhere, depend on constant unnecessary consumption and incessant electronic stimulation, are addicted to hundreds of self-soothing substances and behaviors, and still are increasingly miserable!

Even more accurate to the life-ways of our ancestors are developments of clustered but individual living spaces with purpose-built common cooking, eating, social, educational and recreation areas. Such structures allow for more efficient use of building materials, heating and cooling units, garages and driveways, communication infrastructure, and can be situated on the same terrestrial footprint as an entire classic suburban housing project, allowing the un-built land to be maintained in its natural park-like state. Such developments are being built all over the world, not just in the US. Many of the “Assisted Living” facilities fit this formula. We only need to make the decision to vote for them with our dollars and our feet. We have enormous power to change the future, but only if we act as individuals, with our dollars and our feet.

When Europeans first discovered and explored the Americas, they found all Native Americans east of the

Mississippi River living in communal dwellings, the majority of which were long-houses. Some, in the present state of Mississippi, were as long as 400 feet and housing many family groups in sub-units of 4 families to a common cooking fire and with a central hallway connecting all of the sub-units. They were the co-ops or condominiums of the time, except for the necessary sharing of resources, longevity of relationships, and the resultant necessity of knowing their neighbors.

Lonely, resource depleting, over-consuming isolation is our norm, and media savvy, predatory commodity peddlers thrive on it, on our loneliness and isolation, driven by COASTER, and driving COASTER toward adrenal fatigue!

Too many of us can only afford to live in apartment buildings, like the Section 8. re-habed 112yo former HS bldg. that the main author of this book inhabits. There are eleven units on three floors and, in 12 months, I may have spoken to any other resident about a dozen times, but only three of them for more than a passing “hello”. I finally had to front-up the woman who’s been living on the other side of my bedroom wall for 8 months, and whose name I did not know, practically demanding her name and a handshake before retreating for what I fully expect to be many more months of self-imposed isolation.

Once the ancient clan social ties are disrupted they are very hard to reconstitute.

We seem to prefer to live in isolated safety, rather than risk an encounter with a fellow human. Are we so afraid of a dominance challenge? Perhaps that's it. Now let's look at how we get around in our "modern" world.

35. TRANSPORTATION: HOW WE TRAVEL EFFECTS OUR HEALTH and THE HEALTH of THE PLANET

As for transportation, speaking of acting with our dollars and our feet, take the train and avoid the plane, walk and bike, and whatever happened to sailing ships? A 747 burns 1 Imperial Gallon of aviation fuel every second, a train carries 1 ton of freight or 10 adult humans 450 miles on one gallon of diesel fuel, or 1 adult 4500 miles on 1 gallon of fuel! So, the train is at a minimum 60-100X more fuel efficient than the plane and over 200X more efficient than the automobile, more sustainable, less polluting, and more eco-friendly to the biosphere.

Of course, only 16 commercial diesel powered container ships consume as much fuel, and produce as much CO₂, as the entire world-wide fleet of automobiles.

There are at least 60 such mega-ships plying the oceans today, as well as 59,940 smaller ones! Trust us, the Big Box stores do not want you to know this fact. The destruction of the American manufacturing sector, and much of our middle class along with it, depends on this very inefficient trans-oceanic transport system connecting relatively wealthy Western consumers with cheap foreign labor sources and factories. Without the container ships, there would be no “global economy”, no “globalization”, and relocation of manufacturing would be necessary. The reader will recall the favorite old sot: necessity is the mother of invention.

The critically important event that could save the American middle class, the bulwark of our economy, will be our running out of petrochemicals and the forced relocation of resources and manufacturing that will necessarily follow. But can we hold out that long (i.e., 70 years)?

100 Years Ago

Over 100 years ago, in America, our ancestors could travel from one coast to the other on highly fuel efficient and nearly silent electric or small gas engine powered Interurban trolley cars. However, we understand that a

consortium (conspiracy!) of oil companies, led by John D. Rockefeller, Sr., bought them all up and burned them at the edge of towns, in order to force the travelling public into their highly profitable gas guzzling, rubber dependent, oil-based highway pavement dependent automobiles .

Wake up, flyers and drivers! You already know how fuel inefficient auto-mobiles are (which are anything but automatic, by the way). Were modern medical science actually to monitor relative stress hormone levels during these modes of travel, the reader may be assured that they would turn out: automobile>flying>bus>train>ferry boat or sailing ship>bicycle>walking, with the last four actually regulating stress, except for the noise and movement from the other forms of transportation. We would only need to measure Cortisol levels. Why hasn't anyone done this? PhD anyone?



Nov05#08 Kastner Anthropomorphic Autos.jpg (Command Line)

36. AUTOMOBILES and TRUCKS

The fossil fuel powered automobile and its constant companion, the transport truck, are the single greatest technological mistake of modern man.

Miklashek
STRESS R US

Not only does the automobile isolate us, but it also throws us out into that ghastly arena of endless status battles: the “super-highway”, spread thoughtlessly over the most productive agricultural land. During these endless status competitions, we are constantly stressed, our adrenal glands are pouring out adrenaline, endorphins, and Cortisol, as well as aldosterone and other hormones. Thus, driving, as we must (?), in this spread-out, isolating, un-walkable built-world we have created for ourselves is killing us: damaging our hearts (i.e., atherosclerosis-hardening of the arteries), driving up our blood pressure, causing abdominal obesity, facilitating cancer and infectious disease by Cortisol’s suppression of our immune system, and, oh, yes, causing prostate cancer due to the heat trapped in our prostate glands by the synthetic foam-filled “Corinthian” leather or synthetic upholstery. More on this later.

Do we need to mention the harm to the natural environment, our “carbon footprint”, and the unsustainable natural resource extraction necessary to sustain this madness?

Life and Death on the Highway

While doing constant life and death battle on the nation’s highways, our Stress Response is being constantly

reactivated by large, fast moving objects in our peripheral vision and the constant onslaught of highway and traffic noises. In the ancestral environment, these stressors represented an imminent potentially fatal attack by a large animal, but in our built environment they are resulting in COASTER, adrenal fatigue, and death by stress. Further stressing us is the din of intermittent loud noises generated by the “driving experience”, also, in an earlier environment (EEA), unconsciously warning of an attack by a large predatory animal. Over 50,000 Americans are killed in traffic accidents annually, but millions are dying from the hidden stress of automobile dependent travel, and not a single taxpayer dollar is being spent to fund research into this slaughter of the innocents.

Our researches on this subject were only able to find one recent article published online in *JAMA Pediatrics*, and excerpted in *Medscape MULTISPECIALTY*, also online. This article, entitled “High Cortisol Levels Linked to Lower Car Crash Rate in Teens”, ironically, reports that stressed teens, with higher Cortisol levels, have fewer car crashes. What the authors seem to have totally missed is the equally valid conclusion that all of us relatively safer, crash free drivers must be enduring high stress and high Cortisol! Or, put more plainly: safe driving is stressful and activates

COASTER! Again, haven't we missed the forest for the trees?

Our self-created dependence on automobiles, trucks, and the endless highways they demand is killing us.



Nov05#04.JPG (Command Line)

37. IS THERE AN ALTERNATIVE TO THE AUTOMOBILE?

Of course, if you plan on walking or riding a bike, you may have to move to a community with sidewalks, walking paths, and bike lanes, as well as being built to a human scale that allows walking and biking, rather than to automobile scale, with its strip-malls, isolated suburban housing, and dangerous auto and truck traffic. When will we realize that the burbs are a bad idea, the Gordon's "disturbia", from the perspectives of sustainability, fossil fuel conservation, and our overall health? Recall the research of the Gordon's in Bergen County, cited earlier?

As for the trucking industry, if we stopped consuming all of the unnecessary foreign made, slave labor produced

and trans-oceanic container ship transported “consumer products” that we have been “sold on”, programmed to consume, but don’t actually need. To live happy, sustainable lives, we need far fewer cars and trucks and none of the container ships. Those teamsters and ship crews could find work in the government supported passenger rail system that our country so desperately needs. Why do so very little taxpayer dollars go to rebuild this infrastructure? Couldn’t be the fossil fuel lobbies, including the vehicle manufacturers? Just a wild guess! Time to widen the Panama Canal again?

While the Chinese were spending a large portion of their \$800B economic stimulus money on developing their railway system after the 2008 financial collapse, our not so far-seeing leadership wasted our \$800B on roads and a few, short distance, elite, pork barrel high-speed rail projects, most of which have never been completed. The US Federal government grudgingly gives \$1.6B a year to AMTRAK, which owns few dedicated passenger rails, and while spending untold billions subsidizing airports and roads, not to forget the infamous TSA. Consider that we can travel 4,000 miles on one gallon of diesel fuel when we travel by passenger train. Still want to fly? Drive?

Depaver Jan

Imagine a mere fraction of our current highways, but for electric cars, recharged by wind energy and sunlight, shared with all manner of human powered transports and the occasional donkey cart, with greatly expanded (restored!) fuel efficient rail transport for the bulk of longer range passenger and freight transport.

This is, essentially, the world called for by the “depaver”, Jan Lundberg, who had the courage and foresight to call for tearing up highways, rather than pouring ever more oil sluge on perfectly good farmland. More recently, Jan has moved on to support a movement toward sail-powered water transport of goods, the Sail Transport Network. Check it out!

Again, one source indicates that 16 transoceanic container mega-ships produce as much CO2 as all the passenger cars in the world, and there are 60 such ships in service today, not including the thousands of smaller ships under 1,000 TEU's. That's pretty much our summary of Walmart's business plan. And, yet, Americans keep giving the richest family in the world every last cent for goods that have travelled half-way around the globe, made

by for-all-intents-and-purposes slave laborers, while needlessly producing enormous pollution of our seas and air. Are we really so ignorant?

Imagine a sustainable world, then take personal, individual action with your dollars and feet to create that world! Imagine and act! Think globally, but act locally, and, even more importantly, individually!

38. WHAT'S STRESSFUL ABOUT AGRICULTURE?

The solution to our stress-filled petrochemical dependent transportation problem is the re-localization of manufacturing and agriculture. Imagine the jobs that would be created, by necessity, if we simply took transoceanic shipping and long-haul trucking out of the transportation picture! If we can't find it, make it, or grow it locally, do we really need it and why can't we reform and retool to find it, make it, or grow it locally?

We need to vote for a sustainable future by supporting local farmer's markets, local grocery stores, local meat, cheese and produce markets, and consider the impact of our dollars contributing to our deadly stress and

global environmental destruction when we depend on Amazon and big box retailers. These “big-box” megastores depend on our stress producing, resource squandering off-shore manufacturing and long distance agricultural production, as well as their unavoidable inefficient and unsustainable transportation systems.

C.A.F.O.s

We are the only species to have “commodified” the “production” of a wide range of our fellow species, in our constant search for food for our exploding numbers. We build, and purchase the agricultural “products”, “manufactured “ in our “factory farms” and attendant processing plants. This “factory” process is totally devoid of empathy for our fellow species or the mostly poorly paid laborers “processing” our industrial food. The lives of these factory produced animals are a stressful, crowded, boring, living Hell; their harvested meat filled with stress hormones, other growth promoting hormones and unnecessary antibiotics, which we consume. These ever more common “CAFO”s or concentrated animal feeding operations are organized animal feeding factories in the business of maximizing profits for their investors by “producing” animal meat as efficiently and inexpensively as

possible. Basically, they are massively polluting concentrations camps for our fellow “meat” animals, so that their butchered carcasses can be displayed in our Big Box meat sections for us human “consumers”. Want more of this horrifying story? Watch the movie “Food, Inc.”, which is widely available on the net. Remember “red slime”? Wait ‘til you watch live hogs being turned into ground meat as they are thrown into huge automatic grinding machines. Who are we and what have we become in this “modern” overpopulated dehumanized world-wide swarm of dominant animals? Made you think? Made you squirm in your comfy chair? We have found the search for the truth of human disease for more revealing and disturbing than we planned for at the start of this journey. We apologize for the stressful shock but we’ve lived through it and so can you, if you can find the inner courage to face the truth.

There is no possible moral justification for such agri-business practices. And this entire enterprise is totally dependent on fossil fuels to run the machines and produce the “agri-chemicals” that have largely replaced the humane, small-scale labors of human agricultural laborers, such as we may still see on an Amish or Mennonite family farm, or a truly organic farm, intentionally minimizing

dependence on fossil fuels and agri-chemicals derived from fossil fuels.

Our current dependency on large scale, mechanized, petrochemical dependent farming techniques has resulted in extensive topsoil loss, soil nutrient depletion, and soil death, which, if unabated, will totally disappear in 60 years , according to REUTERS foundation and a senior UN official, as reported in *SCIENTIFIC AMERICAN* magazine online, December 5, 2014.

We are depleting carbon-rich humus, which has been accumulated over millennia. Soil experts indicate that it takes Mother Nature up to 1,000 years to produce one inch of top-soil. Again, small-scale, topsoil preserving organic, non-erosive, family farming techniques, necessarily human and animal labor intensive, may be carried out indefinitely without top-soil loss and with total carbon recycling. The average size of such farms, standard in Japan, is under 5 acres, but those family farms raise their own food and even produce surpluses to help feed the nation. The enlightened Japanese government protects and supports these myriad small family farms as the national treasures they surely are!

The best possible outcome for Mother Earth is our inevitable running out of fossil fuels, especially oil, now, sadly, to our mind, forestalled another 100 yrs., if we tolerate the environmental destruction, by tar sand's oil extraction and the abomination of ground water polluting fracking.

Land Reform

Land reform, the necessary breaking up of huge agri-business land holdings due to ever higher fossil fuel dependent operating costs, will become a necessity in the not too distant future, in order to provide the millions of small farm owners and workers necessary for the millions of "40 acres and a mule" plots, hopefully organized in coordinated "co-ops", that will no-longer be cultivated with giant, expensive, fuel guzzling carbon spewing tractors, pulling huge high maintenance, cumbersome, erosion encouraging tilling equipment through constantly eroded and depleted fields, sown with GMO monocultures, thoroughly awash in petro-chemically derived herbicides and insecticides, and resulting in ever more vulnerable, chemically dependent crop yields. Isn't the Green Revolution a beautiful sight?!

BOTTOM LINE: our current corporate farming techniques are unsustainable and heading toward a total collapse within the next 100 years.

HUMAN NATURES

In Paul Ehrlich's 2000 book, *HUMAN NATURES, Genes, Cultures, and the Human Prospect*, on page 320, he states:

“The conservation record of peoples after the agricultural revolution is mixed. Control by forest dwellers, peasants, and nomadic herders (“ecosystem people”) of the local resources on which they depend often leads to superior husbandry of those resources, in comparison with that of today’s citizens of rich countries (“biosphere people”), who are able to draw their resources from the entire biosphere. In contrast to ecosystem people, biosphere people receive little feedback about the status of the resource stocks they are tapping and thus have little incentive to conserve them. They “discount by distance”, having less concern for possible depletion and degradation far away. Human history over the past ten thousand years has not been a story of sustainable management of resources so much as one of intensification of activities to support larger populations, which has in

some cases led to ecological collapse." (underlining mine)

Professor Ehrlich continues, on page 321, with this warning regarding the downside of human evolution and our impact on the biosphere:

"Evolving human natures also permitted enlargement of the scale of human enterprise to the point that it is destroying the life-support systems on which all of our lives depend. They made it possible to condemn society to gradual extinction from the loss of ecosystem services, to repeat on a global scale the fates of the civilizations of the Tigris and Euphrates valleys, Easter Island, the classic Maya, and the Anasazi. The technological advances combined with lagging social evolution of human natures have caused overpopulation and continuing population growth, overconsumption and continuing economic growth among the rich, and widespread use of environmentally destructive technologies. ... Despite all the good things that have come out of human evolution, one thing is clear to me and to many of my colleagues who spend time examining that predicament: our evolving human natures may be heading us toward the worst catastrophe in the

history of *Homo sapiens (and the biosphere).*
(underlining and italics in parentheses mine)

The historical role of the Neo-lithic “agricultural revolution”, which resulted in our sedentary agriculturist ancestors at that time being smaller, less healthy overall, and with shorter life spans, will be treated at length under TOPIC 40, “MONEY”.

ALTERNATIVES to ECONOMIC GLOBALIZATION,...

In another one of adman turned environmentalist and anti-globalization spokesperson, Jerry Mander’s published efforts, *ALTERNATIVES to ECONOMIC GLOBALIZATION, A Better World Is Possible*, 2nd. Ed., 2004, we find Chapter Eight, “Alternative Operating Systems”. On pages 216-217, we read the following:

“Mechanized, modern tools of farming that require expensive hybrid seeds, fertilizers, chemicals and pesticides (and herbicides), tractors, and other energy-rich systems have been pushed by the World Bank, the IMF, and the WTO but have been a main cause of the desperate situation of small and peasant farmers worldwide, leading to rising debt, increased

hunger, the abandonment of small farms, and an epidemic of farm suicides.

In addition, there are gigantic hidden subsidies from “externalization” of cleanup costs resulting from industrial agriculture processes: poisoned soils, rivers, estuaries, wildlife habitats, and so on. Industrial agriculture is also a major contributor to climate change because it depends on long-distance shipping to distant markets. The average plate of food eaten in Western industrial food-importing nations is likely to have traveled fifteen hundred miles from its source. Each one of those miles contributes to the environmental and social crises of our times. Shortening the distance between producer and consumer has to be one of the crucial reform goals of any transition away from industrial agriculture.”
(parenthetical and underlining mine)

Here, here, Mr. Mander! However, we can make this transition by simply buying local products, grown or manufactured locally. Yes, we pay more, because we do not think it fair that the laborers who grew and made these products should have to work for pennies an hour.

We need to stop looking to Big Brother to fix the system, when we are the real cause in the first place. We can, also, be the solution, if we only choose to do so.

39. WATER STRESS



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When will the “fracking” of Mother Earth, and every other source of water pollution (including agrichemical, agricultural, and treated or untreated sewage runoff), result in cataclysmic pollution and depletion of potable ground water supplies? Please note, the question is not “if”, but “when?”, and that time is now!

Our drinking water is being systematically and permanently polluted at the rate of tens of millions (billions?) of gallons per day. It is impossible to pump billions of gallons of poison into our aquifers annually and not have to drink poison in some dystrophic future, for most of us urban and suburban heavily “treated” water drinkers, but that future is now for the increasing number of helpless rural souls whose wells are already permanently poisoned or infiltrated by saline ground water, drawn in by over-pumping of the sweet water aquifer.

Our children and grandchildren will soon be left to drink a toxic chemical slurry, that was previously naturally cleaned, safe drinking water but, thanks to systematic chemical adulteration, aka fracking, municipal, agricultural, or industrial chemical pollution, is now permanently poisoned! And we haven't even mentioned micro-bead contamination, with its potential to speed our chemical castration from pseudo-hormones! Nor have we mentioned the animal waste contamination that is increasingly problematic in areas where industrial scale animal agriculture is practiced.

It's really quite simple: wake-up or continue to participate in the poisoning of our offspring and their ever more polluted world! Need we add that all these human introduced ground water poisons add huge oxidative and other chemical stress, on a cellular level, to our already COASTER weakened immune system, as well as distorted hormonal balances, and are carcinogenic to boot? These are all "downstream" results of the true "upstream problem, which is our ever expanding human population, which is our ever expanding human population and our inevitable negative impact on our one and only living environment. This critique is the central theme of Karen

Shragg's must-read new book, *MOVE UPSTREAM, A Call to Solve Overpopulation*.

Hunter-gatherers Are Environmentalists

Needless to say, our hunter-gatherer ancestors did not similarly, thoughtlessly abuse their food and water supplies. We're still drinking the same clean water that they drank, naturally recycled and purified, but the natural water cleansing infrastructure is overwhelmed by our capacity to reproduce ourselves and disrupt Nature. What keeps us from being honest with ourselves? Denial is not a river in Egypt!

A new 2014 book, *BLUE MIND*, by Wallace Nichols, PhD, describes another important quality and psychological function of water. He cites scientific evidence "by Japanese researchers (who) show that the sound of a creek in the forest produces changes in blood flow in the brain that indicate relaxation" (underlining mine). He cites other studies that demonstrate similar stimuli reducing Cortisol blood levels, resulting from "a visual Blue Mind boost".

Of course, any high school graduate, who successfully completed chemistry class, knows that water is the "universal solvent", so any water soluble pollutants will be carried into our bodies, if allowed to be introduced into our water supplies in the first place. And, as this is a paper on stress, primarily, we must point out the stressful nature of polluted water. However, this is a topic vast in

its own right, and this book has already far exceeded its original bounds, so the interested reader is referred to the Internet to conduct his or her own research. Suffice it to say, dirty drinking water is biochemically stressful.

An excellent resource, if you're looking for information on this topic from a non-profit organization devoted to reporting on clean water issues and organizing political action to the same end, is to be found at foodandwaterwatch.org. They can use our help!

What's wrong with us is that we've cut ourselves off from the reality of Mother Nature and have, thus, become psychotic: "out of touch with reality". No wonder the long-term-care institutions we are creating to care for ourselves so resemble the mental hospitals of an earlier generation. Did we really need a psychiatrist to say that?

40. MONEY: THE ROOT of ALL STATUS and HIGHLY ADDICTIVE

Money is "the root of all evil", "a medium of exchange", "a necessary evil", "a means to an end", and a measure of personal/corporate social status, or, as the human

ethologists would have it, RHP (resource holding power). The reader may recall our earlier discussions of human overpopulation and our resulting negative impact on the biosphere. Furthermore, the reader may, as well, recall our discussion of conceptual space as a substitute for physical space or territory. The invention of money was central to the invention of conceptual space. In a sense, money is a form of conceptual space, also known as “fiat” currency, a symbol of status or “wealth”. (for a complete discussion of conceptual space, see TOPIC 23)

This world changing leap is from 3-dimensional physical space, which is finite on the planet’s surface (except for multiple floor, vertical “high rises” which multiply 2-dimensional space, or underground cities), to a 4th dimension of conceptual space. This interdimensional leap has allowed a 1233-1850X plus explosion of the human population on earth and the formation of myriad overlapping status hierarchies supporting our numbers. As previously noted in this essay, this dimensional leap, and our resultant break from previously adequate 3D physical territorial population bounds, has occurred at the expense of all other species and earth’s “natural resources”.

Save the Seeds!

This event occurred relatively recently and we can, finally, blame women for this one! Over time, largely female gatherers of fruits, plants, roots and herbs had sought to reduce their risk of predatory exposure by staying together in work groups (to be alone in their world meant risk of attack by predators and possible death) and staying as close as possible to the relative safety of the base camp. Being the exceptionally bright and creative animals that we are, women discovered that plant seeds could be gathered, wherever found, in the Fall and planted the following Spring nearer the safety of the base camp, thus providing a nourishing crop that was more conveniently located and much safer to protect, tend and harvest.

Agriculture had been discovered, particularly the cultivation and eventual domestication of nourishing cereal grains! However, a new problem had been created in the process: storage and protection of valuable surpluses throughout the lean winter months, with allotments for immediate day-to-day consumption but storage of seed grain reserves for the next Spring planting. Surpluses were immediate and facilities for their storage and protection were mandatory. Also, a full-time overseer was necessary, lest winter hunger drive looting of precious seed grain reserves. Pottery had been invented (another female, base camp discovery?) and large pottery vessels capable of holding, and keeping contents safe from rodents, were fashioned. Such vessels are found buried in the earliest towns, dating to 12-14,000 YBP in the Near East and spreading quickly through-out the Fertile Crescent.

In a hunter-gatherer clan, individuals were minimally stratified by status, but once abundant food resources were provided by cereal grain agriculture, extreme vertical social status stratification quickly followed. Thus, even at its earliest inception, urbanization was resulting in numerous new sources of stress, and leading to the elimination of much of the active hunter-gatherer life-way, with its high protein and fat diet, which previously counteracted stress. Comparative studies of the skeletal remains of our ancestors, before and after this transition, demonstrate a striking deterioration in average height, bone density, and overall nutritional status. Our hunter-gatherer ancestors had a healthier and more sustainable diet.

Head-man Invents Capitalism

A “head-man” (against whom none could dare stand) was necessary to provide safety for next season’s grain crop and he was put in charge of the common granary, to which multiple growers added their annual contributions, and extracted their fair shares over the winter and into the next spring growing season. But how on earth would the head man determine the measure of these fair shares? Enter the invention of weights, measures, mathematics,

written language, symbolic money and book-keeping. The reader must, also, realize that this abundance of domesticated cereal grain and the corresponding need for sedentary farm labor was fueling the neo-lithic human population explosion.

Our numbers shot up rapidly from a long stable 4-6-10M world-wide to 350M by year 1, as the hunter-gatherer clan life-way was increasingly squeezed out of its former territories by ever expanding flocks, grain fields, and towns. So, what about money?

small is beautiful,...

For the answer to this question, we offer a quote from E. F. Schumacher's 1973 book, *small is beautiful, a study of economics as if people mattered*, the epilogue in which begins:

“In the excitement over the unfolding of his scientific and technical powers, modern man has built a system of production that ravishes nature and a type of society that mutilates man. If only there were more and more wealth, everything else, it is thought, would fall into place. Money is considered to be all-powerful; if it could not actually buy non-material values, such as

justice, harmony, beauty or even health, it could circumvent the need for them or compensate for their loss. The development of production and the acquisition of wealth have thus become the highest goals of the modern world in relation to which all other goals, no matter how much lip-service may still be paid to them, have come to take second place.”
(underlining mine)

Money is now god and determines who has the highest status value in our myriad social status hierarchies.

41. SYMBOLS of DENISE SCHMANDT-BESSERAT

The Head-man, the largest and strongest person, in our early sedentary agricultural villages had to come up with a method of keeping track of the amounts of cereal grains (and olives, dates, figs, olive oil, heads of sheep, etc.) consigned to his protection and conduct a fair, honest redistribution during the lean time, as well as holding back a stock of seed for planting, while keeping a small (?) share for his efforts, of course. He was a man, as sexual dimorphism in the human species had made men, especially ancients, physically larger and stronger than females, or any other male.

Record Keeping Begins

And now we come to one of the most amazing archaeological discoveries to the present time, the discovery of the beginnings of symbolic record keeping, money, number systems, accounting, and writing, by another one of my heroes, a tenacious and undeniably curious French-American archaeologist and retired Professor of Art and Archaeology, Denise Schmandt-Basseratt, author of one of my all-time favorite books, *BEFORE WRITING (Vol. 1)*, 1992.

In Prof. Schmandt-Besseratt's breath-taking, brilliant, and unique review of the origins of writing, computation, and Capitalism (and counting, symbolic logic, and symbolization of space), she describes her lone quest to make sense of the little clay tokens (or game pieces? or counters?) which she had observed in the remote reaches of little noticed museum display cabinets all over Europe and the Middle East. She, also, noticed broken clay "envelopes" and intact clay envelopes, some still containing their little clay tokens, except that the envelopes were accompanied by later versions of similar envelopes with symbols inscribed into the wet clay at the time when the envelopes were closed

and dried, only to be reopened later by breaking the envelope.

Overlooking Tokens

What could be the significance of these overlooked tokens, clay envelopes, and the triangular symbols pressed into the clay on the outside of these envelopes when created? And, then, a flash of insight hit her well prepared mind: the clay tokens were often shaped exactly like an actual 3-dimensional, conical measure of grain, so the round tokens (in the shape of an olive!) might represent a measure of olive oil, the cube shaped clay tokens might represent a measure of another agricultural product, and so on! But, wait a minute, the symbols on the outside of the clay envelopes were triangular, just like the 2-dimensional cross-section of a cone. And then she asked herself: could they be 2-dimensional representations of the 3-dimensional cone-shaped tokens found within most of the clay envelopes? And she, also, found later envelopes that were sealed and empty, but on which were inscribed the same symbols.

Eureka!

Eureka! She had independently discovered the origins of written symbols, and these symbols obviously represented the contents of the clay envelopes she had been puzzling over for years, and her colleagues hadn't even noticed!

Grain and other food storage record keeping, necessitated by the Neolithic agricultural revolution, the Neolithic population explosions and urbanization, had given rise simultaneously to numbers, counting, money, literal symbols (these clay envelopes and their token contents must have been traded for other goods and services, representing real items of value back in the granaries, or, eventually, on shop shelves), and writing. The writing was the beginning of cuneiform, the earliest known alphabet, the "letters" made from triangular shapes at the ends of a copper stylus and pressed into wet clay.

Unwittingly, a whole new system of symbolic thinking and conceptual space was thereby invented, as a result of the necessity of keeping track of who owned what agricultural produce surpluses, harvested but not consumed, in a growing season. Thus, the mother of all capital surplus and money had been born.

CAPITALISM

This book has tried to steer clear of conventional politics, however, we need to point out that what Prof. Schmandt-Besseratt had discovered in her study of those odd little clay objects, originally determined to be mere game pieces by the academic archaeologist “experts”, was the birth of Capitalism. Those little clay objects symbolized the first surpluses of valuable commodities “owned” by the early sedentary farmers in the Fertile Crescent. Humans are instinctually hierarchical, whether we like it or not. That’s just part of our genetic inheritance. Read Paul MacLean’s *The Triune Brain in Evolution*, if you need hard and fast biological science to back up our assertion. So, just add material surpluses (aka “capital”) controlled by individual farmers, guarded by a Head-man, and we shortly have monied elites, peasant farmers, and bankers. Do we not? Status is quickly defined by how many clay tokens any particular member of the community holds, as that member will ultimately determine who survives the coming Winter famine and who doesn’t. Now, we have employment and shortly we’ll see factories and huge wealth disparities. And the real culprit? Human overpopulation, due to the shift from the necessarily non-accumulating lifeways of our Hunter-gatherer fore-bearers, to the surplus generating sedentary agriculturist lifeways of

their successors. Prof. Schmandt-Besseratt was the first to document this transition and we seriously doubt that our reader has ever heard her name before. We'll let the "expert" professional academic economists and politicians expand the picture from there. Nah!

Hierarchy R Us

Rebel against this aspect of our humanity as much as you will, but that won't change the biological reality of who we are. Many political "Progressives" would argue that this human tendency is exactly why we need over-reaching Federal governments to mitigate this natural hierarchical human tendency to attempt to hide away our surpluses and increase our status, in order for government to redistribute enough wealth through taxation to provide support as far down the hierarchy as possible. Without this redistribution, we get massive inequality, extreme suffering among the inevitable have-nots, and Karl Marx neatly explained what any nation can expect at that point.

42. BLAMING WOMEN

This, of course, could be just a long, drawn-out rationale for why we really should blame ancestral women and head-men for the human population explosion. However, we also know that, allowed control over their own reproduction, which these sophisticated ancestral women with their practical knowledge of medicinal herbs and the natural rhythms of nature surely had, women generally prefer smaller families, fewer dangerous pregnancies and child-births, as well as more education, paid work opportunities, and greater self-determination.

Laura Carroll is the author of two books on overpopulation and reproductive choice: *FAMILIES OF TWO*, 2000, and *THE BABY MATRIX, Why Freeing Our Minds From Outmoded Thinking About Parenthood and Reproduction Will Create a Better World*, 2012. Her thesis is that we are still living in a culture here in America, and the Americas in general, in which large families were critically important for agricultural success and survival. Now that we are 97% urban or suburban and no longer engaged in agriculture, we no longer need to honor and sustain our out-dated culture of “pronatalism”. This theme runs throughout *STRESS R US*, as well, but is not always explicit,

as Laura Carroll's two wonderful and courageous little books are. As author Carroll states on page 88-89 of her latest book:

“Rethinking Humanitarianism & Patriotism

YES, BEARING CHILDREN STILL REMAINS A RIGHT UNDER THIS COUNTRY'S CONSTITUTION. BUT THE PRONATALIST ASSUMPTION, THAT WE CAN HAVE AS MANY CHILDREN AS WE WANT, HARMS SOCIETY AND OUR NATURAL ENVIRONMENT. GIVEN THE IMPACT OF POPULATION GROWTH ON RESOURCE DECLINE AND DEGRADATION IN TODAY'S WORLD, WHEN IT COMES TO OUR OWN REPRODUCTION, WE HAVE AN IMPORTANT SOCIAL RESPONSIBILITY TO THAT (NATURAL) WORLD. EACH PERSON'S EXISTENCE HAS AN ENVIRONMENTAL IMPACT, WHICH (NEGATIVELY) AFFECTS (OTHER) HUMANS AND OTHER SPECIES. IT'S UP TO US (AS INDIVIDUALS) TO CHOOSE (DECREASED) REPRODUCTIVE ACTION THAT LESSENS THIS IMPACT.” (UNDERLINING AND PARENTHETICALS MINE BUT CAPITALIZATION SOME MYSTERIOUS FUNCTION OF THE WORD PROCESSOR!)

ANOTHER ONE OF MANY NEW BOOKS COMING OUT ON THIS TOPIC IS MEGHAN DAUM'S *SELFISH, SHALLOW, AND SELF-ABSORBED, SIXTEEN WRITERS ON THE DECISION NOT TO HAVE KIDS*, 2015.

It was men, who forced women into multiple, dangerous, and often fatal pregnancies, in order to provide low cost, devoted farm labor, security in their old age, and, thus, create the greatest accumulation of material wealth and status. And this equation hasn't changed much since Neolithic times in male dominated sedentary agrarian societies, although childbirth is far safer today than in the Neolithic, when death in childbirth was a common occurrence.

In any case, this is the best story that we have found to fit the transition from the stable world-wide hunter-gatherer populations of 4-6-10 million, prior to 10-14,000 years ago, and the Neolithic population explosion, since the development of sedentary agriculture, which produced a world-wide human population of 100,000,000 by 500BCE, as well as setting the stage for today's constantly increasing but unsustainable 7,480,000,000 humans world-wide.

A Dimensional Jump

But an equally important problem has resulted from this jump from real, physical 3-dimensional territory and into the seemingly limitless multi-dimensional symbolic

world of conceptual pseudo-space: our personal day-to-day detachment from the reality of the natural world, Nature, due to the intervention of the human built-world.

Our neurophysiology was very slowly fitted over eons to the natural world, with all its complex webs of balanced ecology, its myriad competing clans and fellow species, its extreme climatic variations, and, yes, its inevitable episodes of over-population. We were designed for a world very different from that which we have created today. From a purely ecological perspective, we truly are misfits, square pegs trying to fit into round holes.

The apple out of which a rebellious Eve took that forbidden bite was actually the knowledge of temporary technological “advances” in resource extraction, which have temporarily fed our exploding populations since the beginning of the agricultural revolution 10,000 years ago. Ironically, the very fundamentalist religious beliefs that perpetuate our uncontrolled birthing of un-sustainable billions of new human mouths to feed (i.e., 212,000 net per day) have fueled resistance to the reality of the population explosion and strategies to control the resulting disaster. Those folks need to take another bite out of the

apple of knowledge, rather than glorifying the god of perpetual ignorance and denial.

The God of all things in heaven and earth does not wish for us, or our children, or our children's children, to perish prematurely from the "misery and vice" of overpopulation, as we are now doing, were it not for the temporary medical, sanitation, water purification, petro-chemically supported corporate agriculture, and other technological quick-fixes. And all of our self-perpetuating efforts are at the long-term expense of the Garden of Eden.

Toward a Small Family Ethic:...

Finally, we need to mention the new book by "bioethicist" Travis N. Rieder, Research Scholar at the Berman Institute of Bioethics, Johns Hopkins University, *Toward a Small Family Ethic: How Overpopulation and Climate Change Are Affecting the Morality of Procreation*, 2016. If the reader of our book doesn't find his or her moral sentiments jarred in favor of reduced reproductive output for mankind, then reading this expensive little paperback, on the moral imperative for reduced

reproduction and for one-child families, will surely do the trick!

However, if the interested reader needs to pursue this issue, he or she may wish to read the reviews of the book on the Amazon Books website. Of the four reviews there today, two are positive and two are negative. The professional reviewer, Graham Seibert, states: “I want children, I want them to be of my own flesh and blood, not those of a random stranger”. He, also, denies global warming, although admitting the dramatic increase in atmospheric CO₂, and attempts to debunk the IPCC. But then he states: “The best argument is that we should not gamble with our children’s future”. And, then, he concludes: “But without children the argument is absurd”.

Dying for Motivation

The authors of this book, that you are courageously wading through, have been attempting to bring its themes to the attention of overpopulation crusaders like Mr. Rieder, because simply appealing to our rational morality will not bring about our serious embrace of one-child families, as Mr. Seibert’s review indicates. Thus, the focus of this book is the fatal health effects of our population

density stress and environmental destruction not only for ourselves but, also, our children. How many parents today are suffering one epidemic or another, or watching their children suffer and die from population density stress and its “diseases of civilization”?

Morality Is Not Enough

Morality alone will not force us to make the commitment to one-child families that is necessary for our very survival, as individuals, for our children, for our grandchildren, and for our species. Only selfish consideration of the proven biological consequences of continued overpopulation will change our personal behavior. If not, we face extinction in the not too distant future, after an horrific journey through a living Dante-esque Hell of watching ourselves and our offspring suffer and perish from the “diseases of civilization”. Which do we prefer, now that we have been informed of the present and future biological consequences of our own personal reproductive behavior? It is our choice!

43. WORK, IDENTITY, and STRESS

In the world before the agricultural revolution, the former world of population balanced, real-space, minimal status hierarchy, clan and tribal territories, our ancestors were Hunter-gatherers and had their work cut out for them. Contemporary hunter-gatherers and pastoralists, 600 societies of which continue to survive world-wide, have been thoroughly studied by generations of anthropologists and, surprisingly, are only involved in hunting and food gathering for a small percentage of their day, on average. The rest of the day, men rest when not hunting or shepherding their flocks, and women work at a comfortable pace, conversing with their sisters and children frequently. However, many such groups are, of necessity, migratory, shifting camp sites with the changing seasons, moving from old pastures to fresh, etc. This requires many hours of hard work, an equivalent rest period, and a synchronous attachment to the native rhythms of every vital aspect of the self-balancing natural world. Our ancestors knew that Mother Nature leads and we only follow Her rhythms.

We define our identity, our value, and our status by our work and equivalent pay. If we ask you who you are,

you will respond by telling us what you do, your work, your family, your pay scale, your address, your possessions, etc. However, with ever expanding populations, modern work has become ever more unpredictable, temporary, and detached from the real natural world, and harder to find for Westerners, due to an abundance of “cheap” labor in distant “third world” countries or from illegal immigrants pouring in from more overpopulated nations. Petrochemical dependent transoceanic transport systems are capable of transporting those cheaply made goods great distances, at minimal expense, as long as the cheap oil lasts.

Thus, our very identities have become uncertain, increasing the frequency of our Stress Responses and resulting in COASTER, and its pathologies.

Consumerism

Multi-national corporation marketing and advertising departments attempt to convince us that we can sooth our increasing sense of alienation and anxiety (COASTER) by purchasing yet one more new gizmo (ironically, the code name for the first atomic bomb, or was it “gadget”?) after another, that our work is no longer of value, and that we

are no longer of significance. We can be replaced in a heartbeat. We are “a dime a dozen”.

We are told that we can be replaced instantaneously by an eager clone, scab or robot, just as easily as a burned out Christmas tree light in a string of identical bulbs. Recall, if you will, Robert Sapolsky’s subordinate baboons, Calhoun’s crowded surplus mice, or V.C. Wynne-Edward’s luckless peripheral red grouse, with their Cortisol levels elevated, and dying from COASTER, if not picked off by predators or starved to death.

The Rat Race

Ever since the invention of accurate time recording devices at the beginning of the Industrial Revolution, we have been forced to increase our “productivity” by working faster, with greater stress, for longer easily monitored hours, and with fewer coworkers to share the load. Thus, owners, their corporate overseers, and anonymous shareholders could reap ever greater financial rewards, as a direct result of reduced labor costs for a unit of production. And now the rat race is on, as even the few remaining time-stressed workers are increasingly replaced by mechanical robots or ever-cheaper and often poorly treated foreign laborers in far-away lands or illegal aliens.

Interestingly, while American workers were plagued by stomach ulcers in the 1950's, high blood pressure, heart disease, heart attacks, and strokes have temporarily taken over as the top killers of working people.

Increased Worker Productivity

The reader is encouraged to recall earlier sections of this book which cover COASTER and the mechanisms of all of these work-stress related maladies. Overly precise, mechanized, unnatural time-keeping, in the service of "increased worker productivity", has become an enemy of our health, although dozens of books have been written on how to work faster and more efficiently. But at what personal, very human health cost? This question is rarely raised and even less often studied in any serious way. But wait, further exploration of this timely topic must wait for another time. Time to move on to vending machines! (all puns intended)

"Stop talking to the patients!"

In the modern workplace, none of us are safe from dehumanization and subordination. The main author of this work is a retired psychiatrist, who, in his last position

prior to a blessed, if forced, retirement, was pulled into the office of the clinically naïve Director of an urban Midwestern Community Mental Health Center and sternly ordered to “stop talking to the patients” and “just write prescriptions”, which a machine can do. The local hospital actually has such a medicine vending machine in the lobby! I refused to ignore my patients, not take their histories, not conduct informed consent interviews before prescribing potentially dangerous medications, and, as a result, was fired. But, then again, maybe the real problem was my unwillingness to be miserable and submissive like the rest of the thoroughly defeated medical staff hiding in their respective offices (cells?), watching the minutes tick away on their digital desk clocks?

I was still having fun with my job, which made me stand out like a sore thumb to the utterly clueless administrators, who seemed to be everywhere, watching the tiny cadre who were actually treating the patients. In truth, there were 226 county employees in the “Medical Services” building, but only 32 of us actually had direct contact with the patients, and only 5 of us were physicians. 226:5. Pretty much the definition of “top-heavy bureaucracy”.

Bureaucracy as Rigid Hierarchy

Bureaucracies tend to grow and become over-grown and top-heavy, if not properly pruned by knowledgeable guiding authorities. This has certainly been my experience in public mental health institutions and hospitals. Psychiatrists are now viewed as easily replaceable prescription vending machines, with no consideration of experience and particular expertise or qualifications. Ironically, this was one of the most stated complaints of our patients!

Elysium

Who cares about any one worker, when there are, literally, billions of replacements desperate for a place at the production table, behind the counter, in the warehouse, on the route, in the truck, on the tractor, or behind the desk? Matt Damon's character in his recent movie, *Elysium*, dramatically depicts our inevitable future workplace, if we allow current trends to continue. However, Charlie Chaplin did a pretty good job of satirizing today's dehumanizing factory work, with his character in "MODERN TIMES", caught up in the heartless, mechanical wheels of industry, and spit out, no doubt, seriously injured or dead. Many of the other quotations in this book touch on the despair of modern work life as well.

If this were a political critique of modern work, we would only need to reiterate what has already been stated regarding the increased stress (COASTER) in the lower levels of the status hierarchies we have created, which included, for the most part, the factory workers who drove the industrial revolution. In fact, factories, now often located in “third world” countries, where labor is purchased for low wages and lower workplace safety regulations are representative of stressful built-environments.

The next section focuses on our ecosystem, on nature as a whole, and, then, in TOPIC 48, we move on to “Stress Management”: what we need to do as individuals to save ourselves, our progeny, our species, and the rest of the biosphere.

44. NATURE, A POWER GREATER THAN OURSELVES and POPULATION OVERSHOOT

We have lost our millennia-long, direct, daily contact with “a power greater than ourselves”, but could fairly easily set about, individually, personally, to restore that connection, if we would only try. And, remember, that we will be restoring the natural cycling of our stress system,

reducing our experience of COASTER, and reducing our over-all population density stress in the process. Our very “human nature” has been designed by “Mother” Nature in relation to our original physical environment: Nature. In fact, everything we see, everything we are, everywhere we are is Star Dust, 13.5 billion year old star dust. Our traditional religious beliefs have, for the most part, given us an abstract concept (recall “conceptual space”?) of our creator God, but not necessarily a direct, personal, hands-on experience of the presence of our God in our day-to-day lives: Nature.

Spend Some Time with God

Nature is our closest possible personal experience of “God’s” otherwise too often ambiguous physical presence, although many of us may approximate this direct physical experience in our religious communities, literature, rituals, sanctuaries, songs, and prayers. Modern “built” material culture, which is most obvious in our automobiles, airplanes, suburban and urban concrete and steel centers, has separated us from our direct experience of the miracle of creation, as gifted to us by a mysterious power unquestionably greater than ourselves. This separation

contributes to COASTER, to population density stress, and our vulnerability to the “diseases of civilization”.

Furthermore, from an ethical perspective, we are in the midst of an environmental catastrophe, which can be directly traced to human activity, and this catastrophe is directly correlated with how many of us are consuming these non-renewable natural resources.

Western Over-consumption

We in the West certainly consume a far greater share of these resources per capita, but that over-consumption would not be possible if not for the under-paid “lower class” workers in the former (?) colonies and overpopulated “third world” Eastern “developing” nations. The dominance (aka “status”) hierarchies modern men have created are, indeed, world-wide and cannot survive without the submissive “working class” resource extractors we depend on. Whether we wish to admit it or not, we are massively over-populated, part of a world-wide dominance hierarchy, and over using renewable and non-renewable natural resources, producing massive pollution of land, air, and sea. Simply reducing consumption in the West will not solve

our environmental problems' but it's an real and important contribution each of us can make today! However, only a concerted effort to restrain and reduce the size of every family and every layer of our world-wide dominance hierarchy can save our physical resources for future, smaller generations. The alternative is the stuff of many current science-fiction movies and novels and it won't be pretty.

LAST CHILD IN THE WOODS

The well-meaning journalist and author of *LAST CHILD IN THE WOODS*, 2005, and the subsequent title above, 2011, Richard Louv, describes his Nature Principle as “an amalgam of converging theories and trends as well as a reconciliation with old truths” and states that it “holds that a reconnection to the natural world is fundamental to human health, well-being, spirit, and survival”, from the 2011 offering and found on page 3. Unfortunately, this wonderfully intuitive journalist, however well-travelled, and in spite of numerous allusions to interviews with experts in ecopsychology and associated fields, produces little health information of scientific merit. A brief reference on page 63, credited to the work of Frances Kuo at the University of Illinois, seems to refer to John Calhoun's observations on the deterioration of social behavior in his mouse

crowding studies and sites the problem in human societies as “living in landscapes that lack trees or other natural features”. We find this a vague generalization and lacking the specificity we have tried to include in this current book. We’ll let the reader be the judge. All the same, Louv’s books are well written and worth reading. But, now, how about some more hard scientific facts on ocean warming? When meteorologists are asked whether climate change is partially responsible for our current horrific hurricane season, they respond: “Well, ocean warming is certainly adding to the strength of these hurricanes!”

IUCN

Last September, 2016, the International Union for Conservation of Nature (IUCN) published their 2015 report, “Explaining Ocean Warming: Causes, Scale, Effects and Consequences”. The full 460 page text is available for download online. Pretty much everyone should already know that the atmosphere and oceans are warming in a consistent accelerating trend, although self-serving fossil-fuel corporation generated misinformation apparently convinces many to the contrary. The IUCN is an international consortium of environmental agencies and geoscientists and

their report is extremely well documented.

One critically important fact buried in their comprehensive report is that water is 4000 times more heat absorbent than air. So, the oceans of the earth are absorbing a huge amount of the heat generated by human activity, which is directly correlated with human population, although those of us in developed countries generate proportionately far more heat per capita. But, here's the rub.

Without the oceans, the earth's average daily atmospheric temperature would have risen 65degF just since 1955! It's pretty cold up here in Wisconsin right now and a 65degF warm-up would be greatly appreciated. However, what would we do when the summertime temps hit 155degF?! And the real concern, admittedly unknown to even these international climate scientists, is just how much more heat our oceans can hold. No-one has a clue.

Furthermore, the ecological consequences of our warming oceans are already being felt by many sectors including the declining fishing industry, coral bleaching, flooding of low-lying coastal cities all over the world, and the increasing numbers of world-wide migrants being displaced by various consequences of climate change:

currently estimated at 65,000,000. But what the heck does ocean warming have to do with COASTER and human overpopulation?!

Move Upstream:...

A recently published book by Minnesota naturalist and population researcher, Karen Shragg, addresses a core issue in this area of research: our failure to identify the true source cause of environmental destruction, even by well-meaning environmentalists and conservationists: human overpopulation. Author Shragg, a devoted feminist and naturalist, states on page 41 of her book:

“Feminists must continue their fight to protect women in a world that continues to brutalize them. Population activists, however, are the friends of feminists, not the enemies. Their efforts are not an attempt to control their freedom, only a desire to improve their lives and the future of the children they do bring into this world. Feminists need to listen to scientists and overpopulation experts, who are warning of food and water shortages, biodiversity loss and increasing conflict. They are telling us that we need to stabilize and reduce human numbers now if we are to achieve sustainability. Women will be the first to benefit in a world with a sustainable population.”

(underlining mine)

Has Anyone Seen My Nature?

The reader of this current book should, by now, be familiar with the negative health consequences to us as individuals caused by COASTER, which is a direct result of Population Density Stress. However, we have cut ourselves off from direct contact with our healthy natural environment, and most of us have little to compare our current habitual and “normal” lifeways with, let alone the healing effects of contacts with a minimally disturbed natural environment. Thus, few of us realize how sick our natural environment has actually become. We need to remind ourselves of what a natural environment actually is! The realization of the extent of our destructive impact on the natural order will, by comparison, become obvious and unavoidable.

Take A Hike!

We can take a walk in a nearby woods, a city or county or state or national park. Go camping and sleep in a tent or, weather permitting, under the stars, so that we can hear the sounds of the night and see the “starry, starry night” sky. Stop and listen, if we can still find a quiet place, to the sounds of nature. Sit by a waterfall, or on a riverbank, or on a beach, or near a fountain, or in a boat on a body of water. Nine of the top ten destressing sounds, which naturally turn-off the Stress Response, are water sounds, except for number one: laughing babies!

These daily contacts with reality, and a small sampling of our fellow species, keep us sane, in contact with reality, even as our exposure to the chaos of the “built world” of

man attempts to drag us into insanity, psychosis, over-stressed detachment from reality. We can do something to rescue our own sanity but we must take action and redesign our own lives, in concert with loved ones or by ourselves. We must vote with our feet and with our dollars, or else COASTER will solve our overpopulation and over-consumption problems for us.

Listen Up!

We must mention here the life-long work of the “soundtracker”, Gordon Hempton. Gordon has devoted his life to recording the sounds of Nature undisturbed by man-made noise, although he admits that he can only find 3 Square Inches in his home-state of Washington where this is still possible! The interested reader may wish to visit his website, onesquareinch.org, and purchase one of his high quality recordings on a CD.

William James, MD

For those who may criticize our admittedly mystical restorative view of Nature, akin to the 19th century Romantics, we would like to end this topic with a few

quotes from Dr. William James' *THE VARIETIES OF RELIGIOUS EXPERIENCE*, 1902, page 491, as follows:

"Science, on the other hand, has ended by utterly repudiating the personal (subjective) point of view. She catalogues her elements and records her laws indifferent as to what purpose may be shown forth by them, and constructs her theories quite careless of their bearing on human anxieties and fates."

Certainly, in regard to the importance of the physical environment on stress physiology, truer words have never been spoken, although Dr. James was referring to the displacement of Natural History, with its 18th century religious emphasis, by 19th century Rationalism.

Mother Nature is a spirit, a many faceted diverse spirit as well as a directly experienced physical reality, a production of nearly infinite variety and depth, but we must find a peaceful respite within our stressful worlds in order to personally experience Her reality and realign our otherwise isolated inner beings, our true spiritual natures, our souls. In this topic-closing quote, Dr. James in his chapter "THE REALITY OF THE UNSEEN", on page 73, states:

“Nevertheless, if we look on man’s whole mental life as it exists, on the life of men that lies in them apart from their learning and science, and that they inwardly and privately follow, we have to confess that the part of it which rationalism can give an account is relatively superficial. It is the part that has the *prestige* undoubtedly, for it has loquacity, it can challenge you for proofs, and chop logic, and put you down with words. But it will fail to convince or convert you all the same, if your dumb intuitions are opposed to its conclusions. If you have intuitions at all, they come from a deeper level of your nature than the loquacious level which rationalism inhabits.”

On the next page can be found the following:

“The truth is that in the metaphysical and religious sphere, articulate reasons are cogent for us only when our inarticulate feelings of reality have already been impressed in favor of the same conclusion. ... The unreasoned and immediate assurance is the deep thing in us, the reasoned argument is but a surface exhibition. Instinct leads, intelligence does but follow.” (underlining mine)

Thus is our, yes, mystical experience of Mother Nature, if we will allow our inner-being, unimpeded by the numbing of stress hormones and the noise of man-made technology, to fully experience the reality of the true spirit of Nature, with all of Her inherent optimism, vitality, and healing powers.

However, our current course of motoring-on, as if the supplies of natural resources nature has bestowed upon us are unlimited and put into the earth for our benefit alone, is rapidly approaching a catastrophic conclusion. We will exhaust all of these resources, including petrochemicals, rare minerals, topsoil, fishes of the seas, and others, within 100 years hence. Many rare metals will be gone long before that date at current rates of extraction.

OVERSHOOT

With regard to our dwindling petrochemical resource (why else would “fracking” and tar sands extraction be necessary?) and growing atmospheric carbon dioxide problem, not to exclude “climate change” and global warming, we would like to offer the following 45yo quote from a particularly prescient Environmental Sociologist, also cited earlier in this work, William R. Catton, Jr., from his

1980 book (actually written a decade earlier—1970--but not accepted by a publisher for a decade!), *OVERSHOOT, The Ecological Basis of Revolutionary Change*, pages 232-233:

“What was needed was a national redefinition of such substances (“fossil fuels”), involving abandonment of our deep-seated assumption that their use *as fuels* is inherent in their nature. It is high time to learn (before we become even more numerous and still more “developed”) that the wisest “use” of coal and oil may be to leave them underground as nature’s safe disposal of a primeval atmospheric “pollutant”—carbon. By our ravenous use of fossil acreage to extend carrying capacity (i.e., the definition of “overshoot”), we not only prolonged the human irruption but also began undoing what evolution had done getting the atmosphere ready for animals (including man) to breathe, and ready to sustain the kind of climate in which present species (including ourselves) had been evolved. Hundreds of millions of years of evolution had produced the oxygen-rich and nearly carbon-free atmosphere we need, and had apportioned the earth’s supply of H₂O between atmosphere, ice caps, and oceans.

Now (1970!) mankind seemed bent on undoing in just a few centuries what nature had so slowly accomplished.... We need to accept the earth as it was when our species evolved upon it." (underlining and parentheses mine)

We doubt Prof. Catton's use of the term "human irruption" was accidental, although it does make us modern humans sound like a temporary rash on the face of an adolescent earth. We need to reassess our relationship with our Mother of all things before She reaches for the global Clearasil. The God of creation is watching!

Rewilding Institute

A final reference before closing this Nature Topic must recognize the work of Dave Foreman, his Rewilding Institute, and their website. In his recent book *MANSWARM, How Overpopulation is Killing the Wild World*, published in 2014, he presents a very helpful historical survey in chapter 8, "A HISTORY OF THINKING ABOUT MAN'S LIMITS", revealing numerous valuable historical references otherwise rarely mentioned in current

publications. Thus, his thoughtful effort to remind the reader of lost knowledge, gleaned through the hard work of our predecessors, parallels our effort in earlier chapters of this work. In our attempt to give him due credit and provide a summary in his own words from his important book, we offer the following quote from page 106:

“Optimistic cornucopians (Dave’s term for over-population and environmental overshoot deniers) shun carefulness as a social pathology. David Ehrenfeld (author of *The Arrogance of Humanism*) sheds light on why this is so: “The motive for their insistence on being optimistic and “positive” is simply the converse of this; optimism is necessary for those who are attempting the impossible; they could not continue to function without it”. Were they to face the dark pit before us, they would lose their will to live. They would have to come nose to nose with their madness. This they know. To keep the dread from their minds, they curse the truth tellers who attempt to pop their fantasies.” (underlining and parenthetical mine)

What our exploding numbers are continuing to do to the very fabric of Mother Nature Herself, the inevitable blowback on our species, let alone the Sixth Extinction that

is already well underway, should terrify us all. We will only take the personal actions necessary to stop our population explosion when, and if, we awaken from our culture of denial.

Perhaps we must face the madness of our current lifestyles before we can enter into the mandatory new lifestyles utterly necessary, if we are to survive as individuals, if our progeny are to survive, if our species is to survive, if the remnants of other species remaining after this massive extinction event are to survive, and, yes, if animal life on the earth is to survive.

Remember this, even if we are willing to restrict our reproduction to one-child per family, we will not reach our maximum population of 8 billion until 2035, and we will not drop our world population to a much more sustainable 2.5 billion until the year 2100. Any other outcome is simply a doomsday scenario for nearly all life on earth, as well as any future agricultural productivity, perhaps, capable of feeding a mere handful of scattered survivors.

Recall that our Hunter-gatherer ancestors quite probably never numbered more than 4-6-10 million world-wide, and they had a wonderfully productive, intact,

sustainable biosphere. We find this truth terrifying and so should the honest reader.

IN THE ABSENCE OF THE SACRED

The interested reader will find another, more recent, 1991 book by Jerry Mander helpful on this topic. In *IN THE ABSENCE OF THE SACRED, The Failure of Technology and the Survival of the Indian Nations*, the ever prescient former adman compares the short-falls of modern civilization with the hunter-gatherer lifeways of the tens of millions of native peoples still choosing to pursue their ancestral tradition of living close to nature. Ironically, Mr. Mander points out the conscious choice of hunter-gatherer people to avoid accumulating material possessions, as such unnecessary materials simply impede their low impact lifeways.

Now, sit down on a plastic seat and fasten your synthetic bra or jockey underwear, while we speculate on the true sources of the sexual gland cancers (i.e., prostate, breast, ovarian, and testicular), none of which occur in traditional Hunter-gathers. We wonder why this should be so. How about you?

45. UNDERWEAR and CANCER, SEATING and CANCER, BRAS and CANCER; STRESS INDUCED THERMOGENESIS, and COASTER'S IMMUNE SUPPRESSION, or WHY SEX GLANDS ARE PLACED ON THE OUTSIDE of OUR BODIES, and, OH, YAH, SURFACTANTS

So, what about plastic foam , vinyl seating, and undergarments constructed of synthetic fibers, you must be asking yourself? If COASTER and population density stress suppressing our immune systems and making us vulnerable to cancers, what exactly are the environmental triggers initiating the sexual gland cancers, among others? We know that we are filling the environment with chemical toxins that are carcinogenic. We know that certain forms of high energy radiation exposure are carcinogenic. But the only physical cause that all the sexual gland cancers share in common is increased body temperature. The stimulating effects of testosterone on prostate cancer or estrogen on breast cancer are well known. What has never been studied is perhaps the most obvious physical influence of all: core body temperature. Why do we suppose that these four sex glands: prostate, testicles, breasts, and ovaries, have been placed by eons of trial and error either

outside or just below the body surface? Has our “advanced” modern technology presented us with clothing and seating that increases and traps that core body heat on these sex glands? Why are the rates of these cancers rapidly increasing in the urban and suburban West but unheard of in Hunter-gatherer clan societies?

Synthetic Fabrics and Foams

Actually the “modern” materials we choose to cloak ourselves in and sit on may be a major cause of breast cancer, ovarian cancer, prostate cancer, and testicular cancer. COASTER increases core body temperature by stress induced thermogenesis, and, then, synthetic fabrics and plastic foams prevent the release of evaporating, cooling water vapor from body surfaces covered by them, thus increasing the temperature of glandular tissues lying just beneath the skin. The reader surely recalls that a major effect of COASTER, aside from thermogenesis, is suppression of the immune response by over-production of Cortisol. So, new heat induced cancer cells that would normally be cleared and destroyed by our healthy immune system are allowed to grow unchecked by our COASTER suppressed immune system.

Ironically, the unknowing women and men who turn out to run, walk, bike, and otherwise exercise to raise funds for cancer research, are actually increasing their own risk of developing breast, prostate, testicular, and ovarian cancers, by over-heating these developmentally vulnerable tissues.

Ever notice that the breast cancer and prostate cancer rates are about equal, one in seven (1/7 or 8) American adults during our lifetimes? We believe, after 50 years of studying the subject, that these sex gland cancers are quite possibly initiated by at least 4 factors: (1) temperature induced embryonic regression (aka “cancer”) in the germ layer (just below the top layer of endothelial cells lining fluid carrying ducts), (2) genetic mutations, (3) toxic environmental chemical induction, and/or (4) the immune suppression caused by COASTER’s overproduction of Cortisol. CAUTION: There is no placebo controlled double blind experimental evidence that these glandular cancers are caused by increased temperature due to moisture and heat trapping synthetic fabrics and foams, COASTER induced thermogenesis (i.e., heating up), and the immune suppression caused by COASTER’s increase in Cortisol, as the question has never before been asked. However, we now present several anecdotal references to modern

behaviors highly correlated with sex gland cancers in modern humans. Anyone looking for a PhD thesis topic?

First, the reader should recall that Hunter-gatherers do not have these cancers. Many Eskimos spend their time in their Igloos naked, as, essentially, do their warmer climate contemporaries. Could it really be that simple? Somebody needs to explain why we wasted a trillion dollars on “cancer research”, but never asked these most basic, common sense questions about the obvious causes of cancer in “modern” societies. Reductionism raises its ugly head again blinding scientists from the most obvious big questions and answers as they compete ferociously for every last “research” dollar through ever narrower windows. Our knowledge of the minute aspects of molecular biology is exploding as we thoroughly study the deep structure of cancer, while totally ignoring the obvious forest of environmental causes. Once again, we miss the forest for the trees, and all because of our hierarchical competition for monetary status rewards.

Due to the impenetrable fortress of the gridlocked cancer research bureaucracy (which I know from personal experience at the McArdle Labs cancer research facility at the University of Wisconsin), I have been unable to get a response on these hypotheses from anyone in a position

to initiate the research necessary to test these educated guesses. I need to add, however, that when I was privileged to coordinate a course based on this book to a small seminar including the former chairman of the Carbone Cancer Treatment Center in Madison, Wisconsin, he listened and read intently and never contradicted any of my speculations on cancer. He and the other physician in seminar had both done cancer research.

The smaller the questions we ask, the smaller the answers we can expect to receive for our efforts. How about a clear definition of “reductionism”?

Beyond reductionism

The term “reductionistic” and its metaphorical version, “missing the forest for the trees”, are mentioned several times through-out this paper and deserve an explanation for the amateur scientist or general reader. The famous biologist, Paul Weiss, in his contribution for a seminar organized by another one of my heroes, Arthur Koestler in 1968, on pages 10-11 of Koestler’s resulting 1969 book, *Beyond reductionism*, makes the following statement:

“As I once put it, there is no phenomenon in a living system that is *not* molecular, but there is none that is

only molecular, either. It is one thing not to see the forest for the trees, but then to go on to deny the reality of the forest is a more serious matter; for it is not just a case of myopia (near-sightedness), but one of self-inflicted blindness." (underlining and parenthetical mine)

Second, natural fabrics, cotton, wool, linen, silk, and open mesh seating, whether wicker, wooden slats, an Aeron chair (I'm sitting in one now), or a cheap knock-off, all allow for the transmission of water vapor, and heat, away from body surfaces and interiors, cooling the sex gland tissue immediately under the skin, especially when stressed and overheated. The same is true for cotton underclothes, including bras and other underwear. Stress management is the key to reducing stress induced thermogenesis, or the overheating caused by COASTER.

Biologically speaking, a physical characteristic nearly unique to our species is our ability to sweat and, thereby, thermo-regulate our body temperature within a wide range of exterior temperature environments and exercise levels. We would still be confined to a small area on a forested African mountainside without this ability!

But wait a minute, this is a book about stress, not cancer, you might protest! So, let's step back for moment and consider from our ecological mismatch perspective why is it that women wear bras and men and women spend so much of their day sitting down on foam rubber and water vapor impermeable vinyl plastic covered seating?

Third, women wear bras in modern societies to cover their breasts and augment their size and shape, universally enhancing their sex appeal. Also, however, modern women must cover their breasts to avoid unwanted attention from strange, possibly sexually aroused, men. In our ancestral clan-living social groups, this is not necessary, because constant familiarity with a small group of close relations has a distinct chilling effect on sexual arousal—Freud's "incest taboo". The Muslim prohibitions against women displaying their bodies in public or around strange men is another 1,400yo example. Finding information on the net regarding the under-clothes of Muslim women is difficult. However, we must ask why Muslim women have only 20% of the breast cancer rates that American, European, Argentinian, and Australian women have? A brief survey of the web is ambiguous as to whether

traditional non-Western Muslim women routinely wear bras under their traditional Burkas. Are those burkas cotton?

The plastic foam lining “modern” women’s bras is an excellent insulator, as well as a vapor barrier, thus, holding body heat within the breast tissue itself and increasing the temperature of the constantly dividing cells of the germ layers in the glandular tissues, within which our exploding rates of glandular breast cancers occur. Is the reader seeing the connection here?

Fourth, for submissive sedentary men baking our prostate glands all day in a carcinogenic foam-rubber oven while seated in our cubicles, remember that our huge, innumerable, overlapping status hierarchies constantly demand submissive, seated behavior, although bowing and scraping are rarely demanded in the modern office or classroom. Please, be seated!

What can possibly be more submissive than taking a seat when offered by one of our bosses or teachers, which is pretty much at all times, is it not? Don’t we have to avoid the “hot seat”?

Do we not see, in both of these situations, the ever so subtle pressures of our overpopulated mass society, composed of mostly unknown fellows, in every walk of modern social and work-life, crushing the very life out of us and killing us by COASTER?

Our **Fifth** bit of anecdotal correlation of modern Western behavior with COASTER related sex gland cancers involves cryptorchidism. Every 1st year med. student knows that a baby boy born with an undescended testes (empty scrotum) must either have that testes mechanically (surgically) descended or removed by age 6, or it will quite possibly develop into testicular cancer. The only uncontrolled variable in this naturalistic experiment is body heat, greatest at our core, in our abdomen, and least at the water vapor exhausting skin surface and extremities.

For our **Sixth** piece of anecdotal support, we propose that cooling temperatures during the developmental process are associated with the cessation of those developmental processes and, thus, help turn off the embryonic development of sex gland tissues and stabilize the fully developed glands, maintaining them in a

differentiated state and preventing cancerous regression to the previous undifferentiated, rapidly dividing, embryonic state. Thus, constant over-heating these tissues, as a result of COASTER and our synthetic petro-chemically derived clothing and seating choices, may cause embryonic regression and a return to an embryonic state of rapid growth: cancer. Perhaps, this may help explain the induction of ovarian cancers as well.

Ironically, modern scientists, in their quest for stem cells, are winning Nobel prizes for accomplishing this very regressive, de-differentiation of fully developed cells back to the undifferentiated stem cell state, which is never stable, always in the process of multiplying rapidly, and becoming some end-organ or another, unless actively prevented from doing so, and frequently spinning off into just another cancer.

So far as our literature searches have gone, we have been unable to find any scientific exploration of this hypothesis, as no experiment has ever been tried and reported. But, then, we promised not to go further along this line of inquiry. However, we must suggest cotton bras, cotton boxer underwear, and open-mesh cotton canvas, or some other water vapor permeable or natural fabric seating.

Let those glandular tissues “breathe” and stay cool, especially when under high stress. But, then when are we modern, urban or suburban, citizens not experiencing COASTER?

Contact Inhibition

A final digression to complete this topic. Every medical physiology textbook contains a section on normal cellular development and that deviation from the norm we call cancer. Inevitably, in the section on factors terminating the normal developmental sequence of tissues, is a segment on “contact inhibition”.

Simply put, many tissues are lined with a one cell thick layer of “endothelium”, including our guts, the lining of exocrine glands and their ducts, the lining of arteries and veins, etc. So what, you may ask?!

Well, the otherwise continual unrestricted growth (a major characteristic of cancer) of these endothelial cell layers, like that lining our bowels, for instance, is terminated by contact inhibition—one cell butting up against, connecting with, and inhibiting the further growth of its neighbor in a cell layer.

If you are like the average cleanliness obsessed, home cleaner over-sold American, you routinely wash your dinner plates with dish-washing liquids or powders containing powerful detergents, aka “surfactants” or, to us chemists, “surface active agents”. The function of these detergents is to dissolve away unwanted adhering oily, fatty deposits, much like those that bind our endothelial cells and inhibit further growth. Are you following this part of the cancer story so far? Do you think Hunter-gatherers use detergents? Does our modern Western lifestyle demand that we constantly wash away the “germs” we accumulate from daily contact with innumerable strangers? Is this not just another aspect of population density stress?

So, when we constantly wash our guts, lined with just such layers of endothelium, with cell adhesion disrupting detergents, are we not asking for the disruption of contact inhibition of cell growth and the uncontrolled growth characteristic of bowel cancers? We have not used a dishwasher or anything but hot water and a scrub brush to clean our dishes in memory. The thoughtful reader may wish to consider a similar approach. Our apologies to the appliance manufactures, but not to the world-wide

polluting chemical corporations churning out the detergents.

If this hypothesis is correct, we might just wish to reconsider the effects of all the many tons of detergents that we coat the inside and outside of our bodies with daily, before dumping them into our sewage systems. And, of course, we should know by now that the oil and gas concerns are pumping enough detergent-rich fracking fluids into our aquifer daily (billions of gallons) that before long we will be unable to avoid detergents anywhere in our water supply, right?

The phosphates released into our water systems by this constant tsunami of detergents, let alone those from agricultural runoff, are also a major cause of algal overgrowth and marine “dead zones”—the green slime covering and choking our waterways, only to die and take all of the oxygen out of the water as it rots at the bottom.

Ok, ok, we promise, that’s enough about cancer.

46. EDUCATION: KNOWLEDGE IS POWER; IGNORANCE IS, WELL, IGNORANCE

The primary function of American schools and colleges is becoming the “teaching” (training) of submission, rather than analytic independent thinking skills. Since submission to higher authority is the most likely behavioral outcome for today’s young students, we are taught to join a constantly submissive work-force in our corporate social hierarchies. The curriculum is increasingly focused on obtaining “marketable job skills”, rather than gaining a broad-based, liberal arts education. Education for the sake of developing intellectual skills and learning our species’ history on earth, or the function of the ecosystem, is quickly becoming a thing of the past.

Learning Sublimation

What the heck does education have to do with stress management and COASTER prevention? Remember what you learned earlier in this book about Freud’s discovery of the mental mechanism called “sublimation” of primitive emotions? To review, we transform the strong survival emotions, particularly socially unacceptable forms of sex and aggression, increasingly generated by triggers built into

our commodified purposely stressful multi-media environment. And this creative cognitive transformation results in disguised expressions which are actually partial releases of those otherwise socially unacceptable primitive survival impulses.

So, we dance in a sensual manner, rather than have sex. We tackle one another in a sanctioned football game, rather than commit murder of an enemy. We vicariously (i.e., through others, who we have identified with) experience sexual and aggressive feelings through mass media portrayals, including the explosion of violent video “games”, rather than directly carrying out these socially tabooed acts ourselves. In this vicarious manner, we gain relief, a Stress Response “high”, and even “dominance feeling”. Thus, we have created art, literature, film, theater, sports rituals, etc. A liberal arts education opens doors to whole libraries of sublimations for survival emotions that would otherwise seek to gain a more direct expression and result in social unrest and, ultimately, anarchy and collapse. Still think liberal education has no relevance to a book on stress? But who will create and act out these necessary forms to allow our sublimations? Don’t we need creators to make the music, art, theater, TV, movies, magazines, websites, blogs, etc.? And where do we get the inquiring minds necessary for us to

understand all of these complex processes? And, by the way, have we not explained the “anxiety” reducing value of hands-on creative efforts in all the arts and crafts, as these activities sublimate the otherwise more direct but socially unacceptable release of sexual and aggressive energies?

Curiosity and sincere inquiry are the sworn enemies of the rigid, preconceived, fixed, unquestioning, hierarchical conceptual state that America has become. Intellectual and cultural gridlock have become the norm. New ideas are neither requested nor well received, and conformity to pre-existing concepts (“memes”) is expected, demanded. We are “taught” from birth not to ask questions, not to rock the boat, to submit without question to authority, including conceptual authority, (exemplified by the constant uninvited preprogrammed editing built into this word processing program!). Teacher know best!

We blame schools, teachers, the media, and, most of all, parents for the fact that our children are not learning, at least as measured by “standardized” testing, and, more importantly, not developing learning skills necessary for a lifetime of learning. In fact, the real problem is us, parents. We are the most important educational models that our children are exposed to, equally as important as

the teachers, and not the school textbooks, not the media (including electronica), not anybody else but us, older siblings, parents, aunts and uncles, immediate family.

Are we the models of perpetual learning we wish our children to model themselves after? If so, great! If not, why not? When's the last time we read a book or discussed it with anyone? Went to the library or bookstore? Asked our children, with genuine interest, what they learned in school today? Learned something new and exciting in our own continuing education?

Parents as Model Students

We who are parents and family of students, need to ask ourselves whether we are life-long students, or not. Do we, personally set an example of lifelong learning, value education, read, discuss, and question everything, or do we submit and accept everything that our increasingly uniformitarian culture tells us is true and unquestionable? Whether we model lifelong learning or not largely determines whether or not our children become the lifelong students necessary for democracy to succeed and a culture of learning to be established and maintained, irrespective of teachers and schools, political propaganda,

corporate advertising, culture disseminating mass media, Newspeak, and the Thought Police.

We all must question everything or settle for an unyielding, gridlocked, fixed, and unquestioning culture to define our truth about the world and everything in it. Is “tweeting” to be the extent of true learning for us and the next generation? Or “Facebook”? Or TV? Whatever happened to real books and libraries?

Truth to Power?

However, remember that in our massive status hierarchies, with their rigid densely packed conceptual spaces (aka cultural norms, academic protocols, rules, rules, rules), questioning and challenging the firmly held preconceived concepts of higher ranking members of our group, family, work place, social unit, military unit, sports unit, classroom, or church, etc. will be responded to as a status challenge, and, as such, responded to with possible “extreme prejudice”. How thick is our skin? How important is the truth? We love the phrase: “bringing truth to power”, but look at the price we may well have to pay, before “sticking our neck out” for the sake of finding the truth about anything, including stress, over-population, and environmental degradation.

Remember Edward Snowden, Chelsea Manning, and the anonymous leakers, the free press, and every other courageous whistleblower! Honesty, sincerity, and the quest for the truth will exact a high price in a gridlocked, over-populated, totally top-down controlled society. With overpopulation inevitably comes ever greater inequality and, for those with great wealth to lose, a need for ever greater control of the “masses”. Creativity and rebellion must be suppressed, if “order” is to be maintained. Enter dictatorial rule, which must include ever greater control of “education”, as propaganda expands and overrides any other form of creative expression. Get the picture? A society of COASTER addicts is easy to manipulate, keep in ignorance of the truth, and profit from. Only a broad liberal arts education can prevent authoritarian dictatorship and death by COASTER.

Now, do we have a better understanding of the lack of real learning and the utter stagnation and gridlock of our culture, as well as the loss of interest in education-for-the-sake-of-education, and current emphasis on training?

This book is, hopefully, fact-based. However, please, feel free to Google, or otherwise fact-check anything and

everything that has been put forward here. We have intended that the frequent direct quotes from primary sources show proof of concept. But, please, have the courage and curiosity to read this book with an open mind and to face the realities presented herein. Best of all, read it out-loud with a friend or group of friends, dialog your own truth, and all the new questions true dialog will inevitably reveal.

Question Everything!

Teach our children to question everything by modeling skepticism! We have constructed status hierarchies of unquestionable, unapproachable “experts” in every field, who often have little or no true understanding of the subjects they “teach” (“indoctrinate”) and will make every effort to denigrate, devalue, dismiss, and dominate the conceptual efforts of their unfortunate “students” (defeated, submissive, unquestioning, numbed automatons or scowling rebels). The resultant gridlock in academia and the larger world of knowledge leaders is strangling innovation and knowledge development, without which our adaptation to future environmental crises is ever more limited.

The near total failure of academics, contacted to date, to read this book or even scan it, is a case in point. Access to the ivory towers by outsiders is severely limited, indeed, and so is the information they are passing on to their submissive students.

Don't allow anyone to dominate our conceptual space. The best teachers are the best students. The most important lesson in any education is the utter necessity to continue to be a life-long student, which demands constant questioning and learning. We all teach by example. We need to constantly shift our curiosity, back and forth, from the forest to the trees, and back to the forest, again.

When we are fortunate enough to have mentors, teachers, and parents, who truly encourage dialog and questioning, we need to let them know how grateful we are for their extra effort and honor them accordingly. The reader will find at its conclusion a long list of many of the mentors who were instrumental in encouraging the enquiry that is this book.

True Learning Requires Dialog

Recall the 19th century German philosopher (or look him up on the net or a reference book), Georg Wilhelm Hegel,

who clarified the dialectical process necessary for the development of all true knowledge: one inquiring soul develops an idea, a thesis, and presents it to another equally curious fellow (of equal status) , who counters with his own unique version, the anti-thesis, which is then discussed and further developed by both contributors and results in an entirely new thesis, which, hopefully, begins the process anew.

What's missing today is, often, but, of course, not always, respect for this interactional model of learning. Lectures are rarely interactional and, therefore, rarely result in true learning, as the student is never personally emotionally involved, an equal contributor to the outcome, or even invited to participate at any level, other than the mandatory perfunctory examinations demonstrating complete submission and intellectual conformity.

Memories must have an emotional component to form at all and emotional participation in the development of an idea is necessary for a lasting memory of an event or academic concept to form and be retained. It should come as no surprise to the attentive reader that new memories are formed in the hippocampus, deep in the “emotional brain”, or limbic system.

An idea not constructed by equals can only serve to define who is dominant and submissive in a relationship. If we are seated and the lecturer is standing, we have already submitted to the dominant status of the lecturer, boss, judge, etc. In a true learning experience, we are more likely to all be standing or all seated, “on the same level”, literally.

True learning, a process of discovery among equals, should be destressing and not just another contribution to COASTER, which is unfortunately not true of submissive, lower status. Knowledge, true knowledge of who and what we are, how we function, and what contributions we can make to our fellows and the society we have inherited, is power.

47. MEDIA: THE MEDIUM IS THE MESSAGE, and THE MESSAGE IS STRESSFUL

I did not own a television for 10 years, although I was raised on a steady diet of television programming. Now, when I venture into an establishment that has one, and am unable to quickly turn it off, I find myself extremely irritated and search for the nearest exit. And that’s the

whole purpose of television, to demand and hold our attention, as well as activate the “feel-good” chemicals of the Stress Response, all in order to allow commercial interests to sell us environmentally toxic stuff that we very rarely actually need for happy lives.

42% of television programming, 25 of every 60 minutes, is uninformative and often false advertising, and this proportion of creeping commercialization is only growing in our money-is-everything (i.e., dominance, power, authority, god) culture. Whatever happened to the educational potential of the medium?

I found the medium addicting and needlessly upsetting--the content too filled with addictive, stressful violence and constantly worrisome “news” of one horror after another, played over and over again, almost always half a world away, and totally beyond my control. None of these pseudo-worries about all of these “breaking news” horrors occurred to me after I got rid of the television and reduced my radio listening drastically, not to ignore the constant need to actively avoid similar stressful content on the internet. I recommended that my stressed-out, worried sick patients consider a similar remedy!

Our patients were encouraged to carry out an experiment, which was to turn off all the lights in the T.V. room one evening and turn to face the opposite wall. What we see in this experiment is the true nature of the television medium, a flashing 60 cpm strobe-light. The human brain, the illustration on the BACK COVER, contains structures derived from our distant ancestors, who lived in a world of the earliest mammals (over 220 million years ago), a world of ancestral mammal-like reptiles, animals whose brains were designed to automatically visually detect movement, with the rapid movement of larger animals representing an imminent attack by a predator, and the movement of small animals representing their next meal. Quickly detecting and responding to movement was a fundamental requirement of their survival and evolved into a basic ability of their brains. Thus, over the intervening eons of the development of new brain structures on an ancient framework, we mammals and primates have retained this basic neurological capacity and our attention is automatically drawn to anything that moves in our field of vision, involuntarily. Similarly, small mammals developed a “freeze response” when confronted by a potential predator. This instinct is obvious when a squirrel freezes on our approach, even if this means being run over by our

auto when it freezes in a roadway. This is the “deer in the headlights” effect and even humans still have this reflexive behavior when terrified.

Look Away, Look Away, Television-land

Try looking away from a television that is on. Go ahead, give it a try! The strobe effect of the flickering television screen will constantly reacquire and hold our attention, as will the audio track, if it is turned on. It’s the perfect delivery system for stressful content, as well as advertising, all of which, we may recall, is highly addictive, constantly reactivating COASTER. Recall that COASTER includes over-production of endogenous opiates, and is, therefore, highly addictive in its own right. Stress is addicting.

No wonder we can’t stop watching T.V. and are suffering from the many negative health-robbing effects of COASTER. Both the content and the process of the television medium are aggravating COASTER, training us to be unwitting programmed consumers of unnecessary “consumer products”, and making us sick.

Of course, the radio works the same way, interspersing horrific can’t-turn-away-from-it “news” and carefully

engineered alarm sounds, “music” (?), with the true purpose of all this flutter, fluff, and noise: selling unnecessary, redundant, and often down-right harmful foreign-made “consumer” products. What’s wrong with this picture?

We seem to have lost the capacity for clear-minded calmness, peaceful quiet, and the joyous vistas and sounds of the natural world. However, in our disjointed dispersed urban and suburban Western world, this addiction to mass media provides a partial emotional substitute for the clan society and natural world environments of our ancestors. Unfortunately, it comes with COASTER and all our “diseases of civilization”. Fair trade-off?

Subconscious “Amygdalar” Marketing

Now, if you are an advertising concern, without scruples, which is probably being redundant, and only concerned with “marketing” a product (making money), wouldn’t television or radio be the perfect delivery system for your emotionally appealing unconscious message: buy this exciting product, it will make you happy, and don’t look away during this ad? And this deluge of advertisements now make up 42% of all broadcast time!

The longer the exposure time and the more addicting the medium, all the better for holding the “captive audience’s” attention, in order to deliver your sales message.

So, violent , addicting content carried on this already attention demanding medium is the perfect sales tool! For a nation of addicts, it’s the perfect living room accessory, although we now know that it is also causing the perfect death by stress and driving the compulsive buying of unnecessary, unsustainably produced, land-fill bursting, always novel, “consumer products”, manufactured by wage-slaves in foreign lands, and transported across oceans in giant polluting container-ships!

When we boil it down to its essentials, the function of advertising has become the triggering of our Stress Response, over and over again, as often as possible, during any media event, in a stadium, or in the palm of our hand. Having demanded our attention, then we can be conditioned to unconsciously associate some brand-name product with its pre-conditioned limbic based visceral emotional reward---sex, fame, fortune, COASTER, higher status, and, ironically, stress reduction. So, if we really examine advertising, we discover one of the central greed driven causes of COASTER.

Corporate consumer marketing is killing us, but we can't turn it off, and we can't get enough of it. What does that sound like, if not the perfect addiction?

Of course, with the advent of the i-Pad, the i-Phone, and their fellows, with their constant “streaming” of stressful content (violent, sexual, novel), the television experience has become far more “convenient”, so that the message is now nearly non-stop. And, right around the corner, is Google Glass technology, for that rare opening in our otherwise constant visual and auditory “stream” of titillating, addicting, violent, stressful, and sexual content. But carrying, of course, the ever more tailored and “targeted” advertising message, for the ever more addicted and manipulated consumer—you, me, us. But, of course, COASTER thrives in this scenario.



Dec16#07.JPG (Command Line)

Eliminate Television?

Jerry Mander is the 80yo author and retired successful adman who authored *FOUR ARGUMENTS FOR THE ELIMINATION OF TELEVISION*, in 1977. And what a wonderful book it is, if you haven't already read it. Much

of our book's section on television directly parallels Mr. Mander's researches, including our "addiction" to the medium, although he showed no evidence of being interested in the subject of stress, other than the one word quoted below, or human overpopulation. His deep and long held concern for the natural environment comes through clearly in this 1977 book, and has been an abiding interest and cause for action throughout his long and productive life. We provide this quote from page 304, as a case in point:

"To be constantly buffeted by bizarre and impossible imagery cannot help but produce stress in viewers. To have one's attention interrupted every ten seconds (which has become every single second, 39 years since this was written!) must jar mental processes that were otherwise attuned to natural, personal informational rhythms in which such interruptions would be literally maddening.

Leaving the television set to go outdoors, or to have an ordinary conversation, becomes unsatisfying. One wants action (n.b., stress addiction)! Life becomes boring, and television interesting, all as a result of technical hypes." (underlining and parentheticals mine)

Ironically, Mr. Mander notes elsewhere in his brilliant book that, at the time of publication, 1977, television ads were 30-60 seconds long and occurred 6-10 times an hour, occupying 6-10 minutes per hour. Today, the rapid-fire ads, with their attention grabbing “technical events”, are mostly 4, 6, or 10 seconds long and often occur in blocks of 10-15 per “commercial break”, occupying 25 minutes of every viewing hour! Our unconscious training sessions to buy, buy, buy are far more frequent, far more potent, and far more intrusive than in Jerry Mander’s 1977!



Dec16#05.JPG (Command Line)

i-Addiction

So, could our current addiction to even smaller, portable screens, as well as the hours we still spend Mesmerized in front of our ever larger, more life-sized, T.V. screens, be a product of the dissolution of our earlier face-to-face lifestyles? Have we inadvertently traded-in our clans, extended and nuclear families for an electronic substitute? Have we not created the very self-imposed vicarious cubicle imprisonment, so well-illustrated by John Kastner’s wonderful image at the beginning of this book?

Have we not moved even further into John Calhoun's over-populated world of "conceptual space", now available 24/7 on one screen or another? And what if the central theme of this book, that population density stress is killing us and making us infertile, is further supported by our desperate need to cling to our electronic Teddy Bears?

Anybody else dreaming of strawberry ice cream?

Get the picture? Hear the message? Only, we can turn it off, but it will be difficult, the withdrawal will be painful, and we may not be able to do it without the emotional support of fellow humans, without somehow reconstructing the very clans, extended and nuclear families that our electronic images are attempting to replace.

Where are the media disentanglement support groups, "Media Addicts Anonymous" ("MADA"?), or "MADANON"?)? Where are the media deprogramming treatment centers? Of course, compulsive shoppers anonymous (CSA) already exists in many American communities; our churches, synagogues, and mosques are in need of new members; and multiple opportunities for fellowship, also, exist among the 400plus 12-step programs

and their thousands of weekly meetings already functioning in the Addicted States of America.

Stop and Reflect

So, let us stop and reflect for a moment, before we move on to the final all-important PART 4, STRESS MANAGEMENT. By now, we should know how the Stress Response works, what triggers it, and our negative health consequences from COASTER and population density stress.

We may now recall something of the history of stress research here and abroad over the past 144 years, beginning with the observations of New York neurologists Charles Miller Beard, MD, "AMERICAN NERVOUSNESS", 1879, and Silas Weir Mitchell, MD, *WEAR AND TEAR OR HINTS FOR THE OVERWORKED*, 1872. We may have noted the not so subtle criticisms of "modern" medical education, and, therefore, medical practitioners, for abandoning this early stress research in an ever more reductionistic loss of understanding of the true causes of human illness, which we have termed COASTER (chronically over-active stress response) and its elevated tissue levels of CRH and Cortisol. If we carry nothing else away from reading, or even just scanning, this book, it should be our introduction to the theory that all human disease is ultimately stress

based, including those occurring from exposure to high levels of these hormones in a stressed mother's womb.

We may recall the diversion into the history of the family and our ancestral clan-living Hunter-gatherers, as well as contemporary H-g clans, as models for our ancestral COASTER-free lifeways and resulting in their total freedom from the "diseases of civilization" that are killing us.

We may have appreciated the lengthy descriptions of the physiology of the stress response and COASTER, its addictive nature, its life shortening effects on our chromosomes, and the therapeutic effects of certain medicines, when properly used.

We may recall our introduction to the 18th century work of Rev. Thomas Malthus, and our review of the negative environmental, ecological effects of human overpopulation, including William Catton's carrying capacity "overshoot".

But, most importantly, we should have followed the review of animal stress physiology and population density researches conducted by Charles Darwin, Walter B. Cannon, John B. Calhoun, John J. Christian, Hans Selye, George Chrousos, W. C. Alee, Bruce McKewen, and Robert Sapolsky. We were fully introduced to the two most

important concepts in this book: “population density stress” as a “population density-stat”, and “the kill-switch”.

Then, we may recall a lengthy section on alternatives to death by COASTER and the human overpopulation at its source, which we have just completed. So, now, on to yet more possible “stress management” alternatives, which are offered in our sincere effort to provide a guide to healthier living for us humans, and the planet we inhabit, as well as our fellow residents.

PART 4: STRESS MANAGEMENT

48. STRESS MANAGEMENT

There have been hundreds of books, workbooks, workshops, manuals, videos, recordings, guided meditations, cognitive behavioral therapies, therapeutic visualizations, and informative websites produced on stress management.

Most of them say the same vague, general, common-sense things: “stop stressing”, “stop worrying”, pay attention to your breathing, plan your day better, get more rest, exercise more, start running or aerobic walking, study

nutrition and eat better, eat organic and mostly or all vegetables, laugh more, drink less alcohol and caffeine, do Yoga or Tai Chi or Zumba or Pilates, consult an acupuncturist, see a hypnotist, get Rolfed, learn Reiki or other forms of “energy work”, consult a therapist trained in the Alexander Technique, use aroma therapy, get a massage; sit in a sauna, steam bath, hot spring, Epsom Salts bath, or hot tub; listen to relaxation music; play music; make art; use biofeedback; consult a Neuro-feedback therapist; practice “Mindfulness Meditation”, TM, Buddhist meditation, Forest Bathing, or some other form of meditation; start attending church, temple, or mosque and pray; take a vacation to a natural setting; go to a therapeutic spa (the Esalen Institute in Big Sur, CA is my favorite); take vitamins, fish oil, seaweed, red and orange vegetables, and mineral supplements; stop smoking and over-eating; join the “slow” movement and slow down; take it easy, stop hurrying; don’t over-work; find your true purpose in life; etc.

All of these stress relieving suggestions are well-meaning and often, at least temporarily, helpful, and we have tried all of them and continue to engage in most of them daily, when we can afford it, because, in our money-as-god society, they have all been commodified!

Unfortunately, few of these potentially very important destressing technologies have been scientifically studied in relation to the Stress Response, much less COASTER. More importantly, the real problem which this book addresses is our lack of bona fide scientific understanding of the causes of COASTER, the one nearly invisible common element in all of our “diseases of civilization”.

Remember, we haven’t even studied our doubtless elevated Cortisol levels during stressful day to day activities: flying, driving automobiles, walking down a noisy urban street, attending a public “sporting event”, finding a parking space, or watching T.V., let alone their certain reduction during calming, therapeutic efforts!

Breathe!

Lest the reader become too stressed as a result of this in-depth inquiry into the true nature of the Stress Response and stressors, we will now provide a sure-fire method to turn off the Stress Response and activate the parasympathetic nervous system. This method will be mentioned, again, in TOPIC 29, immediately following the current topic.

Find a quiet, stressor-free environment and take ten deep breathes, of equal length in and out. Concentrate all of your attention on this simple task. This is, in fact, a mindful meditative technique, as we cannot fully concentrate on our breathe while, at the same moment, entertaining a worrisome thought. Due to the concentration necessary to focus all of our attention on taking 10 deep, slow breathes of equal duration on inhalation and exhalation, we literally have no ability to worry and have automatically initiated our parasympathetic nervous system, just as our “out of breath” panting did naturally after being chased by a dangerous predator in the ancestral environment.

William James’ “Fears”

The only comprehensive published list of instinctual stressful stimuli, or “triggers” of the Stress Response (Dr. James called this “fear”), that we have been able to find, was constructed by William James, MD, the father of American medical psychology, in his 2 Vol. *PRINCIPLES OF PSYCHOLOGY*, 1890, pgs. 415-422. His list included:

- (1) the startle reaction to noise, (2) strange men and strange animals, especially if advancing

toward us, (3) vermin, especially spiders and snakes, (4) solitude in infancy, (5) black things, dark places, holes, caverns, solitude and being lost, (6) high places, (7) the supernatural, (8) inexplicable sounds, (9) moving figures half discerned, (10) slime and ooze, and (11) corpses.

With great insight, Dr. James concludes with:

“we are strongly tempted to ask whether such...fear in us be not due to the accidental resurrection, through disease (sic), of a sort of instinct which may in some of our ancestors have had a permanent and on the whole a useful part to play?” (underlining mine)

Clearly, avoiding these fearful objects and experiences has long been a means of staying calm, unstressed, and alive.

Hopefully, this monograph, as broken up and scattered as it is, will provide the reader a more scientific explanation of the history and true nature of “stress” and a number of specific (and not so specific) suggestions to guide our individual decisions and lead us out of this man-made wilderness of stressful stimuli, what the ethologists call behavior “releasers”.

Hopefully, as well, we have come to understand why we must consciously choose to reduce our unsustainable corporate impact on the natural environment and our own population density stress on one another, by limiting our population growth and dramatically reducing our current population world-wide.

Avoid Unnecessary Stressors

Thus, at the risk of repetition, avoid unnecessary and extended exposure to stressful stimuli, especially those that are unpredictable, uncontrollable, overly upsetting, occurring too frequently, and potentially addicting, including:

stranger's faces, large moving objects in peripheral vision, loud noises, unpredictable noises, unfamiliar places, being lost and alone in strange places, competing for status and money, fear-conditioned worrisome ideas about uncontrollable occurrences and the media marketing that thrives on these triggering worries, physical or emotional injury, inadequate medical care, isolated habitation, over-work, status change, financial insecurity, estrangement from natural environments, predatory animals, violent or dangerous behavior, extreme cold or heat, heights and falling

sensations, drowning sensations, crowds, homelessness, environmental poisons, cries for help that we are powerless to respond to, disturbing images of sex or violence or danger or injury or natural disaster, sounds of sex or violence or danger or injury, excess alcohol or stimulants, pain, etc.

Choosing Life

So, specifically, we may choose some or all of the following life-style changes:

(1) Protect our brains, or stress systems and adrenal glands by wearing earplugs or sound cancelling headphones or earbuds, while listening to mostly calming sounds: laughing babies, water moving and falling, raining, nature sounds, meditation music, etc.;

(2) Avoid visual stimuli that trigger the Stress Response: crowds, television, “disturbing” movies, “sporting” events, moving automobiles, trucks, and rapidly moving objects of all kinds- stay out of automobiles and trucks; otherwise we’re inviting COASTER;

(3) For transportation: walk, ride a bicycle, take a train or subway or trolley or bus or ship or ferry or carpool, if we must travel;

(4) Choose non-addicting pain and anxiety remedies: soaking in an Epsom Salts (magnesium sulfate) bath (sulfur is naturally anti-inflammatory and non-toxic, non-addicting), try oral sulfur in the form of MSM (methyl sulfonyl-methane) for muscle and joint pain (our local health food store will have it);

(5) Ask our physicians to prescribe clonidine, magnesium salts, or very low dose serotonin releasing anti-depressants like escitalopram (5mgm at night), instead of Klonopin (or Valium, Serax, Xanax, Librium, Dalmane, Seconal, Phenobarbital, etc.);

(6) Get a massage and re-experience your body in a fully relaxed state, give a massage;

(7) Exercise, if possible, as it will release endogenous opiates, as will Yoga, Tai Chi, Pilates, dance, forest bathing, and a brisk walk or hike;

(8) Avoid status competitions, including vicarious gladiatorial combats, if at all possible, and consider demotions as often as promotions;

(9) Stay away from airplanes and their attendant stressors (no pun intended!): freeways, parking lots, airports, humiliating and intrusive stressful security searches, noisy public address systems, noisy over-flights (which do more to destroy the serenity of parks and other natural areas than any other human contrivance), long trips (unless by train or slow boat- the Queen Mary II takes 4 ½ days to cross the Atlantic from NY, NY to South Hampton, ENG), because, otherwise, we're promoting COASTER, sickness, and death;

(10) Avoid high fructose corn syrup (it's pro-inflammatory and not a healthy source of nutrition) and eat fresh vegetables with herb flavored yogurt dip when "stress eating";

(11) Avoid stress eating;

(12) Avoid strange places, stranger's faces, dark places, vermin, corpses, temperature extremes, crowds, physical or emotional or spiritual isolation, predatory animals, addictive high-output states like over-work, excessive sex, excessive exercise, excessive drug and alcohol use, etc., all of which promote COASTER;

(13) Avoid violence in any form, it's highly addictive and results in COASTER;

(14) Avoid money addiction, which promotes COASTER;

(15) Seek out minimally disturbed or restored natural areas and visit as often as possible, preferably alone, in order to focus on our relationship with Mother Nature, while leaving all stressful electronic distractions at home (or in the trash), so that we can actually hear the symphony of Nature, the music of the spheres;

(16) Go camping in one of our myriad state parks, national parks, county parks and private campgrounds, and hang-out with extended family and friends- reconstituting, temporarily, the migratory clan social groups of our ancestors;

(17) Play music and dance;

(18) Join emotionally , physically, mentally and spiritually focused support groups- remember, we are group dependent clan social animals;

(19) Spend time in and around water: walk on a beach, go swimming, fish, canoe , float down a stream in a tube, vacation on a sailing ship, or at least within the sound of ocean waves or running water, etc.;

(20) Get rid of the television, the game system, violent movies or DVD's, violent "sports" tickets; limit exposure to all disturbing media; and, above all;

(21) Avoid overly confident experts, including medical, who are unable or unwilling to discuss their findings and recommendations with us, in detail, until we are completely satisfied with their answers;

(22) Learn to meditate and pray and find the time to actually do it!

(24) Learn to monitor our bodies for signs and symptoms of COASTER: muscle tension, joint pain due to overly tense muscles crossing that joint, indigestion or "heart burn" or peptic ulcers, heart rhythm abnormalities or palpitations, stressed facial expressions, weight gain including lower abdominal girth, stress eating when not really hungry, any compulsive behavior entered into when stressed, avoid use of these expressions: "real quick", "in a second", "just a minute", "ASAP", "I'll be right back", "in a jiffy", etc.

(25) Breathe. We can always choose to take a "time-out", find a quiet safe place, and focus all of our attention on taking 10 deep even breathes of equal duration inhaling and exhaling.

This is a partial list, and the point here is not to crawl in a hole and never come out again, but rather to regain control of our Stress Responses, in order to reduce COASTER, live longer, happier, healthier lives while joining in a world-wide effort to reduce the human overpopulation otherwise exhausting us and the Earth.

Treating “Hurry Sickness”

Ironically, a similar list to that above can be found in the already mentioned 1974 Friedman and Rosenman *Type A BEHAVIOR AND YOUR HEART*. On pages 230-235 the interested reader will find “A DRILL AGAINST ‘HURRY SICKNESS’”, which contains 18 instructions for changing Type A behavior and relieving “Hurry Sickness” (n.b., and, thus, risk of coronary artery disease and heart attack). The list, which will not be reproduced here in full due to space limitations, concludes with item 18:

“18. Find periods each day during which you purposely seek total body relaxation and peace of mind. Since hundreds of thousands of Americans enthusiastically insist that their adoption of various Yoga-inspired techniques manages to accomplish just

these ends, you might be well advised to investigate one of these procedures.” (underling mine)

Nutritional considerations, including nutritional supplements are beyond the scope of this already bloated effort and the interested reader is encouraged to consult the many excellent publications available on the subject. A visit to our nearby health food store, their bookshelf, including James Wilson, PhD, nutritionist’s excellent section on the subject in *Adrenal Fatigue*; and the [www](#). will be very informative in this regard.

Designed to Be Stressful?

Had our ancestors set out to build the perfect, maximally stressful environment, they could hardly have been more successful than the fundamental elements of our modern “built” world:

automobiles and trucks (noisy, polluting, fuel inefficient, fast moving, inherently dangerous, constantly moving into and through unfamiliar territory, isolating us from and forcing us to constantly compete with our fellow drivers, financially threatening to purchase and maintain; crowded cities and sprawling suburbs (at once

over-stimulating and isolating); mass media (tuned directly into our attentional and stress systems to hold our attention and bombard us with the stressful content we have become addicted to for constant re-activation of our Stress Response and its numbing, pleasant opiates); representative government (a constant source of stressful stimuli and over which we are powerless to exercise any control, in spite of propaganda to the contrary); mass, one-size-fits-all “core” public and private education (almost totally dedicated to maintaining our unquestioning, mindless participation in the very culture that is killing us); air travel (the parking lots are heart attack mills, let alone the ticketing, security and boarding processes, constantly noisy, and how much control do we have at 30,000 feet?); commercial agriculture (keeping the population totally separated from the food sources and dependent on the petrochemical industry); The Medical-Industrial Complex (oblivious to the role of stress in our multitude of treatable stress caused illnesses and never getting at the root causes); the Military-Industrial Complex (absorbing more than 10% of the population and subjecting them to life-long COASTER- in the form of PTSD, while attempting to control access to a far greater share of the world’s dwindling natural resources

than our competitors in the rest of the world—the US Navy just proudly launched a new high-tech “stealthy” “destroyer” at a bargain basement price of only \$3B each); the media conglomerates (that “stream” stressful stimuli 24/7 directly into our insatiable ever vigilant brains); the financial institutions (that maintain the cathedrals of power and status, in which we dutifully worship); the sports industry (daily subjecting billions of eager participants to a nearly constant stream of stressful, addictive violence); the addictive substance or behavior industries (the numbing and stimulating industries: distilleries, breweries, pot dispensaries, drug stores, drug smugglers, coffee growers, coffee sellers, tobacco growers and merchants, etc.; and the pornography, gambling-casino industries); the Educational-Industrial Complex (see earlier description); and the myriad cultural mechanisms by which we incessantly justify and rationalize our over-stressed way of living and dying, as is typical of any good addict.

Phew!

Ahhh, nothing like a good rant to clear the pipes!



Nov05#05 Kastner Nailed.jpg (Command Line)

We need to learn to monitor the subtle and not so subtle physical and emotional sensations associated with our Stress Response and take conscious, willful control over our own environment, Stress Response, and equally important Relaxation Response. We need to learn active stress management and practice, practice, practice. Now, relax! Take 10 deep even “belly” breaths, of equal lengths, in and out! Now, laugh out loud, we are!

PROGRESSIVE RELAXATION

For those of us who have forgotten what relaxation actually feels like, we only need to consult the works of the early 20th century physician and research physiologist, Edmund Jacobson, MD, PhD, author of *PROGRESSIVE RELAXATION*, 1929, which includes the following conclusion on pg. 218:

“Accordingly, present results indicate that an emotional state (including the Stress Response) fails to exist in the presence of complete relaxation of the peripheral parts involved.” (italics and parenthetical mine)

Thus, if the skeletal and visceral muscles, automatically tensed when our Stress Response are activated, are then consciously put into a state of complete relaxation, through relaxation training of the consciously controllable skeletal muscles, the Stress Response is terminated, the parasympathetic branch of the autonomic nervous system is activated, our visceral muscles are also relaxed, and, thus, our blood pressure falls to a resting level. Personally, I am amazed every night how tense my muscles are when I lie down to sleep and that I must consciously relax them as I drop off to dream-time and restful sleep.

Thus, with relaxation training, COASTER is relieved and our stress system returns to a resting state, with all of the attendant health benefits of a relaxed state. To bring his laboratory findings to the general public, Dr. Jacobson published, in 1934, *YOU MUST RELAX, A Practical Method of Reducing the Strains of Modern Living*. This wonderful little manual describes, for the layman, Dr. Jacobson's discovery of "Progressive Muscle Relaxation (PMR)", and begins with Chapter I, "Modern Living", pg. 3 :

"Living at high tension has for a long time been the order of the day (written in 1934). Beard spoke of it as far back as 1880 (actually 1869) when he called attention to the prevalence of nervousness in this

country. Since then, with the advent of the express train, the telephone, the automobile, the radio, (“and the plane”-- added in the 1948 3rd edition!) and other agencies, it is well known that the general pace of life has increased.” (underlining and parentheses mine)

Frontal Lobotomy Cures Stress

Dr. Jacobson’s discovery has been further developed into a science of “biofeedback” technologies, which essentially measure our level of stress response arousal, as registered in our electrical skin conductivity, brain waves, and unconscious muscle tension. This technology appears to have reached its apex in “neurofeedback” machines and the practitioners who use them to treat a wide variety of stress conditions.

We wonder what the good doctor would think about our commercial jet airliners and airports, the i-Phone and e-mail, today’s super-highways and gridlocked automobile traffic, satellite media, the television, high-tech militaries, “and other agencies”?

To conclude this topic, we offer a stress disease remedy from Dr. Harold G. Wolff’s 1953 book, found on page 47 of *Stress and Disease*:

“Uncontrollable peptic ulceration in man has been constructively modified by frontal lobotomy (i.e., surgical destruction of the fibers connecting the frontal lobes of the brain to lower centers), in large part resulting in a better relationship between the individual and his environment rather than through specific effects on gastric function.” (underlining and parenthetical mine)

We hope that we do not need to explain our reservations regarding this doubtless effective therapy. Now, for more on the quiet nervous system that is naturally opposed to our Stress Response and COASTER.

49. THE PARASYMPATHETIC NERVOUS SYSTEM and THE RELAXATION RESPONSE

The autonomic (automatic) nervous system consists of 2 opposing branches, the sympathetic nervous system (SNS), which gets all the press coverage for initiating the Stress Response and COASTER, but is opposed by the parasympathetic nervous system (PNS), which has been little studied, at least with respect to its critical role in counteracting the Stress Response, turning off COASTER,

and the stimuli that trigger it. See the diagrams in the Appendix.

However, deep breathing (10 deep breaths, of equal length, with length of breath in same as out, or “block” breathing), vomiting, mindfulness meditation, Yoga, Tai Chi, Therapeutic Massage, Dr. Jacobsen’s PMR (Progressive Muscle Relaxation), Dr. Schultz’s Autogenic Training, biofeedback training, Dr. Herbert Benson’s generic meditation to induce the “Relaxation Response”, relaxing music, aroma therapy, etc., all have their well-known destressing activity, as a result of activation of the PNS, via the Vagus nerve and other parasympathetic sensory and motor nerve fibers.

Anatomically, the only organs in the human body innervated by the SNS, but not by the PNS, are the adrenal glands. Thus, the only mechanism to turn off the Acute Stress Response, must be primarily located inside the central nervous system (CNS), but may also consist of a combination of rapid peripheral metabolism of adrenaline, CNS inhibitory influences on the hypothalamic seat of the SNS, including excitatory glutamatergic input(s) from the cerebral cortex triggering inhibitory GABA inter-nuclei in the activating limbic system. Now, that’s a mouthful, so let’s try to explain more clearly.

These inhibitory GABA inter-nuclei in the amygdalae (see the heads on the two facing sea horses in the ancient brain image on the BACK COVER) operate like the “comb filters” well known in electronics and inhibit the release of the master stress hormone, CRH (cortico-tropin releasing hormone). This is the Master Switch of the entire Stress Response, so this controlling input from “higher” neocortical brain centers is fundamental to our ability to consciously control our emotions. Also, central to the auto-regulation of the Stress Response are Cortisol triggered hippocampal gluco-corticoid receptors (GR’s), which activate the PNS, and, eventually, further inhibit the SNS, at least until overuse wears them down and they no longer turn off the Stress Response! Then the negative feedback loop of the Stress Response becomes ineffective and COASTER runs amok, resulting in adrenal fatigue and failure. This is why, if we stay in a high stress state too long, it becomes increasingly difficult to get out of it, to relax, and we “burnout”: develop Adrenal Fatigue or even life threatening Failure.

The attentive reader may recall where this mystery began, with two 19th century Neurologists reporting their clinical findings of multiple cases of “Neurasthenia”: “nerve weakness”, “nervous exhaustion”, due to the increasingly stressful demands of life in early industrializing urban

America. These two early medical observers knew nothing of “gluco-corticoid receptors” (GR’s) or the autonomic nervous system, for that matter, but they were keen, honest observers and reporters of their patients’ maladies. We owe them much.

However, this arrangement anatomically insures a hair-trigger potentially life-saving Stress Response, far faster and more sensitive to activate than deactivate. Needless to point out, perhaps, is the obvious complexity of these neuro-hormonal pathways. Greater detail is beyond the scope of this book and of questionable benefit to its main thrust: mechanisms of population homeostasis and the health consequences of COASTER in our overpopulated world.

Thus, to repeat, we are brilliantly hard-wired with an automatic, autonomic nervous system, with two opposed sub-systems, beautifully designed to maintain a state of homeostasis (constancy), unless, and even if, challenged by a potentially dangerous internal or external threat stimulus, which, remember, means “dangerous” in a previous, prehistoric Hunter-gatherer natural environment. Please refer to Diagrams 3, 4, 5, inside the BACK COVER, for Googled examples of color illustrations of the autonomic nervous system.

The 6 page entry in Wikipedia on the PNS contains a single sentence regarding the “clinical significance” of the PNS, crediting it with promotion of digestion and restoration of glycogen supplies, and “allows for normal function and behavior”. It is, also, credited with “rest and digest” and “feed and breed” functions. The PNS slows the heartbeat, lowers the blood pressure, increases blood flow to the skin and viscera, increases upper GI tract motility, allows our pupils to constrict, etc. Thus, the PNS reverses those changes in our physiology caused by activation of the SNS, which are not inherently self-terminating.

Most importantly, activation of the PNS and concurrent inactivation of the SNS allows the restoration of normal daily Cortisol blood level fluctuations, higher from 3AM to a 7AM peak, falling to low baseline levels by mid-morning, and minimal throughout the following day, unless constantly increased by a re-triggering of the Stress Response, and the SNS.

Nothing could be more important to the study of, and research into, maintaining and restoring health in our species than identifying the behaviors and environmental stimuli (triggers) that activate the SNS and PNS, and, thus, counteract COASTER. No such research effort is known to

be underway currently. Anybody looking for a PhD topic, let alone a Nobel Prize?

Unfortunately, only one researcher, who we know of, Stephen Porges, PhD, has done and published any psychophysiological research in this area and developed his “polyvagal theory”, as a result, which includes a physiological measurement for the status and health of an individual’s PNS, by measuring the variability of heart rate (HRV) with breathing. Breathing-in activates the vagus nerve and slows the heart, the deeper the breath, the greater the slowing. COASTER is associated with tensed respiratory muscles and, thus, shallow breathing, which reduces this effect and is measurable. This phenomenon explains the calming effect of taking 10 deep even breaths to calm down and relax. Feel free to Google for details of his theory.

However, again, if you research the work done to date on identifying the environmental stimuli and behaviors that trigger the parasympathetic nervous system (PNS), you may be surprised to find precious little, although Dr. Jacobson’s PMR, Dr. Porges’ deep breathing, yawning, stretching, heat, and Dr. Benson’s, or any other brand of meditation and prayer, are recommended! Again, anybody out there

looking for a PhD thesis topic, potentially leading to dozens of bio-tech start-ups?

The Mind-Body Institute

Dr. Herbert Benson's Mind-Body Institute in Boston continues to research the "Relaxation Response" and to train both clinicians and researchers, but even they have only scratched the surface of this most important topic. Their website is bensohenryinstitute.org, and they are associated with Massachusetts General Hospital in Boston, Mass.

Dr. Benson clearly spelled out his technique of inducing the Relaxation Response in his 1975 book by the same name, but subtitled: *A Simple Meditative Technique that has Helped Millions Cope with Fatigue, Anxiety and Stress*". This 179pg. little book is definitely worth reading and using as a guide to a regular meditative practice which has been shown to engage the PNS, lower blood pressure, decrease the subjective experience of Anxiety, and generally counteract the Acute Stress Response and, thus, COASTER, as well as all of the health problems that result from it, if it is allowed to run uninterrupted.

Another excellent resource, with a very well-written printable 21pg. e-paper, “Relaxed and Contented: Activating the Parasympathetic Wing of Your Nervous System” by Rick Hanson, PhD, can be found at wisebrain.org. His group is located in Marin County, California. They have several free e-publications worth exploring and they have published numerous CD’s and books, focusing on Buddhist mindfulness meditation. They, also, sell monitoring equipment to allow us to study and improve our HRV, thus reducing COASTER.

Obesity

Tragically, another way to deactivate the over-active sympathetic nervous system, other than all of the previously discussed addictive substances and behaviors, is over-eating. It should not be shocking news that America and other “developed” countries suffer from an obesity epidemic. “Stress eating” is well known to most of us and can lead to obesity, associated as it is with numerous top ten killers including hypertension, atherosclerosis, heart attack, stroke, and diabetes, not to mention muscle and joint problems, social stigma, and a long list of

inconveniences. Recall, also, that elevated blood Cortisol levels, due to COASTER, result in abdominal obesity, and are a leading cause.

The exploding problem of obesity, including childhood obesity, is the topic of a well-done movie, “Fed Up”, and far too broad a topic to be adequately covered in this already bloated “essay”. An excellent, if fairly technical, paper entitled “Stress and obesity: the role of the hypothalamic—pituitary—adrenal axis in metabolic disease”, by Bose, Oliva’n, and Laferre’re, published online by HHS Public Access, contains the following short paragraph on page 3:

“The first evidence that cortisol levels may be related to obesity and metabolic disease was based on clinical observations of Cushing’s syndrome; the pathological hypercortisolemia in Cushing’s syndrome is associated with UBO (upper body obesity), glucose intolerance (IGT), and hypertension. Adrenalectomy in Cushing’s syndrome patients reverses IGT and obesity”.

(underlining mine)

The final take home point for the purposes of this book, however, is that obesity may well be caused by COASTER and, ironically, our urge to calm down from overwhelming stress, releasing the neurotransmitter serotonin

(95% of which originates in the gut!), during stress-eating already driven by cortisol and the endogenous opiate neuropeptide Y. Prolonged starvation activates the stress response and floods us with adrenaline but, also, endorphins and other endogenous opiates, which may be a means of self-medicating away fear and pain. This may be the mechanism driving Anorexia Nervosa.

A brand new National Center for Health Statistics report, available on the net, gives the obesity rate for those of us Americans over 20yo as 39.6%, which is a 31% increase over the past 17 years. The trend is ever upward. For youth 2-19yo, the trend is flatter and the current rate is 18.5%. The authors make no effort to explain the cause, but readers of this book may well guess COASTER, and that's where our money is!

So, we over-eat and self-medicate with unnecessary food, or starve ourselves, to supplement and compensate for our over-taxed parasympathetic nervous system, just like every other addiction.

Again, the solution to this over-whelmed parasympathetic nervous system and addiction problem is better stress management, with a new understanding of population density stress, re-connection with nature,

reconnection with our ancestral social support systems, and necessary life-style changes already covered earlier but, necessarily, including one-child families.

50. SUMMARY and REVIEW

Summarizing the crux of the lessons taught to me by my 25,000 patients over 42 years of clinical psychiatry practice, most of whom were desperate, is an impossible task, but I promised to try.

My patients demanded that I write down and attempt to share with a wider audience the discoveries that we made together, incorporating every possible information source. Working together, we pulled out our common human problems by the roots and planted seeds of hope for ourselves, humanity at large, Mother Earth, and Her great diversity of fellow life forms. It was often a painful process and many tears were shed, theirs and mine. However brief our course of treatment, we did not quit until an effective treatment had been found and their symptoms relieved. Medications and tincture of human kindness helped, but the courageous efforts made by the patients themselves, armed with a deeper understanding of the true nature of their anxieties, mood problems, and all

manner of physical maladies, led to the life-style changes that were necessary for the long-term relief of their suffering.

Clearly, the basis of necessary life-style change and its accompanying psycho-spiritual reconfiguration originated with the patient. At all times, and irrespective of the facilitative skills of the therapist, change did not occur until the patients told themselves out-loud the exact nature of their own necessary life-style changes.

True insight is a personal experience, however guided by our better angels. We literally must admit, out-loud, to ourselves the changes we need to make in our own life-styles for emotional and spiritual progress. All change requires work, and is often accompanied by more tears, and laughter. However, with hope and a deep sense of the spiritual foundations of all life, anything is possible.

The successful reader, as he or she journeyed and struggled through the preceding broadly arrayed, all-encompassing 51 TOPICS in 600 plus pages, dictionary at hand, probably straining to recall high school biology, and Googling until the CPU overheated, has travelled a great distance in conceptual space. The story was laid out in,

hopefully, byte-sized morsels to allow digestion without too much gastric distress, or sick headache. The technical neuro-physiology of the stress system was repeated several times throughout this piece, in order to allow digestion and memory formation.

A review of the 51 TOPIC headings at the beginning of the essay is the best summarizing and reviewing tool that I can recommend, and the reflective reader may wish to turn there now. You may have noted that critically important information was repeated two or three times, in varying contexts, the names of critically important contributors and concepts have been capitalized or underlined and cross-references have been supplied, all to assist the time-pressed non-scientific reader to pick-up the most important information as painlessly as possible.

To Review

To review, succinctly put, Part 1, the first 20 TOPICS, encompassed the lessons learned from our patients (and my own life experience) concerning: family life and the causes and cures of the medical diseases that are killing us, the knowledge gained from the study of ancient and pre-history, and the work of the early 19th century stress

researchers. Then we proposed the true causes of anxiety and clinical depression, many of the dementias (short-term memory loss), the true nature of addictive disease, as well as some of the successful pharmacological treatments we discovered.

Part 2, the next 10 TOPICS, 21-31, addressed the biological issues of population density stress and its function as an ecological regulatory mechanism; the role of territory and its modern cousin, conceptual space, in our population explosion; the biological functions of social status hierarchies; the little recognized epidemic of adrenal fatigue (illustrated on the FRONT COVER); the resultant destruction of the biosphere and climate change.

Part 3, TOPICS 32-46, approach suggestions for our salvation from ourselves, including necessary reappraisals of our treatment of women, the homes we live in, the ways we travel, the ways we grow food, our water supply, money as God, workplace stress, Nature as God, some hypothetical stress related causes of cancer, and the death of education in an age of “training”. TOPIC 47 addresses our media addiction.

Part 4, Topics 48-51, explore stress management, the little mentioned or studied parasympathetic nervous system

and the relaxation response, culminating with this summary, review, and conclusion.

You Take Over From Here

Hopefully, if the reader's curiosity has been stimulated, he or she will find the numerous references to seminal works by the many pioneers who have preceded us, to be worthy of seeking out and reading in their entirety, whether from a library or online. If you do so, our goal has been met and you may take over, where we have left off. These references are traditionally listed at the end of scientific papers, but, in this essay, they are folded into the text, listed in a parallel "Running Bibliography", and the reader has been encouraged to seek them out at the time, or make his or her use of the Running Bibliography as a guide. Please forgive our non-traditional, purposely non-"scientific" approach. Legitimately formatted "scientific" works are frequently cited but never approach the broad scope of this current effort. Title pages have been provided in select cases, as visual references.

The illustrations are by John Kastner, of Rochester, NY, and assorted artists, often unnamed and, thus, unidentifiable.

For a summary, we have chosen 3 quotes from one of our all-time heroes, Prof. Edward O. Wilson, well-known Harvard naturalist, taken from his wonderful little 2002 book, *THE FUTURE OF LIFE*, and found on page 29:

“The pattern of human population growth in the twentieth century was more bacterial than primate. When *Homo sapiens* passed the six billion mark we had already exceeded by as much as a hundred times the biomass of any large animal species that ever existed on land. We and the rest of life cannot afford another hundred years like that.”

Then on page 133, Prof. Wilson states:

“To summarize: a sense of genetic unity, kinship, and deep history are among the values that bond us to the living environment. They are survival mechanisms for ourselves and our species. To conserve biological diversity is an investment in immortality.” (underlining mine)

Finally, Prof. Wilson addresses a core theme of this paper, Preventive Medicine, on pages 140-141, with the following:

“The implications of biophilia (i.e., love of all life) for preventive medicine are substantial. The biophilic instinct can be counted as one of humanity’s fortunate irrationalities, like women’s choice to have fewer children when economically secure, that deserve to be understood better and put to more practical use. It is a remarkable fact that while average life expectancy in the leading industrialized countries has risen to nearly eighty years, the contribution of preventive medicine, including the design of healthful and curative environments, has remained far below potential. Obesity, diabetes, melanoma, asthma, depression, hip fracture, (hypertension, heart disease, dementia, addiction, prostate and) breast cancer, all have risen in frequency since 1980. Further, despite advances in scientific knowledge and public awareness, neither coronary atherosclerosis among young people nor acute myocardial infarction among the middle-aged and old has declined. *All of these conditions can be delayed or even avoided by preventive measures that include, in most cases and to the point I wish to make, a reconnection to the natural world.”*
(underlining, parentheses, and italics mine)

We could not have said it better.

51. CONCLUSION

The unwillingness of this darned “word-processor” (I thought my marvelous human brain was my word-processor!) to allow me to finish this essay until I was, finally, able to out-process it, is symptomatic of what has happened to modern men and women and is or will be our undoing, if we let it. My failures to out-process WORD are notable in the mysterious shrunken blue paragraphs scattered throughout this book, for instance. We have come to depend on ever deeper layers of physical and symbolic technological infrastructure to make our lives easier and more stimulating, but those same modern luxuries have elevated our Cortisol levels, often taken control of our work, and isolated us from Nature, our own included.

Unknowingly, we have wrapped our exploding numbers in a cloak of physical and symbolic contrivances created in a seemingly never ending Sisyphean attempt at surmounting the always unstable labyrinth of overlapping status hierarchies we are compelled to constantly compete in. Sisyphus, by the way, was condemned by some

celestial grieved authority-figure to push a large boulder up a cone-shaped mountain, always resulting in the boulder slipping from his grip near the top and rolling all the way back down the mountain, where he was condemned to shoulder his impossible burden over and over again, for eternity. We can relate, how about you?

Lost Our Grip on Reality?

We have lost our grip on nature's reality, the true reality of our planet Earth, we are experiencing an unprecedented human population explosion, and, as a direct result, approaching a cataclysmic population collapse, and, perhaps, a biosphere collapse. The solution to avoiding this on rushing calamity is not more Thorazine.

The solution is so very simple: face scientific reality and limit our reproduction to one child per couple, which will cut the human population on earth dramatically, in one generation, and save our children and grand-children from ever more horrible fates due to "misery and vice". It really is just that simple—one child families.

We may truly be near the Biblical "end of times"; maybe the Mayans were right; maybe the UN IPCC and Club of Rome are right. There is still time, we believe, but

it's running out rapidly. We must take action, as moral individuals, as clans, as communities, and as larger polities! If we do not correct our present course, disaster lurks ahead. Any questions? Any suggestions for our salvation? One thing is for certain, all possible solutions start with us, as individuals.

Most simply, we must limit our contribution to the enormous burden of our human population on earth's other species and natural resources. When we live in groups, we can share children and their care vastly improves, as well as their opportunities for learning from many of us, not just their isolated Nuclear Family.

But we love children and want some of our very own. Again, in our ancient social context, there were always children around and we were equally responsible for their care and protection, as a critical responsibility shared with the other members of our group. All children were a group responsibility and we would have had all the contact with children that our hearts desired!

Native American dwellings, east of the Mississippi River, at the time of the arrival of the first European immigrants in the 16th century, were all large communal

Longhouses, in which the native peoples were never far from children, or their constant needs, or their laughter and joy. We might, also, wish to admit that the diseases those white men carried with them decimated 95% of the native population in a few short years. A wonderfully researched but painful book documenting the decimation of the indigenous peoples of the Americas by European diseases, for which the native peoples had no resistance, is Charles C. Mann's 1491: New Revelations of the America Before Columbus, 2005, 2011.

Perhaps most instructive for the purposes of this book is the power of modern sanitation, water purification, and medical technology, to prevent such huge population die-offs in our modern populations. This is our blessing, as well as our curse, and may be the primary cause of our massive over-population of the earth.

Want Contact with Children?

So, if we want contact with children but, also, want to protect Mother Earth and our entire biosphere from further human degradation, we can volunteer our time with neighbors and family who have children and need the help. Volunteer at any number of civic organizations

involved with various aspects of childcare: schools, playgrounds, swimming pools, campgrounds, nature centers, community centers, churches or temples or mosques, school crossing guards, school bus drivers, playground monitors, classroom aides, battered women's programs, our grandchildren or those of a friend/neighbor, and any of a myriad of other situations, in which those of us shouldering the tremendous cost (\$380,000 each, up to age 18 only!) and responsibility of bringing even one more child into this uncertain world need all the help and support we can possibly find.

In *The Baby Matrix*, author Laura Carroll provides this astute socio-political analysis of the driving forces behind pronatalism, on page 16:

“Social controls are still in place for survival and power. Today, three realms greatly benefit from the perpetuation of pronatalism. Keeping pronatalism alive guarantees that government, the church, and businesses will continue to flourish and gain power. Government wants to encourage births so tax bases will grow, which ensures its survival and continued power. The church wants its adherents to cherish childbirth and parenthood so that the church can gain

more followers, which ensures its survival and continued power. More than ever today, business reaps the rewards of a pro-baby, pro-parenthood society because it supports the growth of capitalism. Pushing pro-baby values because of the demand it creates for products and services brings big profits to business. These power realms work to keep pronatalist norms in place and promote reproductive conformity.” (underlining mine)

We Hope and Pray

We hope and pray that this present work, on the true nature of growth limiting population density stress, human illness, and environmental collapse is equally eye-opening!

Bottom Line: Mother Earth cannot possibly support our current human population indefinitely, let alone the 2 billion additional humans expected in the next 30 years, due to our rate of depletion of natural resources and our resultant population correcting ill-health. Our excessive numbers are already pouring across international borders and dangerous seas in the many tens of millions, as refugees escaping from the population pressures of one

intolerable depravation, injustice or another, not to mention man-made climate change and rising sea-levels.

Natural, long standing population regulation mechanisms are already in play and limiting our population growth in the developed world. This monograph has been devoted to an explanation of these mechanisms and possible life-style changes that can preclude the severe, tragic, cataclysmic consequences of inaction.

Now we must decide whether to bring more than one more child onto an already over-crowded and rapidly exhausting, finite planet, or share the joys and sorrows of childbirth, parenthood, and child-rearing with friends, neighbors, and family, while consciously limiting our own reproductive activity. I know, personally, how difficult this decision can be, but consider the alternative, total devastation of Mother Earth and accelerating cataclysmic population collapse, currently picking up speed through COASTER.

Thank You!

Thank you for the courage and curiosity to have read some or all of this monograph. It is an honest summary of my life's work and what my patients taught me. I hope

and pray that it helps guide our retreat from the precipitous edge of the known world and of over-population calamity, before we sail our ark over, into oblivion.

And thanks, again, to the 25,000 patients who, over 42 years, invited me into the stories of their lives, with all the tears and laughter (theirs and mine), and our eternal struggle to alleviate human suffering, one soul at a time (theirs and mine).

Thank you to all those brave, hard-working, devoted, humane students of science and compassionate medical and psychological practitioners and dedicated scientists who preceded me and left their examples and writings to guide my work, including:

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attendees at my PLATO courses, and too many more to mention here, to whom I apologize for omitting.

Finally, we thank our Higher Powers: the Father Creator, Mother Earth and all of our Guardian Angels. This work has been more a broad, clinically based, old-time revelation than a sterile, narrow, reductionistic, academic production, and we do not apologize. We hope and pray that we have gained a view of the “forest”, as well as the “trees”, which the ever more stringent and constraining confines of academia often ignore totally.

Minutiae and the form of a presentation don't matter, if they don't help flesh-out the larger picture, but overly broad “just so” pseudo-theories and unfounded glitzy generalizations are equally useless, if unsupported by well controlled experimental evidence, or, as in the case of an astute medical practitioner, a massive amount of anecdotal individual case studies.

However well-crafted a single piece of a puzzle may be, it is still just that, a single piece of a much larger whole, and cannot form a complete picture by itself alone. Equally important, however, is the necessity of supplying adequate experimental and observational data to

substantiate what otherwise are only vague, all-encompassing generalizations.

Hopefully, the reader can now view the entire puzzle, in all its parts as a whole, in order to make his or her current and future life-style choices accordingly.

Judd Marmor's "Population Density"

We would like to borrow the late psychiatrist Judd Marmor's summary from his contribution to John Calhoun's one amazing book, *Environment and Population: Problems of Adaptation, AN EXPERIMENTAL BOOK INTEGRATING STATEMENTS BY 162 CONTRIBUTORS*, a piece entitled "12-4 Population Density", 1983, pp 305-308, which includes, on page 308, the following:

"12-4-13 In summary, although it is difficult to clearly pinpoint population density as a cause of human distress in and of itself, there seems to be little doubt that in the world as we know it, major increases in population density tend to be accompanied by a wide variety of other manifestations that are clearly destructive to human dignity, well-being and the quality of life. Increased stimulus input and noise levels, competition for limited resources with consequent

heightening of intra-social aggression, loss of privacy, impairment of intimacy, and lowering of economic security with all of its destructive consequences can pose as great a threat to human survival as does the nuclear bomb. Mankind cannot afford to ignore the ultimate explosive threat that both of these problems pose to human survival." (underlining mine)

Niko Tinbergen's Nobel Prize Speech

Finally, we would like to close with a quote from ethologist Nicholas Tinbergen's 1973 Nobel prize acceptance speech, "Ethology and Stress Diseases", published in the journal *SCIENCE*, VOL. 185, pp 20-27, 5 July, 1974, in which he stated on page 26:

"Medical science and practice meet with a growing sense of unease and of lack of confidence from the side of the general public. The causes of this are complex, but at least in one respect the situation could be improved: a little more open-mindedness, a little more collaboration with other biological sciences, and a little more attention to the body as whole and to the unity of body and mind could substantially enrich the field of medical research. I therefore appeal to our medical colleagues to recognize that the

study of animals (including the human animal!)—in particular “plain” observation—can make useful contributions to human biology not only in the field of somatic malfunctioning, but also in that of behavioral disturbances, and ultimately help us to understand what psychosocial stress is doing to us. It is stress in the widest sense, the inadequacy of our adjustability, that will become perhaps the most important disruptive influence in our society.”
 (underlining and parenthetical mine)

Toffler’s *Future Shock*

Futurist Alvin Toffler, in his earlier quoted 1970 book, *Future Shock*, concludes, on page 416:

“By now the accelerative thrust (of technologically driven environmental change) triggered by man has become the key to the entire evolutionary process on the planet. The rate and direction of the evolution of other species, their very survival, depends upon decisions made by man (which, I argue, must be on an individual basis!). Yet there is nothing inherent in the evolutionary process to guarantee man’s own survival.

Throughout the past, as successive stages of social evolution unfolded, man's awareness followed rather than preceded the event. Because change was slow, he could adapt unconsciously, "organically." Today unconscious adaptation is no longer adequate. Faced with the power to alter the gene, to create new species, to populate the planets or depopulate the earth, man must now assume the conscious control of evolution itself. Avoiding future shock as he rides the waves of change, he must master evolution, shaping tomorrow to human need. Instead of rising in revolt against it, he must, from this historic moment (1970!), anticipate and design the future." (underlining and parentheses mine)

We suspect Mr. Toffler, now in his late 80's, is disappointed with our progress designing a sustainable future for ourselves and the biosphere.

We continue to wait for divine salvation, or bureaucratic intervention from on high, rather than realizing that we must take personal responsibility for reappraising our individual impacts on this fragile Earth, including our "carbon footprint", and setting out anew on a sustainable path for the future.

John Calhoun's Last Word

In final closing, we offer a quote from John B. Calhoun's article in the *Proc. Roy. Soc. Med. Volume 66 January 1973*, entitled "Death Squared: The Explosive Growth and Demise of a Mouse Population, who stated on page 86:

"For an animal so complex as man, there is no logical reason why a comparable sequence of events (i.e., to the population sequence in his mouse utopia) should not also lead to species extinction. If opportunities for role fulfilment (i.e., jobs, positions of status in hierarchy) fall far short of the demand by those capable of filling roles, and having expectancies to do so, only violence and disruption of social organization can follow. Individuals born under these circumstances will be so out of touch with reality as to be incapable even of alienation. Their most complex behaviours will become fragmented. Acquisition, creation and utilization of ideas appropriate for life in a post-industrial cultural-conceptual-technological society will have been blocked. Just as biological generativity in the mouse involves this species' most complex behaviours, so does ideational generativity for man. Loss of these respective complex behaviours means death of the

species (i.e., extinction)” (parentheticals and underlining mine)

Many invited professional readers of this work have criticized its structure, while failing to comment on the far more important content. Better chance of improved status?

Let us be blunt. This work summarizes a science-based “end of time” scenario already at work in our own individual bodies and endocrine systems, a ticking physiological time-bomb, and is based on exhaustive research across multiple disciplines encompassing our entire ecological impact on Mother Earth.

Only one second-hand email has actually spoken to the content, and it came from a published but non-medical author:

“I read the piece, and believe it has incredible potential to reach a lot of people who could use this message. (Love the attached art, by the way!)”

The dozens of medical and other “experts” sent early complimentary review copies of drafts of this work apparently did not believe that the “general public” can

either understand or comprehend its message. But, then, they only commented on and criticized the form of the work, but did not comment on the content. The form has since been greatly improved, without resorting to expensive “expert” editors, who no doubt share the medical expert’s distrust in the intelligence of the average American high school graduate. We do not agree! These “experts” are a huge part of our problem and should no longer be trusted to interpret our vision of reality or guide our day to day life-style decisions. You, the reader, are our judge, jury, and most important critic.

We pray that you have found the information presented here helpful for your future stress management decisions and revision of the world-view that guides those critically important daily lifestyle choices, including, most importantly, family size, carbon footprint, and resource consumption.

May we all find peace, grace, meaning, and true fulfillment, as the compassionate stewards, devoted students, curious “plain” observers, and joyous fellow inhabitants of our miraculous “Spaceship Earth”, our “Pale Blue Dot”.

THE END? THE NEW BEGINNING?

BULLET POINTS:

1. Our ancient stress response is chronically over-active (COASTER), which we came to see as a major component of “population density stress”, due to our built-world filled with population density stressors, our separation from Nature by the “built” world, and the loss of our ancestral Hunter-gatherer clan social structures. It is the chief contributing cause of nearly all current human illness.
2. In animal models, a chronically over-active stress response (COASTER) appears to prevent overpopulation and “overshoot” of carrying capacity, as a result of disease promotion, reduced reproduction, and, finally, “the kill-switch”.

3. Were it not for modern medical interventions, improved sanitation, waste management, water purification, and unsustainable natural resource extraction, the vast majority of us humans alive today would have been eliminated from our bursting populations many times over.

4. We have been supporting our huge human populations by unsustainable, non-renewable natural resource extraction for hundreds, if not thousands, of years and are reaching the point of totally exhausting earth's ability to keep us alive.

5. We cannot possibly morally or religiously justify our monopoly of earth's resources to the exclusion of all other life-forms on the planet—the 6th mass extinction of all other life on earth.

6. We are by nature highly social, nearly genetically identical clan social animals. The

human population on Earth was stable at about 4-6-10 (by varied estimates) million when we thrived as clan-living hunter-gatherers. Clan living and the migratory lifeways necessitated constant contact with, and protection of, each-others' children and we kept our families small. We have lost this control today.

7. Only we humans, by individual action, can limit our family size to an average of one child, thus reducing world population size to 2.5 billion by 2100, and reduce our personal excessive consumption of natural resources. Recycle, join a resource sharing clan social group, reuse, buy local, support local organic agriculture; avoid all unnecessary petrochemical, plastic, electrical, and water use, etc., restoring balance to the ecosystem.

It is not already too late but immediate

action is mandatory, if catastrophe is to be avoided. Population density stress is already killing us off, as Mother Nature intends when a species is overpopulated. It's only a matter of time before we're next to be eliminated by COASTER.

AFTERWORD

From then Senator Al Gore's important book *EARTH in the BALANCE, Ecology and the Human Spirit*, 1992, I quote the following from its closing pages, 367-368:

“If it is possible to steer one’s own course—and I do believe it is—then I am convinced that the place to start is with faith, which for me is a kind of spiritual gyroscope that spins in its own circumference in a stabilizing harmony with what is inside and what is out. Of course faith is just a word invested with personal meaning; my own faith is rooted in the unshakeable belief in God as creator and sustainer, a deeply personal interpretation of and relationship with Christ, and an awareness of a constant and holy spiritual presence in all people, all life, and all things. But I also want to affirm what people of faith from long ago apparently knew and that our civilization has obscured: that there is a revelatory power in the world. This is the essence of faith: to make a surrendering decision to invest belief in a spiritual reality larger than ourselves. And I believe that faith is the primary force that enables us to choose meaning and direction and then hold to it despite all the buffeting chaos in life....

For civilization as a whole, the faith that is so essential to restore the balance now missing in our relationship to the earth is the faith that we do have a future. We can believe in that future and work to achieve it and preserve it, or we can whirl blindly on,

behaving as if one day there will be no children to inherit our legacy. The choice is ours; the earth is in the balance." (underlining mine)

This is an excellent description of the "faith" by which our book is written.

How would you, the courageous reader, describe our progress in the 25 years since this was written by Senator Gore? So, do we continue to "whirl blindly on, as if one day there will be no children", or work to achieve a viable future for our children, our children's children? World population in 1992: 5.5B. World population in 2017: 7.4B. World population predicted in 21 more years, 2038: 9.7B, another 33% increase, at current rates of reproduction and death. Carrying capacity of Mother Earth for humans, if we are all vegetarians, according to E.O. Wilson: 9.3B, not to mention our exponentially increasing "misery and vice" and retreat into avoidance of dominance competitions over scientific truth.

We will either develop an appropriate level of life-style changing devotion to the future of all life on earth, and voluntarily limit our nuclear family size to one child on average, or our children's future is dark, indeed, The choice is ours and ours alone, at least until Mother Nature makes the decision for us, which She already has started to do. The extinction clock is ticking. Tic, tock, tic, tock, tic, tock, tic,....?

What do we owe our future generations, if not wisdom and a healthy planet?

DOMINION?

And from natural historian and curator, Niles Eldredge, this quote, found on the last page, 176, of his 1995 *DOMINION, Can nature and culture co-exist?* You may find this, in his "AFTERWORD, A New Story":

"The People acknowledged their true past and their newfound problems. They decided to use the very same tool that had brought them along so far: their cleverness. They saw that all creatures---including the People---face limitations and depend on the natural world.

The People decided to curb their population numbers. They determined to curtail environmental damage and the loss of other species. They decided to conserve the world's remaining ecosystems. And they embraced sustainable development, matching economic growth to the carrying capacities of their surroundings.

The People lived. And it was very good."

