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Free Will vs Predetermination

Grandchildren often ask the question, “What things would you change if you had your life to live over again” and “have you ever made decisions you regretted.” Of course, looking back through the retro-spectiscope gives one a biased view of the past and how your decisions may or may not have been the best. However, I am uncertain if I could have or, for that matter, would have changed any of them.

I do remember having thought seriously about buying 100,000 shares of Fifth-Third bank stock during the crash of 2008 when it was a dollar share, but my risk adverse personality trumped that notion. Most of life’s choices are made within the context of the background noise of our emotions, mood and maybe the underlying chemistry of our brain rather than objective reasoning. A case in point is the philandering executive or elected official whose career is decimated by adulterous activity. Was the temptation so great that he or she did not have the free will to resist or was this dalliance predetermined by a chance encounter?

As I have grown old, I have come to the conclusion that free will is somewhat of an illusion. This may sound overly cynical but I think most of the pathway through life is predetermined by our internal physiology and external circumstances rather than a human’s free will to choose.

When I was an undergraduate at Dartmouth College my classmates and I often had lengthy discussions concerning whether a human had ‘free will’ or whether everything was ‘predetermined’ in life. As a college undergraduate who was raised in a religious Republican household within the framework of a homogeneous white culture, I took the position that one had free will and that life’s journey was far from

preordained. Plus, I argued that the American dream was within everyone's grasp and that disadvantage came only because individuals were lazy and lacked initiative. At the time like many sophomore college students I was idealistic and sorted issues as black or white, and good or bad but rarely nebulous, amorphous or unsolvable. As in Robert Browning's famous poem; I thought "God was in his heaven and all is right with the World."

My college roommate and other classmates occasionally took opposing views in this debate. Some professed a degree of fatalism with an attitude of resignation to inexorable future events. This temporary form of college nihilism in which life lacked real meaning and nothing makes any difference is quite common in undergraduates transitioning from the home nest of dependency to the challenges of independent adulthood.

In the philosophy classes within the ivy halls of academia, invariable a discussion about life's meaning surfaces with no definitive answers. And this uncertainty is most acute during the college years when science challenges religious beliefs and young adults have to confront the intricacies of romantic and sexual relationships. Also, this time coincides with the maturation of the executive functioning of the frontal lobe of the brain and the amygdala nucleus that is the emotional command center of the brain. These two areas of the brain play a major role in development of mental disorders or psychoses that often surfaces within these formative years.

Looking back, these discussions about free will are still quite relevant today. However, the rapidly expanding body of scientific knowledge has changed the guidelines for the dialog that used to center on faith, conjecture, religious beliefs, textbook philosophy, and family cultural values.

Let's first view free will versus predetermination from an internal perspective or what native gifts we are born with versus the influence of external environmental factors that we will discuss later.

In 1956, the double helix of genetic DNA or deoxyribonucleic acid was reported and the karyotype or separation of the 46 individual human chromosomes accomplished. In 1966, the molecular make up of genes was found to consist of the sequencing of four amino acids: namely adenine, guanine, cytosine and thymine plus a sugar deoxyribose and a phosphate backbone or linkage. The human genome consists of three billion of these nucleotides or "letters" and most all of the 60 trillion cells in the human body contain a complete copy of this genome. Because our inherited genetic code is essentially fixed at conception, it is the strongest argument for predetermination.

Intrauterine fetal development must also play a major role. Six days after fertilization of the ova by the sperm the resulting blastocyst that comprises 200–300 cells implants in the wall of the uterus and then the explosive growth of the embryo takes place culminating in a live birth. Sixty years ago the placenta was considered an efficient barrier against damaging influences from the mother. However, in 1961 when Thalidomide was observed to produce infants without limbs this changed and it increasingly became apparent that many drugs, alcohol, tobacco and maternal factors played a profound role in fetal development and the epigenetic turn-on or expression (acetylation or methylation) of various genes.

A case in point is sexual orientation. Medical science strongly suggests that sexual orientation relates to gestational factors that include hormonal influences and maturation of the genital ridge in utero. This explains why gender dysphoria or homosexuality is most likely predetermined rather than an acquired orientation. I know when I was

very young that girls were special and I was enchanted after dancing with girls in the 5th grade. I think homosexuals experience the same inherent feeling toward the same sex.

Internal Systems that are original equipment:

The human organism has a broad range of glands that secrete hormones that influence behaviors. In large part this array of hormones is regulated by the pituitary gland called the master gland that resides in the brain and is the **size** of a pea and weighs about a half a gram. Thyroxin regulates metabolism, and the adrenal hormones influence ones stress responses. Oxytocin is called the love hormone, and leptin and ghrelin regulate appetite and food intake. Moreover, the mixture of bacteria in the gut called the microbiome secret substances that may be related to hypertension and obesity and a variety of other disorders. These substances self-regulate.

In addition to the voluntary nervous system that we can directly control like motion and movement, there is the involuntary nervous system or sympathetic nervous system. These neural pathways regulate the thousands of bodily function that go on automatically behind the scene. Your life style and medications may modify this homeostasis or a stable state, but these genetically automated controls make us humans subservient to their default regulatory functions.

In the brain we find a number of neurotransmitter chemicals that are released from nerve cells that conduct electrical impulses across synapses. These small molecules include acetylcholine, dopamine, gamma - aminobutyric acid (GABA), glutamate, histamine, norepinephrine, and serotonin. Each profoundly influences our behavior. We all are most familiar with dopamine which is a pleasure or reward neurotransmitter and serotonin that influences mood.

Some medications can increase or block the actions of these neurotransmitters, but in general they are beyond voluntary control.

The scientific study of serious mental illness that afflicts 2-3 percent of the human population in the form of schizophrenia, bipolar disorder and psychotic depression is in its early stages. The occurrence of psychosis usually does not relate to environmental factors as it strikes randomly often within a population of some highly talented and potentially productive individuals. These victims did not choose to be mentally ill.

During recent years scientists have been trying to unravel the mystery of consciousness and in what areas in the brain are responsible for how we think, retain information, create and react to a wide variety of stimuli. Functional magnetic resonance imaging (fMRI) is in the forefront of this scientific research and it measures blood flow that increases in those areas of the brain processing information. These techniques can grossly localize brain activity but most emotional or physical stimuli light up multiple locations in the brain and these vary greatly between individual subjects making explicit scientific interpretation difficult. The primary reaction to either stressful or pleasant stimuli seems to be localized in the amygdala, and areas of the prefrontal cortex. Long and short memory is pretty well localized to the region of the hippocampus.

Historically, brain activity was assessed using the Electro-Encephalogram (EEG) that measures electrical output of the brain waves. The five types of waves produced are Delta, Theta, Alpha, Beta and Gamma that appear on a continuous graph and look like the scribbling of a child just learning to draw. To enhance the usefulness of measuring brain waves and localizing the functions of small areas in the brain, today's researchers are using hundreds, even thousands, of microelectrodes to try to measure electrical activity in specific groups of neurons.

We do know that the brain functions as an analog system rather than a digital system. This by definition is using signals or information represented by a continuously variable physical quantity such as electrical voltage dependent upon many moving parts that continuously change.

In recent scientific papers, there is discussion about combining the functions of the analog brain with the artificial intelligence within the digital universe. Phrased another way, you might say they have a goal to construct the analog functioning man or woman with a hard drive of artificial intelligence and computing power. Theoretically, this amalgamation of the digital and analog human being would be able to outthink the next generation of humans and their robotic friends. My prediction is that the 100 billion neurons in the human brain with stem cells continually contributing new brain cells are going to have difficulty adjusting to the binary language of the digital world. I suspect that advanced robots will remain a separate species as machines distinct from humans.

The human brain changes throughout life and exhibits what the scientists call neuroplasticity where different parts of the brain can substitute for other parts. Historically, it was thought that neuroplasticity was confined to children and young adults but today it is recognized that the brain is dynamic and that new brain cells are created by stem cells throughout life.

Considering what we know today about the chemistry and structural framework of the brain, it would appear that the brain is just a chemistry lab and an electrical engineering masterpiece that dictates how we act and react. It supports the view that our actions are just chemically induced electronic impulses that in a predetermined fashion dominate and possibly supersedes free will.

All of this new science makes it comforting to revert back to the simplistic notions of Freudian and traditional psychology. In that framework there was the id, the ego and the superego as well as the oral, anal and phallic phase of childhood development. Plus the psychological defense mechanisms were described with such terms as suppression, repression, regression, over-compensation, hysteria, phobias, rationalization, conditioning and paranoia.

In psychiatry the model of psychoanalysis espoused by Freud has been replaced with Behavioral Modification Therapy as the primary approach to psychotherapy. You would assume that with the improved success rate with Behavioral Modification Therapy that it would support the argument that humans have free will to modify their behavior. But most mental health professionals acknowledge that conditions like drug addiction, obsessive compulsive disorders, neurosis and personality disorders are very resistant to change.

Thus far we have dealt with the inner workings of the human organism as it relates to free will as opposed to predetermination. Now let's view the subject from the outside or external influencers and environmental factors.

In my life, I have observed that every year seemed quite different from the prior one, and this generalization held true with regard to family, career, health, social friendships and so on. Change was the only certainty and each year could be compared with Schumpeter's **business** model of creative destruction. Is this changing scenario a product of free will or predetermination? You can argue either way just as in the time warp of the Terminator movies in which John Connor was able with the help of the robotic Terminator to change the future course of our planet.

Chance and coincidence are major factors in the formula of life. Are these predetermined? For instance, I met my wife on a blind date in High School and my Army Reserve Unit was chosen by Lyndon

Johnson to spend a year in the tropics of Vietnam in 1968. I could have decline that blind date and my life would have taken a very different course over the past 62 years, and my military service commitment as a physician could have been satisfied with the Berry Plan and I would have avoided military service in Vietnam.

Humans are a very diverse species and everyone is unique, be it body contours, emotional responses or most any aspect of life. For something as straight forward as learning, each of us has our own style. I am one of those individuals that learn by doing or trial and error. Only after I get stuck do I revert back to reading the directions. Fortunately, others in my family usually read the instructions before they proceed and intervene as needed.

When describing other families, you observe a wide diversity of behaviors, physical traits and beliefs among children raised in the same family under very similar conditions. But identical twins share many more commonalities than fraternal twins even when raised apart suggesting that genes matter. Many affluent caring families have offspring that become train wrecks due to drugs and/or psychiatric illnesses. And today almost all families exhibit political polarization with one or two staunch progressives and one or two devout conservatives that destroy polite table conversation and make sisters and brothers label one another as crazy, unhinged or radical. Within the American cultural frame and genetic perspective, you would think there would be more uniformity of thought and consistency of moral values. I have observed that most all families are dysfunctional in one way or another. Few rise to the level of the *Simpsons*, but few mirror *Leave It to Beaver* as well. This departure from uniformity supports the arguments of free will over predetermination or maybe it is just the scrambling and mixing of the DNA that occurs when the sperm fertilizes the female ovum and carries with it destiny.

When I was in elementary school at Kilgour in Hyde Park most students came from homogeneous affluent Caucasian backgrounds. The sorting of individuals according to their abilities was a spontaneous and ongoing process. It was no secret who the smart kids were and most everyone acknowledged who was the prettiest and most popular girl. There were some natural athletes and some that excelled because they matured early with evidence of testosterone flowing in the 6th grade. Moreover, everyone knew who was the strongest alpha male and who could 'beat up whom'. Selecting a team in a sandlot pickup game of baseball or kickball quickly identified who were considered the most talented. You didn't need statistics.

Every day I spend a few minutes posting, commenting and perusing other posts on social media such as Facebook. I am routinely amazed at the percentage of individuals that outright refuse vaccination even as the vaccines are safe, highly effective and free, and could have mitigate the carnage of over 900,000 American deaths. Does irrationality equate to free will or are these individuals mentally programmed to resist anything that may impinge on their freedom to choose? You might assume that hospital healthcare workers would be eager to be vaccinated, but in the local hospital systems including TriHealth and Christ less than half came to be stuck in the first round of vaccinations and two-thirds in the second round.

Life's journey carries us through a cycle of predetermination and free will. When you are a dependent child you lack control and are basically dependent upon the luck of the draw. You have no choice in the selection of your parents or where you live and who cares for you. Granted you might not like the Gerber's applesauce that is spooned into your mouth as an infant or the rutabaga that your mother fixes and insists you at least try, but you do not craft the menu. Moreover, any

decisions about your schooling, neighborhoods, friends, clothing and daily activities are prearranged. If you show promise or have some gifts your tribe might offer special training. And this predetermination of the cards you are dealt often carries over into your adult life through inheritance, nepotism and family support.

Once you leave home you may argue that the pendulum swings from predetermination to free will. This independence forces you to address many issues: will you complete your education, what employment suits you, who will be your friends, what are your romantic intentions, do you wish to get married and have children? You must consider these major decisions that have significant long term consequences during the early years of your youth before you have a track record of experience to guide you. But then, don't you have an inner voice of predetermination that tells you if it is right or not for you. On the opposite side of the ledger, you have a second set of questions to answer: do you have the money to complete your education, what job opportunities exist, who is in your social network, and what romantic partners are available with marrying potential who want children. All things considered, I would argue that chance, luck and timing are the major determinants in most of these decisions and thus predetermined.

Finally, one definition of life is that it is the process of wearing out gradually. And as you age your abilities decline and the doors to your alleged free will and options gradually narrow. If you are lucky and retain some of your faculties it delays the time when your well-intentioned family intervenes to make care decisions such as taking your car keys away, selling your house, recruiting a companion and placing you in a retirement home. Inevitably the expanding menus of chronic medical ailments that are unwelcomed intruders hijack your capabilities to make choices.

Universal Human Darwinian Traits

Culturally all societies are tribal or nativist which suggests a genetic basis designed for survival of the fittest. When the European settlers came to the Americas they simply displaced, infected and decimated the 55 million Native Americans. And after American Independence, when the waves of Italian, Polish, Irish and Asian immigrants arrived they were looked down upon and received harsh exclusion by the earlier settlers.

Historically, slavery was a common practice among most tribes. Approximately 12 million African slaves were brought to the Americas in the 18th and 19th Centuries and they were the foundation for the economic prosperity in the American South before the Civil War. Even after the slaves were freed 150 years ago African Americans remain penned in by discrimination and inequality and according to the New York Times in 2019, the median earnings for an African-American amounted to only 56 cents for every dollar earned by a White man. Even today the teaching about slavery referred to as ‘Critical Race Theory’ is considered abhorrent to a large segment of our white tribal electorate.

Each human tribe seems to have a compulsion to feel superior and dominant; perhaps we could offer a metaphor in a quote from Lyndon B. Johnson who once said “If you can convince the lowest white man he's better than the best colored man, he won't notice you're picking his pocket. Hell, give him somebody to look down on, and he'll empty his pockets for you.”

The second imprinted piece in the human genome is the universal need to wrap the tribe in a belief or metaphysical system to provide meaning to existence. Anxiety over uncertainty and change fuels the human need for things to be black or white, acceptable or unacceptable. And this

seems to lead toward blindly accepting the herd or cult premises in order to cement ones identity. I truly believe that the ‘dogma’ genes play a major role in political orientations. How else can you explain the dysfunctionality and craziness of politics in America today?

On the bright side, even as America often fails the test of exceptionalism, it is a pioneering society trying to replace the genetically based inherent tribalism or racism with a mantra of equality and equal opportunity. A pessimist might say, “lots of luck with that,” the optimist might say, “a work in progress.”

Predetermination is both an ally and enemy of Free Will.

All of this musing about free will and predetermination does not deal with some of the starker realities of being raised in America. Approximately 11.8 percent of adults and 20 percent of children in America live in poverty. Twenty-seven percent of children are raised in single parent homes. About 6.4 percent of live births are to woman receiving late or no prenatal care. Roughly 50 percent of marriages end in divorce and for subsequent marriages it is even higher. About a third of children are not enrolled in preschool and in Ohio about 50 percent fail the Kindergarten Readiness Test. On any given night about a half million Americans are homeless and a high percentage of these are veterans due to poverty, lack of support networks, and dismal living conditions in overcrowded or substandard housing.

Approximately 26 million Americans lack health insurance and generally do not receive timely medical care. Unpaid healthcare bills account for the majority of bankruptcies in America. We all know about our dismal inner-city crime statistics and gang activities. Almost 21 million Americans have at least one addiction, yet only 10% of them receive treatment and last year alone 93,000 died from drug overdose.

We also are keenly aware of the gross inequality between the rich and poor in our country According to the latest Fed data, the top 1% of

Americans have a combined net worth of \$34.2 trillion or 30.4 percent of all household wealth in the U.S. And this inequality seems to be increasing.

It doesn't take a rocket scientist to see that these predetermining factors for the raising of our younger generation have a huge impact upon the free will and opportunity to make choices in young lives. And we live in the richest and most prosperous nation on this planet and should be able to boast about our statistics that highlight America's exceptionalism.

These limiting societal factors call to mind several stanzas of Grey's Elegy written in a country graveyard.

Perhaps in this neglected spot is laid
Some heart once pregnant with celestial fire;
Hands, that the rod of empire might have sway'd,
Or wak'd to ecstasy the living lyre.

But Knowledge to their eyes her ample page
Rich with the spoils of time did ne'er unroll;
Chill Penury repress'd their noble rage,
And froze the genial current of the soul.

Full many a gem of purest ray serene,
The dark unfathom'd caves of ocean bear:
Full many a flow'r is born to blush unseen,
And waste its sweetness on the desert air.

My business friends occasionally boast of being self-made men that have made it on their own. They take total credit for their success. We applaud their success but also realize that there were a host of privilege and timing factors that mightily contributed that include inherited intelligence, a free society, adequate financial support, a favorable economy, good mentors and a bit of good luck and timing.

From all perspectives they are and were just as dependent upon predetermined factors as those individuals that failed to reach their potential.

Many will argue that free will is demonstrated in day-to-day activities in which they have choices. This includes their daily schedule, employment, religious beliefs, political views and social circle of friends. But even these activities play out on the underpinnings of genetic factors, networks and opportunities. Curiously, when I interact with friends with similar backgrounds I am often amazed at their alternate views of reality and politics. At times I wonder if their differences directly link to their genome rather than other commonalities. How many folks do you know that do not wish to be bothered by the facts or competing ideas?

It is time to bring closure to my meanderings and offer an analysis on the philosophical basis about free will versus predetermination. In our daily lives this lexicon is structured in various descriptors that directly or indirectly frame the debate. These include nature versus nurture; animal instinct versus reason, chance versus self-accomplishment; dependence versus independence; ontogeny versus phylogeny; luck versus skill; advantage versus disadvantage; control versus lack of control, and the position making the man versus the man making the position. All of these addresses in some fashion the issues that measure free will or personal choice as opposed to chance and predetermination. When I was a young man I threw my lot into the free will camp and was rigid in my thinking about capitalism as it produces justice and mitigates disadvantage.

But unlike most of my affluent acquaintances in middle age and beyond I became more liberal. Perhaps my medical profession inoculated me with a sense of tolerance and empathy for the disadvantaged and how problematical it is to climb out of an impoverished environment. The disadvantaged and poor do not become disadvantaged and poor by choice or free will. So in the final analysis I think ninety-five percent of

our journeys are predetermined based upon genes, luck of the draw, coincidence and environmental factors beyond our control. This only leaves five percent dependent upon our free will for the less important choices in our lives that afford a sense of freedom. Most of our journeys follow the path of chance and lucky breaks. In my own case, I had my wonderful parents to thank for providing me with good genes and raising me with a silver spoon and a cornucopia of opportunity.