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The Humanities, Brain Science and the Unforgiving Minute

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ABSTRACT:-Many independent authors from a wide variety of disciplines have come to a similar, if somewhat startling, conclusion; that we are currently at another “tipping point” in human history. Our arrival at this particular juncture in time seems to be the consequence of a potent mix of past trends and contemporary forces. Collectively, these energies act to feed exponentially growing technical and social change. In addition, there appears to be some agreement by thoughtful observers that the turmoil of our present epoch can be personified by four factors: volatility, uncertainty, complexity and ambiguity. More specifically, the technical and societal changes are being fueled by rapid advances in the fields of biology, neuroscience, materials science, computer science and nanotechnology. Previous authors have warned of the possible dire consequences of large-scale unbridled change on individuals, groups, and organizations. This paper will offer a more positive thesis counter to some of the more cataclysmic views about the negative impact of current socio-technical change processes. It will also attempt to help bridge the humanities-sciences divide by weaving together the surprises of poetry and brain science within the context of unrelenting time pressure.

Keywords:-brain science, humanities, poetry, Rudyard Kipling social change

I. INTRODUCTION

Arguably, the highest art of our most gifted poets has been their ability to eloquently express the previously inexpressible. Using the language of emotion and metaphor native to the right cerebral hemisphere, poets are often able to verbalize in more human terms the implications of rational science. Through the skillful painting of word pictures, heretofore obscure mental images can arise unimpeded from the depths of the unconscious mind. Their successful passage bypasses the censorship of more rational left-brain hemisphere judgment.

Indian-born, nineteenth century English novelist, journalist and poet Rudyard Kipling is a prototype of a creative poetic craftsman. For his body of literary and poetic work he was honored with the Nobel Prize for Literature in 1907. Among his most famous and best known poems is a set of verses called “If”.

Ostensibly about advice from father to son, apparently this epic and greatly admired composition was reported by biographers to have been originally written to honor the character of Scottish adventurer Dr. Leander Jameson. In 1895 Jameson led a dramatic but ill-fated cavalry charge by British forces against the Boers in South Africa. The ode, therefore, is a thinly disguised tribute to the human character traits Kipling, himself, most greatly venerated.

The final stanza of the poem is particularly noteworthy for its possible appeal to what psychologist and 2002 Nobel Prize-winner in Economic Sciences Daniel Kahneman called brain Systems 1 and 2. Kahneman's two brain systems generically refer to unconscious and conscious brain processes. According to Kahneman [1] System 1 is quick, intuitive and emotional; System 2 is slower, more considered and analytical.

The concluding section of the poem seems to offer both symbolic and practical value to those challenged by threatening alterations in their lives. Written at a time when concerns about gender expression in written language were minimal, the poem might equally apply to a daughter.

The closing verse of “If” reads,

“If you can fill the unforgiving minute with sixty seconds worth of distance run,
Yours is the Earth and everything that’s in it,
And-which is more-you’ll be a Man, my son!” [2]

This article will explore how the Humanities, especially Poetry, and the Brain Sciences, acting in concert, might go about addressing questions related to Kipling’s unforgiving minute. Many of these questions appear to be closely related to human survival and the brain networks associated with Fear, Uncertainty and Doubt. In particular, this work will investigate the potential positive benefits that might be derived from a new look at the disruptive factors of: volatility, uncertainty, complexity, and ambiguity

II. DISCUSSION

2.1 Historical Tipping Points

Speaking at a time in the history of the United States when the country was plunged in a dark and ominous economic depression, incoming president Franklin Delano Roosevelt remarked in his first inaugural address, “First of all, let me assert my firm belief that the only thing we have to fear is...fear itself — nameless, unreasoning, unjustified terror which paralyzes needed efforts to convert retreat into advance” [3]. Additionally, weighing in during decidedly fearful times at the height of World War II, British Prime Minister Winston Churchill reputedly stated, “Fear is a reaction. Courage is a decision.”

Churchill’s remarks appear to have some basis in current brain science. One of the lessons arising out of neuroscience research is that naming our fear is one of the first steps in managing it. The part of the brain most implicated in our fear response is located near the center of the brain and is called the amygdala. One of its functions is as a survival guardian, to watch out for and signal danger to the rest of the body. Once aroused, the amygdala almost instantaneously sends chemical signals that serve to mobilize the body into preventative action.

Following another neurological route, the danger signals are somewhat delayed reaching the executive portion of the brain, the prefrontal cortex, where cognitive deliberation occurs. Due to a small time delay in signal processing, it is possible to consciously disrupt the fear reaction prior to the occurrence of bodily action. The delay permits time for consideration of consequences and assessment of alternative possibilities.

2.2 The Tyranny of the Now

From all appearances we currently live in a fearful, uncertain, and doubt-filled epoch where unconstrained technology, demanding social changes, economic turmoil, and political unrest all conspire to unnerve us. Klaus Schwab, the founder and chief executive of the World Economic Forum, thinks the developed or first world is now in what he terms “The Fourth Industrial Revolution.” He suggests that three prior revolutions have already occurred.

According to Schwab, The first significant revolution was the Agrarian which employed animal and human labor to enhance production, transportation and communications. The second revolution was related to the development and use of machines that made mass production of goods possible. The third was principally a digital revolution that was sparked by the creation of computers and mainframe computation.

Schwab [4] has identified twenty-three major shifts associated with the present Fourth Industrial Revolution period. This period is deeply concerned with the fusion of technologies. One of these foremost shifts, that of Neurotechnologies, is all about the practical application of brain science. The currently unsettled conditions, Schwab surmises, are primarily being driven by a set of physical, digital and biological megatrends. These large-scale trends, acting in tandem, combine and coalesce to disrupt and distort our traditional modes of being and doing. The result is stress that works to upset our mental and emotional balance. This all sounds suspiciously like the present time is crammed chock-full of many of Kipling’s poetically inspired “unforgiving minutes.”

2.3 VUCA as a Positive Resource

Authors Nathan Bennett and G. James Lemoine [5] have aptly characterized this current era as one closely associated with the acronym VUCA. This abbreviation, originally conceived at the U.S. Army War College, stands for the situationally dislocating factors of: Volatility, Uncertainty, Complexity, and Ambiguity.

Further, Bennett and Lemoine suggest that this quartet of factors can be arrayed in simple matrix form that integrates prediction and knowledge.

The matrix is formed by a vertical or prediction-related axis that relates to how well you can predict the results of your actions. The horizontal axis, is concerned with knowledge, or how much you already know about the environmental setting. Each VUCA factor fits within one of the four panes of a 2 X 2 matrix format.

Volatility: difficulties you face may come unexpectedly or be unstable or erratic. They may also be of unknown duration. Understanding the situation may not actually be very difficult and available knowledge may be plentiful.

Uncertainty: despite a lack of other information, the basic cause and effect of the situation is known. Change may be possible but is not a given. **Complexity:** a growing number of problematic situations have many highly interconnected elements. The large amount of information available makes processing and interpreting the interdependencies very difficult to control.

Ambiguity: cause and effect relationships are unclear or elusive. No established standards are available as references. This vagueness is nicely illustrated by a well-publicized incident that occurred in a United States Defense Department press briefing. Then Secretary of Defense Donald Rumsfeld confusingly stated, "There are known knowns. There are things we know that we know. There are known unknowns. That is to say, there are things that we now know we don't know. But there are also unknown unknowns. There are things we do not know we don't know." [6]

2.3.1 Volatility as Opportunity

Instability and unpredictability seems part and parcel of the Zeitgeist or spirit of our times. Volatility can provide the impetus for organizations to free up rigid management thinking and open up their boundaries to innovative outside influences. Social psychologist Kurt Lewin suggested that personal and organizational change could be understood using a metaphor borrowed from physics. Lewin likened the change process as analogous to changing states of water from one solid form to another.

The first step is by unfreezing or freeing up the system through the application of energy in the form of heat. The next step is introducing the desired change in the form of a new shape. The final step reinforces the change by refreezing or acting in ways to cement the new change in place.

Within its intensive study of the top risks and opportunities for 2016, "Finding Opportunity Amidst Volatility," research firm Oxford Analytica [7] analyzed the key worldwide risks and opportunities to be related to: geopolitics, terrorism, and cybersecurity. A sampling of possible opportunities identified by Analytica include a reduction in geopolitical risk that could boost short-term and long-term economic growth prospects; the shortening of supply chains to afford fewer points of vulnerability; and the creation of hardware and software to deter hackers and data breaches. Additionally, opportunities may exist for: Asian initiatives resulting in new avenues for infrastructure spending; commodity importers benefitting from lower prices; and new insurance markets open to accommodate risks associated with climate change.

2.3.2 Uncertainty as Stimulant

Uncertainty has long been a theme in published poetry. Writing in the *American Poetry Review*, Jane Hirschfield devoted an article to the subject of "Poetry and Uncertainty." Hirschfield [8] remarked, "To exchange certainty for praise of mystery and doubt is to step back from hubris and stand in the receptive, both vulnerable and exposed."

Steve Case, a well-known American entrepreneur and social venture investor has thoughtfully reflected on the role of uncertainty in the world. His recent book *The Third Wave* chronicles the technological change waves that have marked the growth stages of the Internet. At the end of his book Case optimistically summarizes his perspective on the stimulating role of uncertainty. Case [9] declares, "Yes, the future is uncertain - and that's what makes it so exciting."

Physicist and strategist Theodore Modis suggests that understanding life cycles and positioning organizations are keys to long-term individual and organizational survival. Modis, writing in his book *Conquering Uncertainty* [10] notes, "The successes of yesterday become the problems of today. This is so

because learning, creativity, and productivity are natural growth processes associated with the filling or the emptying of a niche.”

2.3.3 Complexity as Benefit

Complexity as grist for both poetry and science is attentively analyzed by Claudia Schlee. Schlee [11] states, “Scientists leading the exploration of chaotic phenomena, including Edward O. Wilson and Nobel prize-winner Ilya Prigogine, argue that science never be divorced from culture, and that cultural values influence the development of science.” Prigogine is best known for his work on self-organizing systems. A self-organizing system is one that starts in disorder and transforms into a higher and more complex form. The new order emerges as a consequence of interactions of a large number of its constituent elements. An example is the complex bubble patterns spontaneously formed when a pot of water reaches a boil.

Writers Suzanne Kelly and Mary Ann Allison propose that complexity can actually be advantageous under certain circumstances and useful in achieving peak performances. Kelly and Allison [12] claim that self-organization is a fundamental principle of advantage inherent in the universe. They believe that fundamentally self-organization adds complexity through the concerted actions of simple elements.

The resulting new system is of a higher order, better able to deal with more challenging and difficult environments. Kelly and Allison believe that the increased complexity results from the actions of non-linear dynamics, open and closed systems, feedback loops, fractal structures, co-evolution, and some natural elements of group behavior. Complexity may provide its benefit through human processes that increase momentum, advance learning, and offer more aligned decision-making choices.

2.3.4 Ambiguity as Advantage

Howard Bloom is a polymath who bridges the arts and sciences. He has suggested that people really want freedom but when they get too much of it they tend to go crazy. Bloom [13] notes, “Humans (and our animal cousins) cannot stand what science calls ‘ambiguity’ making choices often is an agony.” However, modern brain science research has shown that emotions are indispensable to decision-making. Individuals deprived of their emotional brain centers by trauma or disease are often incapable of making choices. So, far from being an impediment to decision-making, emotions are actually needed in order to choose among options.

Some cognitive scientists at the Massachusetts Institute of Technology think that ambiguity actually constitutes advantage when it comes to language. Gibson [14] states “Ambiguity is no longer a problem—it’s something that you can take advantage of, because you can reuse easy words in different contexts over and over again.” Leaders may also greatly benefit from a judicious use of ambiguity. Wilkinson [15] suggests “These emerging breeds of leaders are becoming the new movers and shakers, with their ‘song’s new numbers and new world thinking who use ambiguity to create real advantage for themselves and their organizations”

III. WHAT DOES THE SCIENCE REVEAL?

Cognitive research indicates that poetry appears to have positive effects on brain functioning particularly those aspects related to memory consolidation, self-reflection, and relaxation. Poetry appears to activate particular areas of the brain, such as the posterior cingulate cortex and medial temporal lobes, which have been connected to the ability to examine our own mental and emotional processes. When reading a favorite passage of poetry or prose, areas of the brain connected to memory are stimulated, as reading something familiar is a type of recollection.

A recent study relating poetry to the brain was conducted by scientists at the University of Exeter using Functional Magnetic Resonance Imaging (fMRI). The brain scans revealed the activation of particular areas of the brain when the participants read poetry passages. The study [16] provided three relevant findings related to the poetry-brain science connection: 1. poetry and music appear to engender similar emotional reactions, 2. poetry stimulates areas of the brain linked to memory, and, 3. poetry makes people more self-reflective.

Another research study completed at the University of Liverpool [17] more specifically looked at how reading Shakespeare affects the brain. Using several types of brain imaging technology including electroencephalography (EEG), magnetoencephalography (MEG), and functional magnetic resonance imaging (fMRI), subjects reading Shakespeare were observed to react in a way similar to that of assembling a jigsaw puzzle. One of the researchers noted that the effect was analogous to a rocket booster for the brain, enabling the shift to new neurological pathways that create new thoughts and linkages.

3.0 Possible Implications

Organizational philosopher Charles Handy [18] has suggested that, "Perhaps we need an earthquake to remind us that we should take nothing for granted, not even the ground we stand on." In these uneasy and precarious times, finding positive ways to restore our balance may be critically important to maintaining our personal and organizational health. The alternative is certainly not pleasant to contemplate.

Although the trauma of Handy's complete ground-shaking may not be necessary to raise awareness, an increased knowledge of new developments in the brain sciences may yet prove helpful. Practical insights from Neuroscience coupled with the relaxation and focus offered through poetry can offer new avenues for coping with the stresses associated with dealing with Volatility, Uncertainty, Complexity and Ambiguity. A side benefit might be a reduction of our upsetting feelings of fear and doubt.

Forbes [19] has noted, "On the positive side, recent advances in the brain sciences, particularly in neuroscience and positive psychology, offer strategies and techniques to assist managers with surviving and thriving in their chaotic worlds"

IV. SUMMARY LEARNING

- Neuroscience has come late to the exploration of the effects of poetry on the brain [20]
- Art and Fear have been long connected together [21]
- Poetry appears to have a positive effect on cognitive and emotional health [22].
- Poetry stimulates imagination. The brain doesn't distinguish between an experience that is intensely imagined and an experience that is real [23].
- Uncertainty arises from unreasonable fear about the future [24]
- The effects of volatility, uncertainty, complexity, and ambiguity may be offset through the judicious employment of speed, fitness, flexibility and agility [25]

V. CONCLUSION

It may well be that this chaotic period we are now living through offers blessings in disguise. Philosopher and traveler Eric Weiner argues that, "During times of fragmentation, humanity made its greatest creative leaps. This tendency, known as Danilevsky's law, states that peoples are more likely to reach the creative potential when they belong to an independent nation, even if it is tiny." [26] Weiner further associates the rise of genius with the level of chaos in the times.

Perhaps, in the end, the "unforgiving minute" is not so unyielding as it seems at first glance. For, within the challenge of making distance run meaningful there may be found new beginnings rooted in the perspectives of both poetry and brain science. Yesterday's facts and feelings yield to today's knowledge which merges into tomorrow's wisdom. What may be most important is the way we consciously choose to travel the demanding interval of time.

The poem "Traveling" [27] seems to express this choice quite well.

"Tomorrow lies a long mile away,
Down the twisting road previously today,
Yesterday is back and over the hill,
An obscure path that I reminisce still,
What new highway does the future show,
What distant places will I come to know,
When that time comes shall I longingly cast,
A backward glance at all the todays gone past,
Or, go traveling on as I have always done,
Counting each new inch another victory won."

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