Future Shock Revisited

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Abstract: In 1970, Alvin Toffler wrote his ground breaking and alarming book warning of the psychological shock people face as technologies were developing at a pace faster than ever before. He predicted the technical evolution would cause major disruption in society and values. It would force worker dislocation, generational conflicts and moral and ethical challenges. The time period of which Toffler wrote is now often referred to as the Third Industrial Revolution. Today we are witnessing yet another Industrial Revolution in the Western and Developed nations. Innovations in instant communications, quantum computing, nanotechnologies, bioengineering, three-dimensional printing, artificial intelligence, robotics, autonomous vehicles, etc. are already reshaping the world. These advances in science are redistributing resources and wealth, changing the methods of manufacturing of goods, altering the delivery systems of consumer and human services, and challenging the very notion of what or who is “alive” as robots become more human-like, and displace millions of workers whose livelihood depends on jobs which will be lost to robots and three-dimensional printing. The social and psychological impacts of these exponentially increasing changes are “Future Shock” on a much larger scale perhaps than ever before experienced. Traditional ethics, morals, religions and social interactions, even politics and national boundaries are strained by mass migration as people seek safety and new economic opportunity in technologically advanced nations. Psychologists, counsellors, social workers, social engineers, philosophers and politicians need to act now as the future has already forced the present’s door open to this latest revolution.

Keywords: *Industrial Revolution; Future Shock; Change; Psychological Response to Change; Impact of Technology on jobs, morals, social interaction.*

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Introduction

Alvin Toffler (1965) first conceived of future shock in an article in which he argued that change was going to accelerate to a speed which would disorient individuals and alter society. "With future shock you stay in one place but your own culture changes so rapidly that it has the same disorienting effect as going to another culture" (*New Scientist*, 1994: 22)¹. *Future Shock* (Toffler, 1970) was defined as "too much change in too short a period of time". It was his contention that the human psyche cannot absorb the vast quantity of change and its increasing rapidity without emotional stress, which in some cases is debilitating. Although many of the predictions by futurists in the 1970's and 1980's turned out to be incorrect either in what would occur or when it would occur, just as many predictions have been accurate. Futurists foresaw cloning, personal computers and personal communication devices, the internet, and cable and satellite television (Toffler, 1980) and an increasing use of technology in the military to reduce military personnel's exposure to harm while increasing weapons' lethality through unmanned weapons systems (Toffler, 1990; Kurzweil, 1990). However, the question of whether these futurists were correct is irrelevant to Toffler's concern about the resiliency of the human mind and spirit.

People in the developed nations and in many developing nations have adjusted to the speed of change and the changes themselves, some with greater success than others. Witness the rising financial status, political stature and living conditions in parts of Africa, China, and parts of the Middle East, (Toffler, 1990) all made possible by new technologies and the communication revolution which have had dramatic impacts on their societies causing major societal transformations. With all of these technological innovations, life is altered and, in many ways simpler. The convenience of some inventions is undeniable; on-line banking and shopping save time. On-line maps make travel easier. And of course, on-line dating opens new relationship possibilities. But each of these activities bring new risks of identity theft, bank fraud, and a loss of privacy; necessitating the use of usernames, passwords and encryption codes. Thus, in some ways

¹ From the *New Scientist* interview with Alvin Toffler: "What led you to write *Future Shock*? - ...it occurred to us that big technological and social changes were occurring in the United States, ...Between 1955 and 1960, the birth control pill was introduced, television became universalized, commercial jet travel came into being and a whole raft of other technological events occurred. ...Our ideas came together in 1965 in an article called 'The future as a way of life', which argued that change was going to accelerate and the speed of change could induce disorientation in lots of people. We coined the phrase 'future shock' as an analogy to the concept of culture shock."

these advances have introduced a “surplus of complexity” (Toffler & Toffler, 2006).

What changes lie ahead of us is less important than how society and its individuals cope with the multitude of changes. This is the essential question. It is the same question addressed by Alvin Toffler and his wife Heidi throughout their work. Possible answers and some insights into this question of how people might react in the future to the rapid pace of new developments maybe gathered from history.

Societal Transformations

In 1910, Daniel Burnham noted that “But it is not merely in the number of facts or sorts of knowledge that progress lies: it is still more in the geometric ratio of sophistication, in the geometric widening of the sphere of knowledge, which every year is taking in a larger percentage of people as time goes on” (Moore, 1921: 140). Further, Burnham stated that the pace of change has so immensely accelerated in the fifty years prior to 1910 and that the pace will increase in speed with every new development to a point when “...our sons and grandsons are going to demand and get results that would stagger us” (Chicago Record-Herald, 1910).

There appears to be a general agreement that human society has evolved through three major stages in history. At first hunter-gatherers followed the movements of game animals and with seasonal growth of edible plants. This nomadic life supported few people and each had to contribute meaningfully to the group’s subsistence level survival. The weather contributed to their movement as early man sought shelter from the elements and depended on rain for the growth of vegetation on which the animals grazed. This way of life disappeared as farming took hold. When mankind transitioned from a hunter-gatherer, small band of people to an agrarian community, new technologies were created to efficiently clear the forests, till the soil and plant the first seeds. The simple planting stick evolved into the plough and agrarian civilization emerged. Humans developed permanent dwellings to protect themselves from the elements and predators. New societal configurations with early villages, towns, and eventually cities emerged. Complex road systems developed, monetary systems began to replace the trading and bartering that early man used to secure what they needed to survive (Burke, 1978).

Just as in the hunter-gatherer society in which people with needed skills (e.g. those best at making stone points, spears, arrows, weaving, hunting, etc.) prospered and were often community leaders, those in this

new era of agriculture who possessed valued skills and knowledge (the right time to plant and harvest, the best way to plant, how to make farming tools, etc.) accumulated wealth, power and leadership positions. Conflicts between villages and towns and latter nations, arose over the expansion of agricultural lands and trading rights. This same pattern was witnessed in the progression from the agrarian to the industrial age (Burke, 1978) when vast fortunes were made by industrialists who became leaders of society and commerce, and influenced governmental policy. More than once armed conflicts arose over needed raw materials (iron ore, coal, petroleum, etc.) to fuel the industrial centres. In this era metal money and later paper money replaced the barter system.

Over time, manufacturing centres shifted from developed nations to under-developed nations causing disruption in both societies. It is also true that this shift resulted in people in both nations learning new skills. As industries change locations or introduce new technologies some workers are displaced, but these changes also create new jobs in new locations or opportunities in new fields of employment. In both situations, workers need to learn new skills and adapt to new work routines. Individuals with the resiliency to adapt to changing circumstances will fare better than those who cannot or will not adjust. When manufacturing shifted from one nation to another due to market forces such as cheaper labor, new service industries arose and resulted in what has been called the post-industrial period. Although this is an apt nomenclature for some nations it is not necessarily appropriate for the nations newly converting to the manufacturing stage of development. Change is occurring on a differential timeline in various parts of the world which adds to the shock of cultural change and interface. Undeveloped and developing nations lag behind the more highly developed countries.

During the height of the industrial period in the Western world, credit and credit cards increasingly replaced cash. The wide-spread use of credit altered financial transactions, lead to an immediate improvement in the living standards of common people and caused inflation and massive personal debt. The relationship between work and financial reward has become less visible.

In the more developed countries, a system of service industries replaced manufacturing and marked a decline in the need for manual labor. Employees with computer skills and more science and math- based education easily found jobs. This post-industrial period, often referred to as the age of information, brought about a communications revolution with the internet, mobile phones, a variety of social media formats and digital

currencies. It has touched all but the remotest areas of the global and has again brought challenges along with progress. The world-wide contact between societies has brought about changes in personal expectations, desires, and living standards, in addition to cultural, religious, and financial structures. All of these vast changes have been accompanied by social status dislocation as those with the resiliency to change and the skills necessary within the evolving new society accumulate wealth and power (Toffler, 1980; Toffler, 1990; Toffler & Toffler, 2006).

Our world has become one of impermanence where we eat fast foods with disposable utensils and drink from disposable plastic cups and bottles. When our pen runs out of ink, we throw it away just as we do with the lighter that lights our cigarettes. Fashions change with each season and so often that one rarely passes a garment to a younger sibling. Adults change jobs and often move great distances from their birthplace leaving family and childhood friends behind. Forced to make new friends who may soon move away as jobs are eliminated or parents' divorce, children seldom have life-long friendships. In many ways people in developed nations have become modern-day nomads leaving behind homes and many possessions too numerous to transport.

Each of these periods brought with it a transitional phase in which those in the vanguard prospered, quickly amassing new fortunes challenging the social status quo in industry, political organization and societal mores. The wealthy got wealthier as the base of the production of goods and provision of services changed. Rich nations, like rich people in rich nations, accumulated more riches while poorer nations and people remained poor and the financial gap between the two groups widened. Technologies divide societies into two classes; "the informed elite and the rest" (Burke, 1978: 294). There is no reason to presume that this pattern is not being repeated as we enter into the latest technological era.

The world has entered into a new transition into what has been called the Fourth Industrial Revolution (Schwab, 2016; Skilton & Hovespian, 2017). As previously demonstrated, each new period stimulates a rapid, geometrically expanding information base and technological changes. Each new discovery leads to several even more advanced discoveries. It has been predicted that in the next hundred years the human knowledge base will expand at a rate equal to 20,000 years of previous learning (Kurzweil, 2001). Quantum computing, artificial intelligence, nanotechnology, nanomedicine, cellular targeted medicine, robotics, autonomous vehicles, gene-designed medicines, implanted digital body parts, wireless electricity, 3-D printing and many other inventions are no longer things which may be

seen in the future. They are already with us. Each of these advances will likely lead to additional as yet unthought of changes. This epoch into which mankind has entered will alter the way we think and our value systems more than any previous period. Medicine is at the threshold of substantial life extension and the integration of bio-material with mechanic-material. The definition of what is alive, what is artificial will be re-evaluated challenging conventional wisdom and traditional religious thought. Robotics and 3-D printing are already revolutionizing manufacturing. Forecasters estimate the loss of jobs from these two inventions will displace as much as nearly half of human workers perhaps as soon as 2030 (Rutkin, 2013; Frey & Osborne, 2013). Computer engineers predict the existence of computers with human level intelligence as early as 2025 (Kurzweil, 2006; Moravec, 2008) and not later than 2050 (Moravec, 1998a; Moravec, 1998b). Will these computers be sentient beings? How will they feel when they are old and replaced by a newer, faster, smarter version of themselves? It has been jokingly suggested that we may need to hold funerals for computers that die. Such questions may seem fanciful, but science fiction has become science fact in just the past 150 years from Jules Verne's *De la Terre a la Lune* (1865)² to the 1960's era *Star Trek* (Singer, Coon, et al. , 1966-1969) television series and its 1990's popular sequel *Star Trek: The Next Generation* (Roddenberry, Berman, et al: 1987-1994) with its android character Data. Kurzweil (Israel, 2015; Kurzweil, 1990, 1999) predicts that machines will soon rival the full range of human intelligence. Hans Moravec (1988) was perhaps the first serious scientist to make the same prediction. Since his earliest look into the future he has revised the time line for the rise of robots to near human status on no less than five occasions (Moravec, 1998a; 1998b; 2003; 2004; 2008); each time moving the date closer to the present.

The Pace and Extent of Change

Daniel Burnham's statement of more than one hundred years ago was an accurate prediction of the future. The rate of change has been accelerating in a geometric manner and each new technological development brings newer technologies and ideas once unimaginable. Change does not happen in a linear fashion nor in a teleological one. History cannot be considered with isolated events despite the dominate academic propensity to portray events

² Jules Verne's works were published in three different formats in subsequent years. The first of each of these publications was a serialization in *Magasin d'Education et de Recreation* (Magazine of Education and Recreation). *De la Terre a la Lune* (From the Earth to the Moon) was first published serially in 1865.

on an historical timeline. Every innovation acts as a “trigger” of change with a multiplier effect leading to more innovations and more and improved tools: the better and “the more tools, the faster the rate of change” (Burke, 1978: 7). The Intuitive Linear View of history has been eclipsed by this understanding of history. It is what Kurzweil (2001) has dubbed the Exponential View. Events, discoveries, and new ideas are not isolated from other events, discoveries and new ideas. Rapid global communication has made the interface of such things more immediate spurring greater amplifying change. Thus, ‘the law of accelerating return’ (Kurzweil, 2006) takes hold and each new innovation opens multiple doors to entire rooms of things yet to be created.

As the pace quickens, and the diffusion of innovative ideas in the technical community is made easier by technological advance itself, the rate of change accelerates. At an obvious level this increases the avalanche of material goods and services provided, and makes life more comfortable – if also more complicated. (Burke, 1978: 292).

Today’s world is a gestalt of interconnected events; a world of complex webs of interactions and connections, each with untold impact in visible and ‘invisible’ (unknown to the majority of people) levels in multiple arenas.

... innovation increases also at an ‘invisible’ level – that at which a high degree of specialist knowledge is necessary to understand what is happening. Unfortunately, it is at this level that many of the advances most critically important to our future occur: ... It is in these areas of innovation that the average citizen feels disfranchised (Burke, 1978: 292-293).

Moore’s Law (Moore, 1965.) postulated that the number of transistors in an integrated circuit doubles every two years. The advent of digital circuitry has demonstrated this principle. It now is apparent that our knowledge base and technologies are evolving faster than mankind (Kurzweil, 2001). Scientists believe that mankind is approaching what is called Technological Singularity (when technology outpaces human’s ability to control it) (Kurzweil, 2006; Korotayev, 2018). Science fiction movies

portray super intelligent, life-like robots controlling “human slaves” who are all but unnecessary. The battle between humanity and its own sciences may soon be more than fodder for Hollywood. These changes will occur in quick succession as one change gives birth to several commensurate and necessary changes. With change comes instability. The faster the change the greater the instability in culture, society and family life.

Technology, Change and Family Dynamics

Regardless of one’s anticipation of coming events, some realities are predictable: 100’s of millions of workers will be dislocated world-wide (Frey & Osborne, 2013); financial systems will be altered and fortunes will be accumulated or lost as existing wealth is redistributed both within and among nations; technology elites will increasing influence all aspects of society; new discoveries will lead to even more rapid change; old values, both religious and cultural, will be contested. Transnational migrations will increase causing cultural and religious conflicts.

Technological innovations will cause worker dislocation and unemployment. People will be forced to seek new employment; employment which may not provide the same compensation as previously earned, thus requiring changes in family expenditures and a lowering of the family’s standard of living. In families with multiple incomes it is likely that only one wage earner will become redundant at the same time forcing the unemployed individual to accept any available job. Shifts in family dynamics may occur as a consequence of this change. A ‘stay at home’ spouse may be forced to re-enter the workforce or there may be a role reversal when the former principle income earner remains at home. Perhaps a regional lack of job availability forces worker relocation resulting in family separation or family relocation.

When a person’s place of employment changes long commutes may result adding new stressors as family routines, schedules and traditions are altered. Added commuting costs and reduced income further strain personal budgets. In the event of family relocation, responsible adults must find new housing, in addition to new jobs, with the attendant adjustments to a new workload, new boss, new co-workers and new workplace rules. Children will face equally challenging adjustments. They face the loss of friendships and the need to establish new ones. Additionally, they must enter a new school system, with different teachers and a new curriculum. In some situations, they encounter a new language. Every member of the family will encounter increased levels of stress and emotional challenges. Due to the wide

disbursement of extended family members and friends, which has become commonplace in the Industrial and Post-Industrial Periods, limited emotional support may be available.

The loss of one's job, shifts in wealth, family separation and reconsideration of societal values are all aspects of change with which individuals must cope in this increasingly transient society. We are modern day nomads and like the hunter-gathers we are forced to constantly adjust to new circumstances in order to feed, clothe and shelter ourselves and families. These are the types of life altering and cultural shifts that Toffler (1970) referred to as 'Future Shock.'

Education for the Future

The World Economic Forum and the Boston Consulting Group in *The Global Competitiveness Report: 2015 – 2016* (Browne, Corrigan, Crotti, et al, 2015) identified three categories of what are believed to be the critically necessary skills for the future. Education should focus on literacy in science in general and within a specialty, advanced mathematics, finances, and culture are found in the first category. Critical thinking, creativity, communication and collaboration skills within a variety of intellectual disciplines comprise the crucial elements of the second category. The third set of skills are personal character qualities: leadership; adaptability; initiative; persistence; and curiosity. Although the fundamentals for work are found in the Literacy category of skills, it is posited that this technological information will change quickly requiring the skill sets of the second and third categories to remain relevant in the employment field. A study published by DeakinCo (2017) identified many of the same skills as needed for future success. Communication, the ability to work in teams (collaboration), self-management (initiative, persistence), problem solving (creativity, adaptability), and critical thinking were on both lists of imperative skills beyond the basic literacy of the work load. Warren Buffet gave an interview with Becky Quick of CNBC's cable network (Quick: 2019) in which he enumerated his list of future anticipated skills. Among them were the same skills listed by *The Global Competitiveness Report: 2015-2016* (Browne, Corrigan, Crotti, et al, 2015) report and the DeakinCo study (2017), but notably he added the personality characteristic of an ethical code (one which contains humility and compassion)³. People will need to be self-starters and

³ This is the interpretation of Buffet's comments by the author. Buffet addressed the unequal distribution of wealth and remarked that he won the "birth place lottery". He was fortunate to be born when and where he was which made his success possible. Not everyone has such

highly adaptable. They will also need to specialize in some area but be prepared to re-educate and change specialties with changing demand. It appears that the experts agree on what will be necessary for success in the future.

Implications for Educators, Counsellors and Psychologists

Mankind as modern-day nomads in a transient world require stress hardiness and resiliency. They need a certain degree of courage and self-confidence that they can and will manage despite numerous ordeals. Thus, stress hardiness, resiliency and self-confidence have become key concepts in preparing successfully for the emotional tsunami caused by the shock wave of change. These emotional tools can and must be taught to students and clients. To do so educators, psychologists and counsellors will themselves need to be trained and possess these same skills as they are not immune to the onslaught.

Career counsellors will need to aid in their clients' acquisition of job search strategies and skills in addition to addressing emotional needs. The days when one committed to a career and or an employer for a lifetime have already begun to disappear. Most manufacturing jobs will be assumed by automation. Thus, new work skills will be needed requiring re-training with an emphasis on technology, "soft skills" and people management skills. Not only will manual labour jobs in the manufacturing sector be affected, managerial positions will be eliminated as automation requires fewer managers and a greater number of technicians. In time even the number of technicians needed will decline as robots self-repair and self-duplicate. Computers are already programming themselves.

Moravec's paradox (Moravec, 1988) states that the higher-level brain functioning jobs will be the first to be supplanted by robots as it is easier to develop hardware and software to perform intellectual tasks than the more mundane tasks of gardening, waiting tables, providing 'handyman services', etc. These activities require complex circuitry to mimic human physical movement and the myriad of instant and unconscious decisions. It would appear that these more menial jobs are secure for the present but even these are vulnerable in the longer period.

School counsellors must assist new students to adjust to the school and the loss of previous relation-ships. These same counsellors will be

good fortune. Note that despite his enormous personal wealth he lives modestly in the same home for several decades. He also has planned to make his fortune available to charity upon his death.

increasingly valuable in student selection of educational paths. Educators at all levels must substantially modify curricula with a renewed emphasis on math and sciences and opportunities to engage in activities that enhance personal coping mechanisms.

Counsellors and psychologists will be called upon to assist increasing numbers of clients with depression, suicidal ideation and post-traumatic stress disorder in the wake of overwhelming culture shock. After the Christchurch – Canterbury, New Zealand earthquakes of 2011 physicians saw an increase in the number of people who suffered apparent heart attacks due to the loss of loved ones, homes and valued possessions. Referred to as the ‘broken heart syndrome’, it has been recognized as a real physical problem, most commonly suffered by women, and is due to significant losses and uncertainty in the environment (Mayo Foundation for Medical Education and Research: 2019). It is an emotional response to stress with a clear etiology impacting on the physical health of the human heart. This condition may become more apparent in future years as people experience forced relocation as a result of mandated job changes and the concomitant losses. Mental health professionals must prepare themselves for treating such conditions and be willing to work with medical professionals.

Technology has already influenced changes in the provision of psychological services. Counsellors’ and psychologists’ practice delivery has undergone substantial changes. Just three decades ago counselling by telephone was considered appropriate only in crisis situations and generally conducted by volunteers on ‘crisis hotlines.’ Crisis hotlines were acceptable ethically only because of the very nature of the person’s condition. Today telephone interventions, on-line counselling, SKYPE interviews, and other social media mental health services are not only recognized as appropriate intervention platforms, they have ethical standards included within professional ethical behavioural codes. The American Counseling Association (ACA) and the American Psychological Association (APA), have established statements of ethical behaviour regarding the use of telecommunications counselling by means of SKYPE and other transmission methods (American Counseling Association, 2014⁴; American Psychological Association, 2017⁵). Professional counselling businesses operate across state and national boundaries while offering personal

⁴ See Section H. “Distance Counseling, Technology, and Social Media, pp.17-18. 2014 ACA Code of Ethics.

⁵ See Section 4- 4.02 of Ethical Principles of Psychologists and Code of Conduct (2017).

counselling services. Such services are widely available and most useful to isolated communities with few mental health practitioners.

As tensions rise between social, economic and age cohorts (a natural outcome of rapid social dislocation resulting from technological advancements) mental health workers will be confronted with issues of rich versus poorer social classes, younger generations who feel more at ease with technology and older people unfamiliar, confused or afraid of new technology. The 'generation gap' will grow wider and several gaps will be apparent as a new generation of young people follow the millennial generation who followed Generation X. An older generation cohort may be faced with working under the supervision of a much younger person who is more technologically adept causing tension and even insecurity. While job dislocation occurs it also creates new jobs and forces workers to learn new skills and coping mechanisms. The challenge for educators, counsellors and psychologists, and career counsellors is how to deliver meaningful services to these various groups. Counsellors will need to address the full range of emotional responses to culture shock while also educating clients in flexibility and adaptability.

Counsellors could play a significant role within their communities through outreach programmes emphasizing the need to find "life-anchors" to substitute for distant family connections, directing career change classes and job-hunting skills courses. These and other programmes designed to assist the public in awareness of the impact of change and how to cope with it will broaden the scope of counsellors and provide new income opportunities.

The rapid changes in technology have already caused changes in the provision of mental health services. What changes in mental health practice lie ahead is unknown but it can be assumed that the professional will not escape rapid changes. This portrayal of the future may seem daunting or exciting, depending on how one experiences change.

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