THE MASTER SLAVE EVOLUTION OF TECHNOLOGY AND CULTURE: AN EXPOSITION ON CULTURE SHAPING MACHINES AND MACHINES SHAPING CULTURE

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Abstract — **The paper describes expositions on how our beliefs and culture have cast a shadow on the development of industrial robots, service robots, domestic robots, military robots, entertainment robots etc. In what ways have our beliefs and ethics suggested a future picture of such progression? - Contrasting different cultures and economic world powers. Reversely, how the introduction of automation in the society have bred new cultures.**

Keywords— **Culture, Technology, Society, Drones, Military, Robotic.**

1.INTRODUCTION

As soon as this world embarked on a journey to realize the science of intelligent machines, we started brainstorming on selecting the objective we were to pursue. These pursuits drew definitions from our needs and perceptions of social evolution. After years of artificial metamorphosis and advancement an array of interesting line of thinking and objectives to build such machines have emerged. These objectives greatly vary in different regions of the world and can be attributed to the diversity in cultures, behaviors, economies and above all, our perspective on existence. Consequently, somewhere it is mainly the culture which is casting technology to its mould whereas at a different locale it is technology which is shaping up a new culture.

2.ACCEPTANCE OF ARTIFICIAL AGENTS IN HUMAN SOCIETY: CONTRASTING APPROACHES TO APPREHEND THEIR ROLE IN FUTURE CIVILIZATION.

The developed countries have all been very enthusiastic on the evolution of autonomous intelligence but apparently, their development models are so visibly dissimilar that they can be associated with an existing culture from within the same country. For instance, Apart from the extensive research on the evolution of robotics in

both Japan and United states, the Japanese have already employed over a quarter of a million robots as a workforce in industries largely because of the declining human work force in the country which has dropped from about 67 million in 1997 to 63.79 million in 2015 [1]. While the Americans have started thinking on the lines of safeguarding the future, research and development of autonomous agents recently has become subject to ethical reviews in the west. Spending hugely in military robotics, Americans want to make it certain that there is always a human making decision regarding the use of lethal forces. In 2014, Prof. Stephen Hawking wrote an op-ed which appeared in The Independent, according to him, humans, limited by slow biological evolution, couldn't compete and would be superseded by artificial intelligence and such a level of A.I. could be the biggest and also the last event in human history unless we learn how to avoid the risks [2]. The western intelligentsia which includes people such as Hawking, Elon Musk and Bill Gates believe that a section of AI in which machines can mimic humans and make decisions could lead to potential unforeseen disasters for humanity. Although the deliberation over the eventuality has gained seriousness very recently, such credence is nothing new for the western society where popular culture from Eando Binder's IRobot and Isaac Asimov's Three laws of robotics to the very recent motion picture Ex-Machina have all been highlighting the perils of superseding machines. In a psychoanalytical paper "Why are we afraid of Robots? The Role of Projection in the Popular conception of Robots" by Michael Szollosky presented at the conference " Beyond AI: Artificial Dreams" held in Pilsen November 2012, Szollosky argues that the threat lies in our own fantasies and conception of ourselves that can be described by a complex psychological process of relating known as projections also known as blame shifting according to which humans defend themselves against unpleasant impulses by denying their existence in themselves, while attributing them to others. Such as a violent person constantly accusing others to be violent. "It is apparent that our fears of robots are at least in part a fear of our own rationality" the author further adds [3]. If we validate this association to a certain degree, it can well justify to some extent as to why the popular culture in west has perceived artificial machines in such light, Since the slow takeover of science over metaphysical idea of existence in the western world is leading them to believe ourselves to be mechanical and calculated beings away from our more human interpretations. Also, the concept of "doomsday" is so well pronounced in the Abrahamic religion that it persistently instigates the popular idea of devastation among believers of such an occurrence. The mindset is quite different in Japan where robotics is not largely considered a threat; instead, the Japanese have already started accepting artificial beings as a part of the society. Experts carry the opinion that the nation's love for robotics derives its roots from Japan's Shinto religion. In Shinto, spirit of nature or 'kami' is believed to exist everywhere and hence is known to be a highly animistic (belief that non-human entities plants, animals and even inanimate objects possess a spiritual essence.) religion. Hence introduction of artificial breeds in the human society is more of a systematic problem than ethical in Japan. The Japanese attitude towards the use of technology and machine can also be considered to be a reflection of its recent past. Following the wide spread destruction of world war II, Japan formulated article 9 of its constitution according to which Japanese people forever renounced war as a sovereign right of the nation and the threat or use of force as means of settling international disputes. This not only immediately led to the Japanese divorce with fighting wars and conquering lands but also gradually depicted the future of Japanese civil society and the inclusion of robots in it. Murata Manufacturing and Co. Ltd., a

leading Japanese electronics component manufacturer which also expertise's in Robotics has put a restriction on weapons and Military end use of its products. The company's policy forbids the use of its products in the design, development, maintenance, utilization or production of any kind of weapons of mass destruction so as to be "consistent with Japan's recognition as a pacifist nation" [4]. This view is also consistent with most of the Japanese manufacturers, researchers and ultimately the Japanese people. Today the entertainment, manufacturing and service robotics is thriving in Japan, all thanks to the people of Japan who have put technology to a positive use and are overwhelmingly welcoming new guests in their society of the future. Despite the fact that they have varied opinions on mechanization of an upcoming society, these countries have a dense strategy for future if not concrete. There is yet another class of the world, the developing world and the underdeveloped world which is still oblivion to the idea of a class of machines in the society let alone the thought of how a future society with robots would be. This may have disadvantageous implications. Even though the development of a new social breed and its advance in the future world is inevitable, the part of the world where majority of humans reside and most of which are widely considered the economic masters of tomorrow, their framework on mechanization of society is imperative. These are the countries where there are poor habitation facilities and unemployment is overwhelmingly large. Thinking of machines that eat-up jobs would be highly unacceptable although this has some exceptions. Also, in the lands where purchasing power of a large populace is so low that they go to bed without a meal, service and entertainment robotics does not find a lucrative market at least in the near future. What may still inspire them to share land with machines is their inclination to the development model of advanced countries. This has its own pros and cons as imitating other frameworks rather than one supported by indigenous culture might create problems. On the other hand, it might also carve new cultures-completely alien to contemporary beliefs, adding dimensions to an already vibrant society.

3. DRONES: A NEW SOCIAL BREED

This dissertation on drones the state-of-art machines, attempts to evaluate its social and cultural impact on the society and how it continues to determine the trends of near future. From the pilotless aircrafts of WWI to Nixie, the first wearable drone of 21st century, the world is exploring ways to diversify the concept of automatic vehicles and giving wings to the capabilities of such agents. Drones have long been used as unmanned aerial vehicles for reconnaissance and surveillance by several law enforcement agencies and military around the world in different forms. In the United States, these applications took a giant leap after September 11 attacks and were followed by many other nations in pursuits such as patrolling the nation's borders, scout property, and locating fugitives. Advanced surveillance, carrying live-feed video camera, radar, IR Cameras, heat sensors, Equipped with high-tech cameras that can scan entire cities [5]. Military applications of drones are tasking countries to pursue heavy research on surveillance and destructive capabilities of drones. In 2012, it was reported that the US army had 7,494 drones as compared to 10,767 manned aircrafts. Adhering strictly to the social impact of such undertakings we can say:

Firstly, since the use of drones limits the scope and scale of human military action it is widely perceived to be a 'good way' to fight wars. Consequently there is less

deliberation over the loss of lives from the attacking side leading to sufficient green signals to fight a war. America's entire drone program constitutes only about 1% of the entire annual military budget [6]. In comparison, the military's F-35 Joint Strike Fighter program alone cost the United States $9.7 billion in fiscal year 2012 [7]. The financial evil of fighting a war is decreased significantly and thus demoting the reasons to not indulge in a war.

Secondly, since the soldiers are not directly involved in the combat, they get emotionally detached from the horrors of fighting a war. This alteration will significantly change the way we think about wars. Combat stirs up a whirlwind of conflicting emotions. Feelings of exhilaration, love, hatred, guilt, rage, helplessness, disgust, and fear race through the minds of soldiers in battle. The activist veterans of the Vietnam War spoke to a generation that enjoyed a more thorough, scientific understanding of the war and its impact on human mind. Now with mechanical agents to do the job, 'war diaries' which are a significant first-hand source of history and ultimately a culture would pass into oblivion.

Thirdly, all military research on drones does not seem to be disputable. In fact, the abilities of surveillance and sensing have developed such vivid applications which in themselves have become a system. S.W.A.R.M. (Search with Aerial RC Multi-rotor), a United States budding organization, has started a worldwide volunteer search and rescue network of over 1,100 SAR Drone Pilots dedicated to searching of missing persons. The initiative has spread to 33 countries across the globe as of 2015. Moreover the organization is non-profit and provides free services [8]. Such an undertaking can revolutionize vigilance and administration without loss of identities. This is however, always a subject of how the technology is put to use as it can also augment the already infamous trends of spying and decreased social privacies.

Over the years agrarian crisis has brought agonizing blows and misery to a largely agrarian Indian society and their seems no respite if the popular peasantry practice does not change. Today, it is estimated that every thirty minutes a farmer commits suicide in India [9].

Figure 1: Drones in Agriculture [10]

A new class of drones, agricultural drones is stepping in world of farming and is expected to take up a lion's share of the drone's world. Agriculture drones are unmanned aerial vehicles (UAV) used for precision agriculture, a modern farming method that relies on big data, aerial imagery and other means to optimize efficiency.

After the drone collects images of the farm and makes a map that color-codes its areas by their health, the UAV Company analyzes them for the farmer [10] as shown in Figure 1. As a national leader in Unmanned Aircraft Systems advancement, the state of Kansas in US is poised to benefit significantly from these drones as according to a recent Association for Unmanned Vehicle Systems International (AUVSI) study, UAS will contribute an economic impact of $2.9 billion and create 3,716 new jobs in Kansas by 2025 [11]. India is characterized by small farms. More than 80% of total land holdings in the country are less than 2 ha (5 acres). Most crops are rain fed, with only about 45% of the land irrigated. Predominantly, poor availability of funds, farm inputs, and farming without mechanization has led to very low farm productivity [12]. Amidst these unkind scenarios it is noteworthy that Indian farmers have already started accepting this new emerging technology and using it to boost production and efficiency in their farms. If estimations are to be believed, agricultural drones are bringing yet another green revolution in India and ultimately revolutionizing the way Indians sow their farms. The harbingers of productivity could presage our tomorrow. Very Interestingly, We're beginning to realize that, far from being killing machines, drones offer a whole new way to create spine-tingling performance art. Especially in our private indoor spaces it is showing such bizarre applications that it may soon change our way of living as did the cell phones and the computers. FPV or the first-person-view is by far the most artistic application of these mechanical birds. From volcanoes to war zones they have started giving us new perspectives. In addition to breaking down these geographical barriers, drones can similarly help dissolve the barrier between art and audience. By their very nature they can move into the audience's space, leaving viewers feeling like a more integral part of the performance. Withstanding the fact that the new guests will have an inhospitable evolution amongst us for the years to come, they seem so reassuring as to be an inevitable change in the society. Ever intelligent and social, birds of tomorrow.

4.TECHNOLOGY TO CULTURE: A CYCLE OF CHANGE IN CONTEMPORARY CHINA

Be it the Americans on the west or the Japanese in the east they have all started thinking about intelligent machines. Even a location as remote as Madagascar cannot stay impervious to this change. Apart from all the futuristic machines that will change our society, the contemporary world is already thriving with machines that are bringing new cultures into existence such as the Computer Numerical control machines or the CNCs. The interplay between technology and culture can be illustrated by looking into the status quo of a country like China. People's mundane life is most important part of their culture. China has long been known as a hub for manufacturing units. Till now, Most of the population was employed in industries, making goods for exporting to western countries. However, the recent announcement of Dell to invest $125 million in R&D department in China [13] shows the transformation of demographics of china from labor intensive work towards education. This transformation has been possible with quick advancement of robotics in China. Western countries have always targeted China for off shoring due to abundant cheap labor and low manufacturing costs. However the condition in these factories is changing drastically since 1990's. The immigrants from countryside, who constituted the major workforce, have started demanding higher wages hence leading to shortage in "blue collars". Compared to situation in 1987, the wage demands have quintupled. This has led industrialists to

resort to Robots. These robots are not the one like humans, but are manufactured for doing any specific task. In contemporary China, these robots have substituted nearly half of the human workforce employed in factories. Figure 2 shows rise in number of industrial robots operating in China from 2004 to 2013.
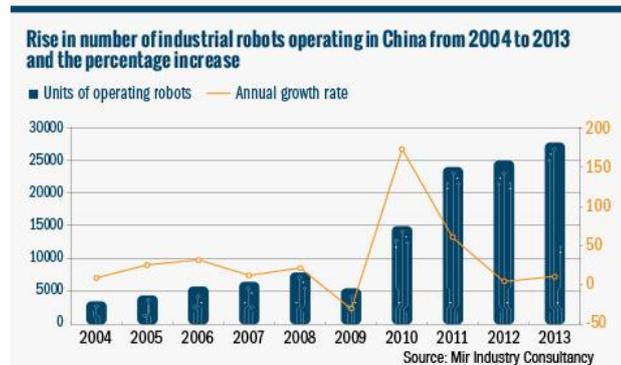

Figure 2: Mir Industry Consultancy [14]

From the perspective of workers, the silver lining has been the emphasis of the government on encouraging the undergraduate institutions. As recently as 1997, China had only 3.2 million undergraduate students. With the Asian financial crisis that year, China began expanding its universities quickly, in an attempt to offset job losses among young people. According to Confucian tradition, once a person gets educated he does not soil his hands in manual labor; hence the undergraduates refuse to accept the factory work, except the supervisory or engineering positions. As a result of this youngsters are getting inclined towards research work. A beautiful example of how mechanization of industries is turning occupations of people from manufacturing to a research oriented one and cyclically its contribution to the promotion of technology in industries thereby substituting labors. Like a feedback loop transforming culture and technology recursively.

5. CONCLUSION

From sticks to ploughs to trains, we have evolved from a society where everyone needed to do physical labor to one where a very small percentage is constrained to so. Shifting to stronger and tireless mechanical muscles from human labor has left most of us better off. This is how our economies grow and standard of living gets better. The society is now developing mechanical minds and just as mechanical muscles reduced the demand of human labor so will perhaps the mechanical minds reduce the demand of human mind. Whatever our concerns may be, the change is inevitable. In that not so distant civilization how would the roles of human beings change is of great consequences rather than whether machines would surpass humans. It is human intellect which is responsible for their production how can a creation supersede its creator?

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