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# How Capitalism and Islamic Economics Supplement Each Other

By

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Abstract

N iterations of Prisoner's dilemma would determine outcomes that favor humanity at large towards material welfare at a universal scale through scientific innovation but the motivation comes through examples of leadership within human societies that have opted for kindness, cooperation and collective welfare. The paper tries to unlock one of the most pressing questions in human history whether bringing peace to this polarized world when there is no armed conflict among countries and within countries is possible. The paper suggests that transforming historic grievances into practiced competition between nations is possible by providing fair and level playing fields where populations have equal access to information and opportunities and thus would not be exploited but would contribute to their own welfare. It is very important for each country to work on international commitments like SDGs to finally have a world bereft of violent conflict. The paper explains the path from income centric measures of human emancipation like in case of poverty line towards more sustainable and inclusive definitions of development that include qualitative definitions of progress like quality health and education representing capability approach by Amartya Sen while not excluding good governance practices adopted by the government. There is a difference between Capitalism that defines progress through monetary outcomes and Islamic economics that harness and define human emancipation on wider definitions of progress including values like trust, ethics, culture, and rights. In this context the article explains to its audience why Pakistani Prime Minister Imran Khan refers to the golden era of Islamic caliphate of Umer Bin Khatab who put the foundations of an economic system where human welfare was practiced through universal application of human progress based on economic, social, cultural and ethical emancipation. The paper explains that according to Islamic values monetary asset ownership that is a contract between the government and the people should have application for ethical dispensation and strong welfare purpose rather than driving greed in guise of incentive.

## 1. Iterative Prisoners Dilemma Towards the Right Game

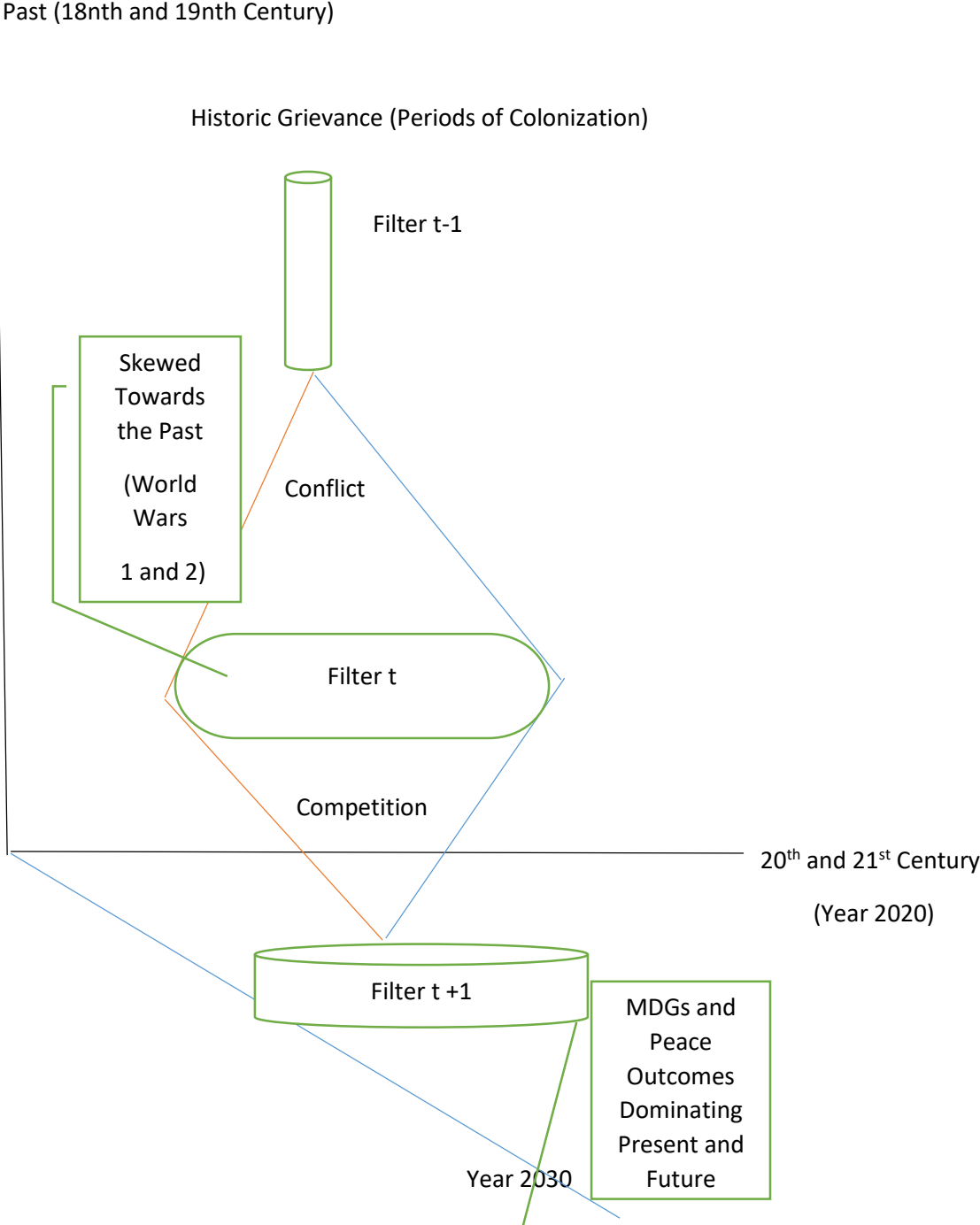
When two distinguishable identities interact as in two persons, two ethnicities, two religions, two institutions or two countries, there is a strong possibility of each one feeling that the other is taking up their space of ideas, resources, culture or ethics forcing them to enter into prisoners dilemma where each one compete on exploiting information asymmetries, cultural bias, ethical interpretation or resource allocation to own benefit by trying to starve the other off from equal opportunities and even capture the opponents' space while feeling good about it. (Watts, 2004) This brings us to the old adage of zero sum game when competing identities may enter into a dynamic multi iterative game where historic lessons force them to choose options that try to outperform the others based on past

grievance for a loss of material resource or lack of intellectual providence. However, when the discrete prisoner's dilemma repeats itself in multi iterations spanning years and sometimes centuries, the realization to outperform the very game becomes more salient with improvements in rules of the game that rely less on competition but more on cooperation. (Straffin, 1993) The price of learning by doing in the game becomes as intangible as the time spent in the game. The lessons of history have taught the intellectual mind of today to strive for world peace, regional and global integration of resources, protection of environment and rise above human constraints that decide about political, social and material outcomes that are still appearing to favor the already prosperous regions of the world. Science as a self-taught subject has been foreseeing to eventually come to the rescue of humanity and also the world they live in. The scientific mind has realized if rules of the game are not changed, the prisoner's dilemma is eventually coming to get everyone by making everyone worse off if rules of engagement are not corrected in time. One possible scenario that science has proposed is that artificial intelligence would take over the world by concluding the zero sum game humanity has historically been playing with itself and their natural habitat by creating myopic outcomes like exploitation of tangible and intangible resources based on differences in religion, ethnicity, culture, creed or simply geography. Evolution towards intelligent robotics make up for a new generation of artificial intelligence that can sustain scarcity of resources and more suited for a resource scarce world than humanity itself in its historic and contemporary context. (Falkenstein, 2009) So the outcome of a zero sum game where humanity would lose appear to be a valid possibility if not for those men and women that had transcended survival instincts, promoted and provided examples of kindness, cooperation and peace among human civilizations in multi-cultural and multiethnic context that creates the possibility of the future where these characteristics of cooperation become universal for every human society taking the rules towards the logical end that appears to be the win win situation for each member of these culturally, ethically, socially and economically diverse communities in order to be empowered with adequate enmities to live and prosper in life and material.

## **2. How SDGs are Transforming War into Peace**

The Colonization of the East by the West where nation states were exploited of their human and material resources sowed the seed for historic grievances between nations that is still source to armed conflicts in and between many countries. Though the West have learnt their lessons from World War 1 and World War 2 in early 20<sup>th</sup> century where grievance is now transformed into competition by switching exploitation with provision of an evolved level playing field within the populations of Europe and the USA and common grounds to compete in international trade, innovation and socio economic idea exchange is promoted. However, the level playing fields to empower the populations in the East by knowledge sharing and knowledge management is starchy underdeveloped partly because institutions of good governance and concepts like freedom of expression, equality of opportunity and material emancipation is not equally distributed among population and rather most of the masses are bereft of application of these important modern day interventions. Most of the populations in developing countries still live in historic grievances where it is believed as a matter of popular opinion that the developed world is still exploiting them through ideas of neo colonization and create outcomes of dependency on Western technology, culture and language. To resent the West is to give self-confidence to underdeveloped lands that isolation from global developments in knowledge, innovation and technology may secure their cultural heritage. Taliban movement in Afghanistan is one of the most salient examples of extreme actions by a significant segment of Pashtun

Figure 1. Filtering Peace out of War



speaking population that have chosen the path of war on modern life styles leading to decades long armed conflict in the region that have partly engulfed the neighboring countries. Similarly, there are many hotbeds of conflict in Middle East and Africa where lack of rights and exploitation of ethnic and religious fault lines have resulted in armed conflict within and between countries. This religious

and ethnic faultiness had been magnified by colonial exploitation and ruling by means of dividing local populations. However the world is way past the era of colonial rule that entirely ended by mid 1900s. The historical grievances have outlived their memory because level playing field for the fair outcomes of competition are not harnessed in these conflicting regions. In this context concepts like Sustainable Development Goals where every country is the signatory are one of the most important global commitment of global welfare for all. If the goals committed by SDGs are realized by 2030, the world may very well say good bye to Wars and embrace everlasting and sustainable peace between and within nation states.

### 3. Welfare Economics and Inclusive Development

Figure 2: Path to Inclusive Economic Development

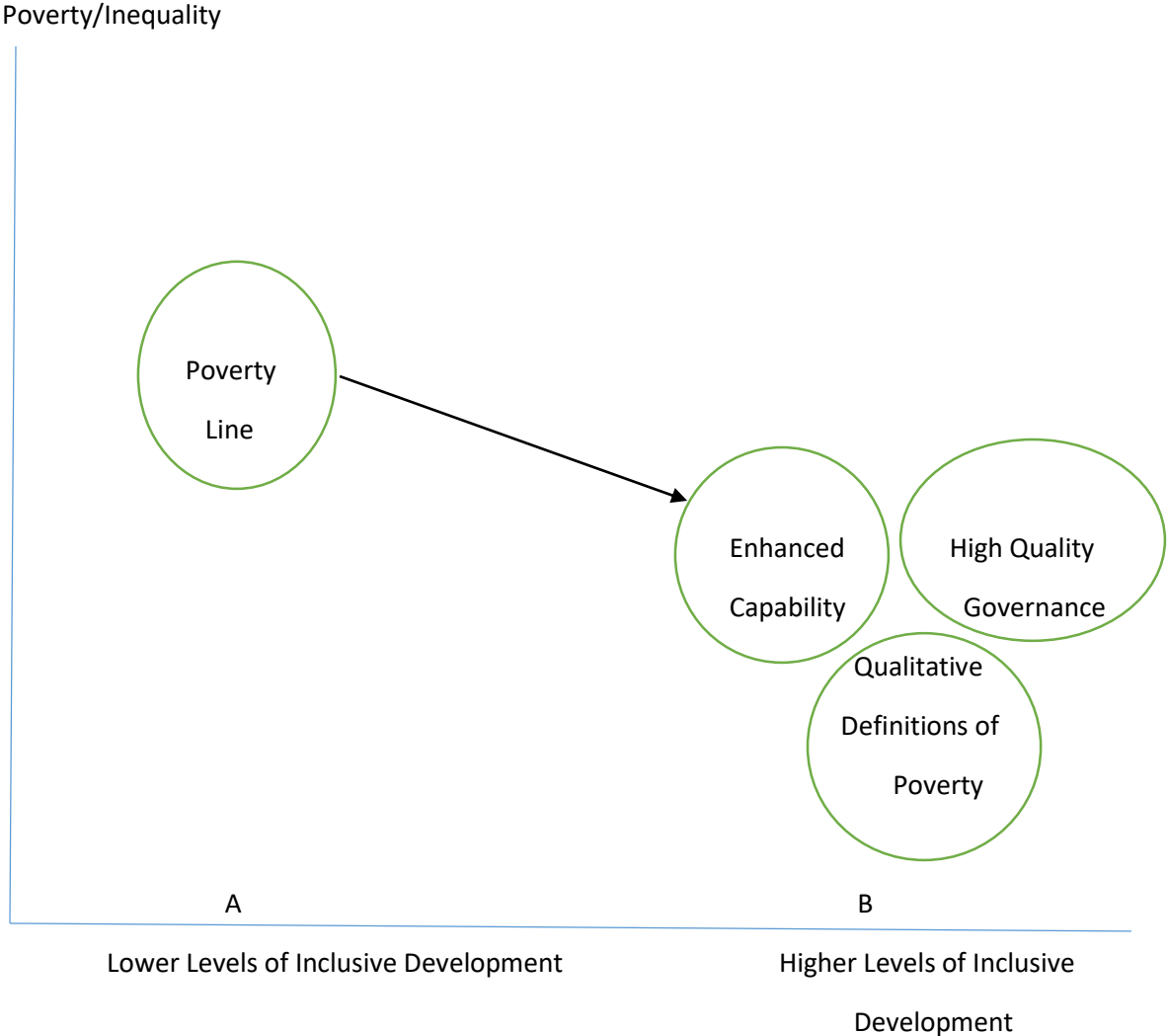


Figure 2 explains the path for inclusive development that moves beyond income centric measures of economic welfare including income centric poverty measures like poverty line and economic growth. Most of the developing countries, income centric measures of poverty are still relevant as millions are

below poverty line and they earn less than a dollar a day. To improve the extreme poverty levels in a country, it is important to improve the per capita income of the population in these developing countries. Thus these developing countries need to have GDP growth rates of more than 6 percent for extended periods of time. However, the focus on incomes has resulted in economic growth policies that on average improve the levels of GDP but significant portions of the population due to lack of capabilities like good health and quality education, or lack of provision of social and legal frameworks of good governance are still excluded from the processes of economic development and economic growth. Thus the path towards inclusive economic development and inclusive economic growth is to move away from income-centric measures of economic development and include qualitative definitions of economic, social, legal and regulatory progress. By cultivating the environment of business competitiveness can be a good measure to improve the income profiles of the population if the governments in the country intend to rely on the private sector activity to create paths of economic prosperity for the population. Private sector when compared to the public sector may provide more tangible opportunities to the population for empowering the citizens with better incentives to improve their life styles. This is partly because government resources are limited and without healthy trends in economic growth, the government may not extend a generous fiscal policy due to poor tax collection. The fiscal policy that is directly related with citizen welfare may mean spending of monetary resources on health and education sectors. However, despite resource constraints the governments can improve the welfare prospects of the population by formulating high quality governance structures that facilitate the private sector activity through autonomous institutions of regulation like independent central bank; and provide citizens with security of life and property through robust legal structures including police and judiciary. The inclusive economic growth models suggest that in addition to improvement in household income, the citizens in a country should also have access to better quality education and health; they should have freedom of expression and right to exercise their religious beliefs; and there should be no discrimination based on gender, ethnicity and religion. Higher income levels that are achieved by adopting inclusive models of economic development are more sustainable and long run economic growth trajectories based on these inclusive definitions of development are more reliable. (Mamoon, 2008)

#### **4. Contours of Islamic Economics:**

The mainstream economics that is known as neo-classical economics is based on defining progress in terms of its materialistic outcomes. The exchange of goods and services among people, among nation states and among regional economies are measured through their monetary outcomes with US dollar as the most common mode of currency exchange. The pro-business and free market regulation in the US partly explains the motivation for innovation and incentive structure to work to improve monetary value of effort. US has been known as the country of immigrants that attracted the global citizen to come to the country and work hard to improve his and society's monetary welfare. The billionaires like Elon Musk, Michael Zuckerberg, Bill Gates, Steve Jobs had little monetary resources to start with. The prosperity of rich in the US is all due credit to the progressive market structures built over centuries of experimentation with pro-business regulations that created an environment that facilitates incentives and higher monetary returns to innovation. That innovation can be of ideas or processes of production. Basically every American is given an opportunity to change his/her destiny with hard work while the State provides the ideal grounds by providing conducive environment for creativity, freedom of expression, security of life and rights, and greater human emancipation with high quality

education and health systems. The governance structure of institutions including formation and practice of legal system ensures a provision of free world to an American citizen so that creativity and hard work is translated into value addition in personal and national wealth. The US is by far the closest adherents to what Adam Smith calls wealth of nations. He identified wealth of nations as its human resource, pro market governance structure, well developed legal, social, economic and regulatory institutions. (Smith, 1827)

However, as it turned out the American society has become the prisoner of its own device. The immigrants who have built the great North America during industrial revolution predominantly came from Europe and comprised of the white population. As the US welcomed immigrants and best minds from across the world, the color of immigrants changed from white to brown and black. The regulatory and pro market governance structure did not discriminate the Americans based on their color or culture as that was envisioned by its fore fathers in the constitution of United States. The instincts of survival that was present among the new wave of immigrants coming from regions as far as South Asia turned the markets to their benefit. The intergenerational transition of progress and prosperity switched races from white European to Brown American. American universities and American industries, that have been the bastion of learning and progress, were now dominated by this new color of immigrants.

The system of incentive that gave value to hard work and innovation was not favoring the working class American who are predominantly white. A clash of civilization started within the society and the greater white population decided to use democracy that favors the numbers than intellectual effort to come to their rescue. A political transition from Democrats to Republicans where the race centric agenda by the President Donald Trump was introduced. Anti-immigration policies were soon implemented. Finally, the capitalism failed the white American who invented it in the first place and according to Democrats; the very foundations of the constitutional legacy of United States is under threat.

The role of markets does favor economic prosperity on the basis of incentive structures but the political and demographic disharmony has a lesson for founders and adherents of neo classical economics. The state should always intervene to create a fair distribution of economic resources where the population that resides in the fringes of prosperity should not be left to the brutes of markets but a mechanism of redistribution is very important. The skills and level of participation in economic activity is not homogenous and the heterogeneity within the demographic structures in a country need to be considered where people from different economic, religious, social and ethnic back grounds should be catered to by channeling resources to every one among the population.

The contemporary West takes more credit to its progress than it should be attributed. The intellectual memory among popular thought among the West attribute their progress to be entirely indigenous rather than an outcome of centuries of cultural, social and economic exchange of civilizations. The clash of civilization is a preposterous thought promoted by a significant segment of Western intellectual.

It was the emergence of Islamic civilization during the Caliphate of Umer that created the basis for a comprehensive economic welfare programs for the population. Islamic economics is not entirely based on monetary value of effort but traditions of Islam give more weight to human notions of social

trust, dignity of work, cultural values and ethics of doing business that are the defining frameworks of the Western intellectual thought like in case of Fukuyama. (for details please see Fukuyama, 1995) The neo classical economics is still trying to come in terms with the application of notions like ethics and trust in business transformation.

The foundations of neo classical economics/ capitalist economics and Islamic economics are based on entirely different paradigms. In capitalist economics it is the monetary welfare that is the defining parameter whereas Islamic economics defines progress by means of human welfare. In Islamic economics unit of analysis is not some piece of paper but it is the notion of human intervention that defines the institutional means to the piece of paper.

The non-economic concepts within capitalist and materialist societies like human rights, social and ethical modes of progress of human beings, the cultural emancipation of human societies are closer definitions that make the foundations of Islamic economics. The caliphate of Umer defines Islamic economics by practicing universal social, economic, ethical and cultural welfare when each citizen of the caliphate was not only economically protected but his rights were equally and legally secured.

When the leader of Pakistan says to the world and his people that he wants to build the systems of the Islamic caliphate referring to Umer Bin Khatab, that is what he envisions: A Pakistan where there is no discrimination based on religion, color and creed. A Pakistan where every citizen has equal opportunity to contribute in the progress of the country not only by means of monetary incentives but also cultural, social and ethical emancipation. In this perspective Imran Khan understands well that capitalist economics is a crude definition of human progress where a piece of paper rules over humanity. It is the humans who should be empowered where each and every human life has the same sanctity not only in terms of rhetoric but as a matter of policy outcomes of economic, political, social and legal governance structures. (Mamoon, 2006; Mamoon, 2012, Mamoon and Murshed, 2017)

## **5. Greed or Ethics: Islamic Definition of Money**

The currency notes are issued by respective government of the country and it is a tacit contract between the government that issues the currency note through central banks and the population who use currency note as the most convenient mode of exchange and trade of goods and services. In consumer economy, the monetary worth of the individual depends upon the asset ownership. These assets can be liquid in terms of amount of money the individual hold or these assets can be evaluated based on property ownership. The overall worth of asset ownership is translated into monetary terms. Some individuals that are considered rich are banked to be millionaires and some as billionaires holding hard cash and property. The people who possess greater aesthetics like in case of painters and poets are not considered rich unless they have been able to cash their traditional values. Thus skills like education, aesthetics, cultural values and health status should all be evaluated against their monetary worth in a capitalist society. In capitalist country, education and health may have very high monetary value due to their close relevance to higher participation in bankable labor market. Ideas and innovation is observed to be directly proportional to level of education of the individual. Aesthetics and cultural values in quasi capitalist societies like Pakistan are usually of less monetary value despite their importance to retaining the voice of reason within human societies. In the West, culture and aesthetics is for consumption of the elites where a painting of Da Vinci can bring hundreds of millions of dollars. Most of the western societies have rejected the value systems that the culture of



middle Europe offered to them that also produced painters like Leonardo Da Vinci. Most in the Western societies are inspired by their working hours in their jobs and success is earned by paying a monetary price. Even, culture, values, ethics and aesthetics are not available for free. Higher is the level of income, higher is the individual's exposure to culture, ethics and aesthetics. West is living by the adage that time is money meaning there are no free lunches available. Thus a capitalist and materialistic society has created a fantasy world where quality of entertainment is directly related to the income of the individual. However, in a society like Pakistan, all is not lost yet. Over the decades, Pakistan has also transformed into a consumer society where enmities of capitalism including technology induced products sought higher monetary value and worth more than indigenous culture, values, ethics and aesthetics. However, being an Islamic country, the definition of prosperity should not be the assets that can be evaluated on their monetary worth. In other words, it should not be the bankable nature of the piece of paper but it should be the idea behind the exchange of monetary asset that should define the life styles of common Pakistanis. The piece of paper, a contract of any nature, has been practiced to have a well guided meaning in Islamic history. The agreement of Hudabia where prophet Muhammad (PBUH) made a written contract with non-believers of Makkah is a good example to define the non-monetary value to contract. Thus a currency that is the contract between both the government and the population should follow the same spirit of ethics than greed. The greed in guise of incentive should not be the motive behind accumulating assets. The welfare purpose to the monetary asset where it should be inclusive to the issues of the poor is an important application of ethical guidelines practiced in Islamic history. Islam does not prohibit profits and accumulation of monetary assets but the ethical guidelines should override the aspects of greed. Accumulation of monetary assets in terms of hard cash or other bankable modes should lead to welfare outcomes for the population in the country whereby these assets are used to strengthen the humane culture; that can consider ethical representation of heterogeneous income groups, and practice of values of peace and harmony inside and outside national borders.

## **6. Defining Feminist Values in Islamic Culture, Contract and Unit of Family**

The extension of life is presented by male and female who through reproduction activity gives birth to life. This is common within all mammals including humans. The mother of the child due to the painful and lengthy process of pregnancy gives birth to new life and thus has been observed to be more compassionate towards her child. However, males are observed to be of little value to this whole process of reproduction. Since ancient times and because of physical superiority males are considered to be the source to arrange for protection of the child and the mother. However, the ancient societies did not put a contractual responsibility of males in the form of written contract and thus it was the female who was binding to take care of the child from conception to birth and after wards.

The culture of binding man into the process of reproduction was realized in every culture and foundation of the institution of marriage was constituted. Marriage is not an institution out of necessity but a contract between a man and a woman to enter into a binding contract for starting a family where each one is required to extend life with care, love and compassion.

The traditional value systems that the institution of family represents is somewhat out rightly rejected in postmodern feminist movements that think that marriage actually restrict the rights of a female and takes her freedom away. Sex is among the basic human instincts and postmodern feminist movements

defend the right of sex for a woman. Without revolting against the basic human instincts, postmodern feminism builds a superfluous rights movement in context of rejecting the institution of marriage. It is understandable that traditionally women have been exploited by the many systems and cultures of economic, social and ethical practices that favor men over women.

The educated West thinks that without binding a woman into the institution of marriage, she can still carry out her responsibility to represent herself as a best guide to her child. It is accepted that the independence of women due to the feminist movements in the West has brought more rights to women and they are emancipated and economically empowered to live a life of independent women.

However, postmodern feminist movements fail to realize that the contract that is signed between a man and woman when they marry is actually defining the responsibility to give their children a secure future more than it is about him and her and their sexual lives. For example, Islamic culture which prohibits sex out of a binding contract is a direct outcome to secure the unit of family. Thus Islamic societies can retain their cultural heritage that promotes institution of marriage while working for cultural solutions where women are given greater rights. For example the labor laws in a Islamic country like Pakistan can give monetary value to the institution of marriage by facilitating marriage, child birth and adolescent care through paid leave of 4 to 5 years to women and consider it as work experience for women who participate in job market and also intend to get married.

Many psychological studies suggest that the children that are brought up in a unit of family of a father and mother tend to be more intelligent and with stable personality traits. More importantly the institution of marriage suggests that Islamic culture considers there is more to the interaction of a woman and man than a mere sexual attraction. Islam defines the role of humanity more than what the basic instincts like sex try to define their role. Human being is much more than the outcome of their basic instincts and thus Islam gives humanity a greater role in world affairs. Yes, that roles need to be binding through law to ensure that basic instincts don't override the matters of the society.

By defying the contractual binding of marriage, postmodern movements of Feminism define a culture that is inferior to Islamic culture in this respect. Women can be empowered in a society while the society also practices the contractual value of marriage. And if the institution of marriage, that as explained above, is more about the child than the very act of reproduction, is translated into other means leading to gender exploitation in favor of men, the contemporary law can address such issues with ease.

Thus the feminist movements in countries like Pakistan where Islamic culture is strengthened should work on its own version of female empowerment rather than trying to implement a system that is practiced in another cultural context like is the US or Europe.

## **7. Pakistan 100 Years into the Future:**

Ahmad was sitting on a terrace of a well preserved old building turned into a restaurant that was just adjacent to the Badshahi mosque. He was a Pakistani astronaut who went on a mission to outer space well beyond the Moon and MARS in year 2030 when SUPARCO put a Pakistani flag on the moon. Time was relative for him and his crew. Their mission was to explore outer space. That is what they

did and spent a year in the vastness of space beyond the solar system. But when they returned back to Earth after a year, it had been 100 years passed on Earth. The Pakistani space crew knew the possibility and so did the SUPARCO. They were well received in Pakistan. By 2130, space travel had become so common that they were only heroes in history books that were written in 21<sup>st</sup> century by many Pakistani authors. There were many websites and social media webpages dedicated to them. But not many were talking about them in 2130. So he and his crew could live among the people not like celebrities but someone's who just had spectacular careers.

The joy was all for them to observe. Pakistan had changed a lot in these hundred years. It was technologically advanced. People could live for more than 100 years on average. New technologies had overcome most of the diseases of 21<sup>st</sup> century. There was no poverty and technical innovation had helped people to live efficient lives. Most importantly Pakistan was a hub to cultural activities where the people had maintained their value system. Hijab was not considered something outdated or out of fashion. Local cuisine was the same as it was 100 years ago. Efficient and healthy techniques of cropping enabled the food on table rich with nutrition. Old houses were well preserved in their aesthetic architecture but equipped with technology including intelligent robotics that reduced the effort in household chores by both men and women equally.

Cities like Lahore and Karachi were the cities of lights not only to Pakistanis but tourists from all over the world who come to these cities to experience the centuries old cultural heritage of Muslims well preserved and well promoted.

Since he came back from outer space, Ahmed's favorite pass time was to sit on the terrace and look at Badshahi Mosque with awe and wonder. Before he went to space in 2030, the skyline was the same above the Mosque but the people were different. While sitting there he always imagined himself walking in the streets adjacent to the mosque. Meeting friends in the same restaurants and sitting with them till late hours of the night. Today he was sitting with two middle aged women. They showed him clips of some videos they made for You Tube from 2030 to 2060. In those years from the distant past, both the women were just 10 and 5. As they grew up they were making videos for their father. In every video they used to tell the audience how they were living their lives. Their lives changed as they moved on into the next century. One was now a doctor and other was an economist. By 2030 most of youth lived their lives in social media. So the videos were more about telling about the world to their father who had disappeared into the depths of outer space. They were telling their father the stories of their future as they were witnessing it and contributing in it. How humanity ended wars. How humanity achieved harmony and peace globally where human rights were finally being preserved universally. Both these girls, as was common among their generation witnessed transformation of Pakistan and the world. Pakistan had become a nation that contributed significantly to development of new technologies in all field of sciences. Many Pakistanis received Nobel prizes in all categories.

After every video these girls always had one question for Ahmed:

“Father when would you come back home”? More than anyone else they waited for Ahmed to come back. And now Ahmed was finally sitting with his daughters reading their social media messages. One year spent in space had him journey 100 years into the future. His daughters had waited for 100 years and gave him a better world and a better Pakistan as a present. Yes, the pain of waiting was all theirs but her generation and the younger ones made the impossible possible.

The world without war and disease was indeed not a small feat. A journey better than a voyage to outer space and an expedition better than what awaits beyond the solar system. For Ahmed, it was not easy to believe what the generation of his daughters have achieved. They have preserved the value of their forefathers and proved that Pakistan is integral part of the future of not only this world but the universe yet to be discovered in entirety.

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## Appendix

### The 17 individual Sustainable Development Goals

#### Goal 1: No poverty

SDG 1 is to: "End poverty in all its forms everywhere". Achieving SDG 1 would end extreme poverty globally by 2030. The goal has a total of seven targets: five to be reached by 2030 and two that have no specified date. The five outcome-related targets are: eradication of extreme poverty; reduction of all poverty by half; implementation of social protection systems; ensuring equal rights to ownership, basic services, technology and economic resources; and the building of resilience to environmental, economic and social disasters. The two targets related to means of achieving SDG 1 call for mobilisation of resources to end poverty and the creation of sound policy frameworks. There are 13 indicators to measure progress on the targets.

Despite ongoing progress, 10 per cent of the world live in poverty and struggle to fulfill basic needs such as health, education, and access to water and sanitation. Extreme poverty remains high in low-income countries particularly those affected by conflict and political upheaval. Without significant shifts in policy, extreme poverty will significantly increase by 2030. Around 1 in 10 people live on less than the target figure of international-\$1.25 per day. A very low poverty threshold is justified by highlighting the need of those people who are worse off.

#### Goal 2: Zero hunger

Sufficient and healthy foods should be made available to everyone

SDG 2 is to: "End hunger, achieve food security and improved nutrition, and promote sustainable agriculture" The UN has defined 8 targets SDG 2. The five outcome targets are: ending hunger and improving access to food; ending all forms of malnutrition; agricultural productivity; sustainable food production systems and resilient agricultural practices; and genetic diversity of seeds, cultivated plants and farmed and domesticated animals. investments, research and technology. The three means for achieving SDG 2 include addressing trade restrictions and distortions in world agricultural markets and food commodity markets and their derivatives. SDG 2 has 14 indicators that will measure progress.

Globally, 1 in 9 people are undernourished, the vast majority of whom live in developing countries. Under nutrition causes wasting or severe wasting of 52 million children worldwide. It contributes to nearly half (45%) of deaths in children under five – 3.1 million children per year. A study published in Nature concluded that it is unlikely there will be an end to malnutrition by 2030.

#### Goal 3: Good health and well-being for people

SDG 3 is to: "Ensure healthy lives and promote well-being for all at all ages". Of the total of 13 targets, nine are "outcome" targets. Those are: reduction of maternal mortality; ending all preventable deaths under 5 years of age; fight communicable diseases; ensure reduction of mortality from non-

communicable diseases and promote mental health; prevent and treat substance abuse; reduce road injuries and deaths; grant universal access to sexual and reproductive care, family planning and education; achieve universal health coverage; and reduce illnesses and deaths from hazardous chemicals and pollution. The four "means to achieving" SDG 3 targets are: implement the WHO Framework Convention on Tobacco Control; support research, development and universal access to affordable vaccines and medicines; increase health financing and support health workforce in developing countries; and improve early warning systems for global health risks. SDG 3 has 21 indicators to measure progress toward targets.

Significant strides have been made in increasing life expectancy and reducing some of the common causes of child and maternal mortality.

#### **Goal 4: Quality education**

SDG 4 is to: "Ensure inclusive and equitable quality education and promote lifelong learning opportunities for all". The UN has defined 10 targets and 11 indicators for SDG 4. The seven outcome-oriented targets are: free primary and secondary education; equal access to quality pre-primary education; affordable technical, vocational and higher education; increased number of people with relevant skills for financial success; elimination of all discrimination in education; universal literacy and numeracy; and education for sustainable development and global citizenship. The three "means of achieving" targets are: build and upgrade inclusive and safe schools; expand higher education scholarships for developing countries; and increase the supply of qualified teachers in developing countries.

Major progress has been made in access to education, specifically at the primary school level, for both boys and girls. The number of out-of-school children has almost halved from 112 million in 1997 to 60 million in 2014. Still, at least 22 million children in 43 countries will miss out on pre-primary education unless the rate of progress doubles.

#### **Goal 5: Gender equality**

SDG 5 is to: "Achieve gender equality and empower all women and girls". Of the nine targets, six are outcome-oriented: ending all forms of discrimination against all women and girls everywhere; ending violence and exploitation of women and girls; eliminating harmful practices such as child, early and forced marriage and female genital mutilation; increasing value of unpaid care and promoting shared domestic responsibilities; ensuring full participation of women in leadership and decision-making; and ensuring access to universal reproductive rights and health. The three "means of achieving" targets are: fostering equal rights to economic resources, property ownership and financial services for women; promoting empowerment of women through technology; and adopting, strengthening policies and enforcing legislation for gender equality. Fourteen indicators are named to measure progress toward gender equality.

According to the UN, "gender equality is not only a fundamental human right, but a necessary foundation for a peaceful, prosperous and sustainable world." Providing women and girls with equal

access to education, technology, health care, decent work, and representation in political and economic decision-making processes will nurture sustainable economies and benefit societies and humanity at large. Achieving gender equality will require enforceable legislation that promotes empowerment of all women and girls.

### **Goal 6: Clean water and sanitation**

SDG 6 is to: "Ensure availability and sustainable management of water and sanitation for all".[24] The six outcome-oriented targets cover the entire water cycle. Targets 6.1 through 6.6 are: provision of safe drinking water; ensuring safe sanitation and hygiene services for all; increasing reuse of wastewater; increasing water-use efficiency and addressing scarcity; implementing IWRM (integrated water resources management) through transboundary cooperation; and protecting and restoring water-related ecosystems. The two "means of achieving" targets call for international cooperation and capacity-building for developing countries and increased local participation in water and sanitation management. The eight targets are measured by 11 indicators.

Indicators measure proportion of the population with access to safe drinking water and safely managed sanitation services, including a hand-washing facility with soap and water". The Joint Monitoring Programme of WHO and UNICEF (JMP) reported in 2017 that 4.5 billion people currently do not have safely managed sanitation.

### **Goal 7: Affordable and clean energy**

SDG 7 is to: "Ensure access to affordable, reliable, sustainable and modern energy for all". Targets for 2030 include access to affordable and reliable energy while increasing the share of renewable energy in the global energy mix. This would involve improving energy efficiency and enhancing international cooperation to facilitate more open access to clean energy technology and more investment in clean energy infrastructure. Plans call for particular attention to infrastructure support for the least developed countries, small islands and land-locked developing countries.

As of 2017, only 57 percent of the global population relies primarily on clean fuels and technology for cooking, falling short of the 95 percent target.

### **Goal 8: Decent work and economic growth**

SDG 8 is to: "Promote sustained, inclusive and sustainable economic growth, full and productive employment and decent work for all".[30] For the least developed countries, the economic target is to attain at least a 7 percent annual growth in Gross Domestic Product (GDP). Achieving higher productivity will require diversification and upgraded technology along with innovation, entrepreneurship, and the growth of small- and medium-sized enterprises (SMEs). Some targets are for 2030; others are for 2020. The target for 2020 is to reduce youth unemployment and operationalize a global strategy for youth employment. Implementing the Global Jobs Pact of the International Labour Organization is also mentioned.

Strengthening domestic financial institutions and increasing Aid for Trade support for developing countries is considered essential to economic development. The Enhanced Integrated Framework for Trade-Related Technical Assistance to Least Developed Countries is mentioned as a method for achieving sustainable economic development.

### **Goal 9: Industry, Innovation, and Infrastructure**

SDG 9 is to: "Build resilient infrastructure, promote inclusive and sustainable industrialization, and foster innovation". This goal includes striving for resilience (engineering and construction) and urban resilience. Manufacturing is a major source of employment. In 2016, the least developed countries had less "manufacturing value added per capita." The figure for Europe and North America was US\$4,621, compared to about \$100 in the least developed countries. The manufacturing of high-tech products contributes 80 percent to total manufacturing output in industrialized economies but barely 10 percent in the least developed countries.

The last of the seven targets is "Universal Access to Information and Communications Technology." Mobile-cellular signal coverage is the target's indicator and has improved a great deal. In previously "unconnected" areas of the globe, 85 percent of people now live in covered areas. Planet-wide, 95 percent of the population is covered.

### **Goal 10: Reducing inequalities**

SDG 10 is to: "Reduce income inequality within and among countries". Progress toward SDG 10 targets calls for reducing income inequalities; promoting universal social, economic and political inclusion; ensuring equal opportunities and end discrimination; adopting fiscal and social policies that promote equality; improving regulation of global financial markets and institutions; enhancing representation of developing countries in financial institutions; and responsible and well-managed migration policies. The targets relating to means of achieving goals call for special and differential treatment for developing countries; encourage development assistance and investment in least developed countries; and call for reduced transaction costs for migrant remittances.

Target 10.1 is to "sustain income growth of the bottom 40 per cent of the population at a rate higher than the national average". This goal, known as 'shared prosperity', is complementing SDG 1, the eradication of extreme poverty, and it is relevant for all countries in the world.

### **Goal 11: Sustainable cities and communities**

SDG 11 is to: "Make cities and human settlements inclusive, safe, resilient, and sustainable". Target 11.1 is to ensure access to safe and affordable housing by 2030. The indicator to measure progress toward this target is the proportion of urban population living in slums or informal settlements. Between 2000 and 2014, the proportion fell from 39 percent to 30 percent. However, the absolute number of people living in slums went from 792 million in 2000 to an estimated 880 million in 2014. Movement from rural to urban areas has accelerated as the population has grown and better housing alternatives are available.



## **Goal 12: Responsible consumption and production**

SDG 12 is to: "Ensure sustainable consumption and production patterns". The 11 targets are: implement the 10-Year Framework of Programs on Sustainable Consumption and Production Patterns; achieve the sustainable management and efficient use of natural resources; reducing by half the per capita global food waste at the retail and consumer levels; achieving the environmentally sound management of chemicals and all wastes throughout their life cycle; reducing waste generation through prevention, reduction, recycling and reuse; encourage companies to adopt sustainable practices; promote public procurement practices that are sustainable; and ensure that people everywhere have the relevant information and awareness for sustainable development. The three "means of achieving" targets are: support developing countries to strengthen their scientific and technological capacity; develop and implement tools to monitor sustainable development impacts; and remove market distortions, like fossil-fuel subsidies, that encourage wasteful consumption.

## **Goal 13: Climate action**

SDG 13 is to: "Take urgent action to combat climate change and its impacts by regulating emissions and promoting developments in renewable energy". The targets are: strengthen resilience and adaptive capacity to climate-related disasters; integrate climate change measures into policies and planning; and build knowledge and capacity to meet the challenge of climate change. Means for achieving the targets call for implementing the UN Framework Convention on Climate Change and promoting mechanisms that will increase capacity for planning and management.

## **Goal 14: Life below water**

SDG 14 is to: "Conserve and sustainably use the oceans, seas and marine resources for sustainable development". Effective strategies to mitigate adverse effects of increased ocean acidification are needed to advance the sustainable use of oceans. As areas of protected marine biodiversity expand, there has been an increase in ocean science funding, essential for preserving marine resources. The deterioration of coastal waters has become a global occurrence, due to pollution and coastal eutrophication (overflow of nutrients in water), where similar contributing factors to climate change can affect oceans and negatively impact marine biodiversity. "Without concerted efforts, coastal eutrophication is expected to increase in 20 per cent of large marine ecosystems by 2050."

## **Goal 15: Life on land**

SDG 15 is to: "Protect, restore and promote sustainable use of terrestrial ecosystems, sustainably manage forests, combat desertification, and halt and reverse land degradation and halt biodiversity loss". This goal articulates targets for preserving biodiversity of forest, desert, and mountain ecosystems, as a percentage of total land mass. A "land degradation-neutral world" can be reached by restoring degraded forests and land lost to drought and flood. Goal 15 calls for more attention to

preventing invasion of introduced species and more protection of endangered species. Forests have a prominent role to play in the success of Agenda 2030, notably in terms of ecosystem services, livelihoods, and the green economy; but this will require clear priorities to address key tradeoffs and mobilize synergies with other SDGs.

### **Goal 16: Peace, justice and strong institutions**

SDG 16 is to: "Promote peaceful and inclusive societies for sustainable development, provide access to justice for all and build effective, accountable and inclusive institutions at all levels". Reducing violent crime, sex trafficking, forced labor, and child abuse are clear global goals. The International Community values peace and justice and calls for stronger judicial systems that will enforce laws and work toward a more peaceful and just society.

### **Goal 17: Partnerships for the goals**

SDG 17 is to: "Strengthen the means of implementation and revitalize the global partnership for sustainable development". Increasing international cooperation is seen as vital to achieving each of the 16 previous goals. Goal 17 is included to assure that countries and organizations cooperate instead of compete. Developing multi-stakeholder partnerships to share knowledge, expertise, technology, and financial support is seen as critical to overall success of the SDGs. The goal encompasses improving north–south and South-South cooperation, and public-private partnerships which involve civil societies are specifically mentioned.