Human Creativity as a Renewable Resource

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Abstract

This article is a scholarly essay that uses secondary data sources together with historical analysis to provide and broad overview of the development of humans throughout their long history on Earth, how humans have slowly decoupled themselves from Darwinian evolutionary condition by developing language and intelligence which, in turn, has allowed them to adapt the environment to fit their needs instead of simply adapting themselves to fit the harshness of the natural environment and a survival of the fittest principle. Thus, unlike all non-human species, as human society continues to evolve, the process of natural selection seems to apply less and less to the human species. With the development of language and intelligence, humans have progressed at an amazing rate in terms of quality of life, inventions, knowledge of how the world works and humans' place in it, and their development as free moral agents. However, this new human condition has brought with it, especially within the last few hundred years, major impacts to the planet. As a result of these impacts, this article has argued that humans must view human creativity as a renewable human resources that should be nurtured at every stage of human development and every stage in the educational process and see it as a critical factor creating a more a sustainable and just environment for all (humans, animals, and the natural environment).

Keywords: Renewable resources; creativity; sustainability; sustainable development; human rights.

Introduction

A resource is defined as an asset that can be used to satisfy needs such as human needs, political-economic-social needs, and environmental-ecological needs. As such, there are many types of resources that can be used to satisfy the varied interdependent and intersecting needs of humans such as human resources, information and technological resources, monetary resources, and natural resources.

With respect to natural resources, a renewable resource is defined as a natural energy resource that can be used indefinitely because it is continually replenished by naturally recurring physical processes (for instance, solar, air, water, biomass, and geothermal). They exist within the hydrosphere, geosphere, biosphere, and atmosphere which are interdependent and interconnected in a complex web of cycles and processes. All living energy systems start with and depend on the sun for their existence. As such, the supply of renewable resources is, for all practical purposes, unlimited. Although renewable resources are plentiful, the limitation and challenge in their use has been in how to make practical and affordable use of them on a large scale (Park, 2016).

Renewable resources are contrasted with nonrenewable resources such as fossil fuels, rocks, and minerals that cannot be replenished and thus are limited in supply. Another issue to be addressed with renewable resources is that they are dependent on the natural rhythms and cycles of the environment and they are intertwined and interdependent with the ecosystems in the environment which operate in a delicate balance.

Until recent decades, most people have given little thought to the impact of human expansion across the globe. For example, mass consumerism, the exploitation of natural resources, unbridled urbanization, and rapid population growth) has created stress on the planet, human societies, and animal ecosystems. Planetary crises that include mass pollution, species extinction, ozone depletion, climate change, and natural resource depletion threaten the survival of all living things (Steg, Perlaviciute, & van der Werff, 2015).

A major turning point in human history

Although there exists major problems in the world (for example, extreme poverty, illiteracy, famine), overall, the quality of life for most people on the planet has improved dramatically since the Industrial Revolution. The Industrial Revolution may have had the greatest impact on society in human history because it changed the course of human history in very tangible ways, from new inventions and innovations in nearly every aspect of life to the rapid extension of life due to advances in medical science and healthier living. These new inventions and medical advances quickly began to raise the standard of living for most people, greatly speeded up globalization through internationalization of trade, and brought about wide-spread structural changes in nearly all aspects of society from universal basic education to widespread automation of agriculture and manufacturing to mass communication and transportation systems (Goudie, 2018).

Per capita gross domestic product remained relatively constant throughout most of human history until the Industrial Revolution arrived (Horn, Rosenband, & Smith, 2010; Wrigley, 2018). While the Industrial Revolution brought about mainly economic and technological impacts, the Democratic Revolution (for example, the American and French Revolutions) which occurred at the same time (late 18th century to mid-19th century) brought about mainly political and social impacts. Together, these revolutions created a mass change in the course of human history and how humans lived and interacted with others on the planet and how they interacted with their natural environment. (Palmer, 2014). The large scale use of non-renewable resources since the Industrial Revolution has been a primary factor in fueling economic growth around the world (Cronin, 2009).

Although the Industrial Revolution gradually brought about better living conditions for most people, it also brought about problems such as a heavy reliance on non-renewable resources which, in turn, brought about mass pollution and natural resource depletion. Over the past two hundred years, most people have probably viewed this as an acceptable trade-off but more recently, with advances in climate science and a better understanding of how these conditions have impacted the planet, governments and other organizations now have both the scientific data as well as the moral responsibility (for instance, human, animal, environmental rights and international laws) to act in order to reduce the negative impacts and to chart a new course for humanity by transitioning to renewable energy resources for a more sustainable future (Blessinger, Sengupta, & Yamin, 2018; Blessinger, 2017; Steg, Perlaviciute, & van der Werff, 2015).

The environmental impact of human existence

The study of human interaction with their natural environment is commonly known as environmental history. It is a very broad and diverse field of study that impacts many disciplines. The field of environmental history has traditionally been focused on environmental conservation but has broadened the scope of its focus to cover sustainable development issues which has a more global remit and holistic and interdisciplinary way of approaching ecological problems and environmental concerns. (Goudie, 2018; MacEachern & Turkel, 2009).

Over the long course of human evolution, especially the past several thousand years (for example, the development of written language, development of domestication of animals and farming, development of social communities and trade), two basic features have characterized human development that have made them unique from other species: 1) sociality – the personal connections that exists between people such as mutual cooperation and interdependence for survival and to fulfill basic human needs, and 2) intelligence – the basic knowledge and skills required to solve everyday problems (eating, clothing, shelter, defense and protection from predators or enemies) necessary for survival and communicating information with other humans towards this end (Chiarelli, 1998).

Forming social groups, which evolved into more complex social communities with political systems, were a consequence in helping to meet their everyday needs as the human population increased and as they learned how to better live in and interact with their natural environment. Chiarelli (1998) contends that the two features of sociality and intelligence were the two most important selective factors in all periods of human evolution. These two features contributed in

humans developing an erect posture and in developing interpersonal information communication skills. It is likely therefore that human physical development (for example, erect posture and ability to speak) was facilitated by human social development, thus serving as mutually reinforcing factors (Chiarelli, 1998).

The development of these two features (that is, social and cognitive development) allowed humans to take greater control over their environment. In other words, these features allowed human to adapt the environment to their human needs rather than humans simply adapting themselves to the environment which is a key distinction between humans and all other species on the planet. For instance, some animal species adapt to their environment (for example, hibernation, migration, tolerance, camouflage) but humans have learned to adapt the environment to fit their needs (for example, domestication of animals and plants and food preservation methods to solve food shortage problems) (Chiarelli, 1998; Goudie, 2018).

Physically altering the natural environment (for example, building mass transportation systems, creating urban living communities, creating mass fresh water supply and sanitation and waste disposal systems, creating climate controlled living conditions) to address the needs of humans has brought about great advances in economic development and quality of life for many people. However, at the same time, without proper long-term sustainable development planning, the human impacts made to the natural environment have also led to overexploitation of resources (for example, over-fishing, loss of biodiversity, habitat destruction, environmental contamination, and over-consumption of non-renewable resources) (Goudie & Viles, 2016; Goudie, 2018; Vidal, 2019).

Because of these issues, the focus is now on sustainable development as a rational means by which to safeguard the planet for future generations. Fritjof (2015) states that this new understanding of life centers on the intersection of four dimensions: biological, cognitive, social, and ecological. Fritjof (2015) contends that this new way of thinking about humans and our relationship to the world represents a major paradigm shift in our way of thinking – from "seeing the world as a machine to understanding it as a network" (p. 242). In this new way of thinking, traditional Darwinian "evolution is no longer seen as a competitive struggle for existence, but rather as a cooperative dance in which creativity and the constant emergence of novelty are the driving forces" (p. 243). This new way of thinking requires viewing, understanding, and solving problems from a holistic systems view wherein the complex web of relationships, patterns, structures, and context is essential to addressing the world's most complex and important problems.

Rethinking the human relationship to the planet

One advantage of nonrenewable resources is that they are highly concentrated forms of energy and they can be easily stored, transported, and used for a variety of purposes which is why they have been so heavily in demand by modern societies. However, this advantage comes with certain disadvantages such pollution, climate change, deforestation, and damaged ecosystems. Traditional large scale farming and mass urbanization, for instance, have dramatically increased the need to clear land for use in farming and to harvest timber for housing, respectively. These two factors, in turn, have had the unintended consequence of mass deforestation in some parts of the world, especially in areas such as the Amazon rainforest. Since 1970, about 90% of deforested land in the Amazon rainforest has been used for livestock pasture farming (Margulis, 2004).

Large forests such as the Amazon rainforest are needed to help control the amount of carbon present in the atmosphere. If deforestation occurs on a very large scale then it can contribute to global warming. Forests are important to the health of the plant because about 300 billion tons of carbon are stored in trees alone. Thus, when trees are killed on a massive scale, it has a negative impact on the global carbon cycle by releasing carbon dioxide into the air. In addition, the planet loses about 18 million acres of forest annually and about 15% of all greenhouse emissions are the result of deforestation which is the second largest human created cause of carbon dioxide being released into the planet's atmosphere. The leading cause of increased carbon dioxide into the atmosphere is the

large scale burning of fossil fuels. More specifically, in the last 150 years, carbon dioxide levels have increased from 280 parts per million to 400 parts per million, leading to warmer oceans, melting glaciers and ice sheets, and rising sea levels (Bradford, 2018; IPCC, 2014).

The increase in carbon dioxide into the atmosphere, in turn, causes the atmospheric temperature to rise because carbon dioxide is a gas and, unlike oxygen and nitrogen which makes up most of the Earth's atmosphere, it stores thermal energy from the sun in the atmosphere – this is known as the greenhouse effect because the absorbed thermal energy gets trapped in the atmosphere and the atmospheric temperature gradually increases over time. In addition to contributing to the greenhouse effect, mass deforestation also has the negative impacts of species loss, soil erosion, disruption to the water cycle (decrease in freshwater supply) and the destruction of fragile interdependent ecosystems. Although efforts have been made in many countries to counter deforestation with forest renewal and other forest management programs, forested areas on the planet continue to decline (Bradford, 2018; IPCC, 2014).

Because of human created causes of global warming (that is, burning of fossil fuels and deforestation), the world, by and large, has gradually come to the realization that human societies must start transitioning to renewable forms of energy. Currently, about 80% of human energy consumption comes from fossil fuels (International Energy Agency, 2014; (McNicoll, 2007). The transition from non-renewable resources to renewable resources has become a major challenge for several reasons.

First, it requires people and governmental leaders to think in new ways and antiquated mindsets can be difficult to change, even in the face of conclusive scientific evidence.A transformative shift in the way people live their lives would have to occur. O'Sullivan (2002) writes that "we are dealing with a profound cultural pathology that requires a deep cultural therapy. Part of this cultural therapy involves a transformative mode of cultural criticism" (p.5). Second, the negative impact to the planet has occurred relatively slowly over the past few hundred years and, despite the scientific evidence, many people are reluctant to believe in the necessity of large scale transitioning to renewable energy unless they see and feel it in tangible ways personally. Third, when people are comfortable with the status quo, they are unlikely to want to change unless there is a real benefit to them personally for doing so. Thus, not only is on-going education required to inform people with the facts about climate change but governmental leaders must also take the lead in bringing this awareness about and driving the changes needed to incentivize both producers and consumers to want to make the changes needed. O'Sullivan (2002) maintains that visionary education, at all levels, requires "all members of the planet to enter communities of greater inclusion" (p.9).

Decoupling overreliance on non-renewable resources

It is important to understand the difference between sustainability and sustainable development. According to Shaker (2015), sustainability is the human-ecosystem equilibrium (that is, the condition of homeostasis) whereas sustainable development is the process by which humans attain the goal of sustainability. As discussed by Blessinger, Sengupta, and Yamin (2018), throughout human history, prior to the Industrial Revolution, people made use of renewable resources on a relatively small scale to meet the basic living needs (for example, using air for seafaring transportation, timber for heating and shelter, and fresh water cooking and drinking).

Ancient societies, even after the invention of agriculture and domestication thousands of years ago, still had to adapt a large part of their lives to fit the natural conditions of the environment. Thus, there was little need to use non-renewable resources until the advent of industrial societies that needed fossil fuels on a massive scale to fuel economic development (for example, mass production and global commerce). This situation, as mentioned previously, created a paradigm shift in how humans lived within their environment. The discovery and application of electricity created another wave in the large scale use of fossil fuels because electricity is a secondary energy source that must be produced by primary energy sources. Electricity allowed humans to create climate controlled living

and workplace settings, artificial lighting, mass manufacturing systems, as well as modern transportation required humans to physically restructure the landscape to bring these things about.

Perhaps the most remarkable result of human progress over the past hundred thousand years is that every stage of progress has allowed humans, for the first time in their long history, to break free from the Darwinian evolutionary restraints that other species are still confined to. As a result, humans over the past few thousand years especially have become less and less dependent on the conditions and cycles of the natural environment. Over the past two hundred years, the rate of progress has accelerated greatly. However, humans, in their rush to improve the quality of life and to escape the shackles of political oppression and economic deprivation, quickly adopted mass industrialization without fully understanding the consequences it would have on the natural environment. Plus, until recent decades we lacked the scientific methods and tools needs to reliably collect the scientific data needed to collect accurate and complete climate data needed to make informed and rational decisions.

Given the preceding discussion on the evolution of humans and their interaction with and impact on the environment, important questions are raised that need to be addressed if humans are to successfully transition to the next stage of their evolution on this planet. For instance, how can economic growth, which is important to employment and quality of life, be decoupled from overreliance on natural non-renewable resources? In other words, how do we make the transition to renewable resources without creating upheaval in the lives of people and in society and without impacting their standard of living and consumption?

This is one of the most fundamental questions that opens up new lines of inquiry and new sub-disciplines in the natural and social sciences as well as the humanities, with a focus on not necessarily reducing consumption which most people are probably not likely to want to do but finding innovative production methods based on low or zero carbon economic processes. With human population growth continuing and the mass migration movements (for example, refugee crisis) and the continued urbanization of many countries, societies must find innovative ways to transition to clean, safe, and inexpensive ways to produce and consume renewable energy resources without disrupting how people live their everyday lives (Chakrabarty, 2018).

A moral responsibility to protect the environment

For better or for worse, humans now dominate the Earth and their impact on the planet is wide-ranging and immediate. Thus, in the modern age, the relationship between human history and natural history has converged because the two are now inseparable. Regardless of the discipline or profession, humans are now confronted with the stark reality of climate change and the long-term negative effects that it will likely have on future generations. Humans can no longer afford to think about human history or natural history in isolation of each other. Humans can no longer afford to think about natural science and social science and humanities as separate from each other. Now scientists, researchers, scholars, and decision-makers are required to think in more holistic and interdisciplinary ways and with a mindset of moral responsibility to the plant and future generations.

Humans have made great strides in understanding how the universe works and how life on planet Earth works: from quantum mechanics and general relativity to evolution and ecology, humans are now required to think and interact in much more morally responsible ways and more innovative and creative ways. Scientific knowledge is necessary but not sufficient to solve human problems. A sense of moral and legal obligations are also needed. Unlike many thousands of years ago when the pace of human evolution and progress was extraordinarily slow (compared to today), humans are now confronted with a sense of urgency never before imagined or required.

As noted by Chakrabarty (2018), much of human history revolved around two major stories: 1) how humans learned to decouple themselves from the limits and restraints placed on them by the harshness of their natural environments, and 2) how humans learned to free themselves from the domination of other humans and their authoritarian regimes. Unlike other species, humans have

developed at a much faster evolutionary pace than other species have been able to and this has allowed humans to escape the Darwinian evolutionary constraints still imposed on other species which, in turn, has allowed us to, among other things, develop higher levels of consciousness, higher order thinking, spoken and written languages, human rights, political, legal, and moral systems of social living, modern societies based on democratic principles, and scientific and technological discoveries and inventions. In short, human agency has now become a defining feature of the human species.

Given the long history of human evolution, it is quite remarkable that it has only taken humans a relatively short period of time to progress from hunter-gathers to agriculture-based societies to modern technology-based societies. The most rapid era of progress has been over the past two centuries. However, since humans have become a major force to change the face of the planet in a very short period of time, humans are now just learning that humans must also take on the moral responsibility that comes with that kind of power.

To that end, The United Nation has created the sustainable development goals as an ambitious initiative to help create a more sustainable planet. These goals are a concrete example of putting ideals into action and demonstrate that humans are beginning to take on the moral responsibility to manage and protect the natural environment for the benefit of all societies and for future generations. These goals not only cover human rights but also animal and environmental rights. A rights based approach to sustainability is important because scientific knowledge must be applied in a morally responsible way and in harmony with the environment. To that end, moral reasoning is just as important as scientific reasoning because while science equips us with the scientific data to understand our world, moral reasoning equips with the principles to act in ethical and humane ways.

Human creativity as a renewable resource

In modern cities the culture-led development and creative industry plays a vital role as a renewable resource and is significant in creating an identity of the city and underpinning their dynamism as a center of economic development (UNESCO 2011). Culture-led redevelopment of urban areas ought to give priority to sustainability in planning and design along with managing the existing environment, the tangible and intangible heritage that is unique to the city along with their community and cultural values. Conserving and adapting the urban environment contributes to a better quality of life. Caring for the creative resources helps in building a sense of social cohesion and provides a stable ecofriendly environment to work and thrive.

Industries thriving on culture and creativity is essential for urban renewal as it helps in developing the socio-economic environment and improve the living conditions of its inhabitants. Urban development needs to refocus their energy towards investing in cultural institutions which will help flourish a creative economy and develop a sustainable urban environment. Going back to our roots of culture driven heritage can help in mitigating ill-effects of climate change and conserve nature and delicate ecosystems that exist within the social fabric. Human creative should be fostered in humans at every stage of the educational process since creative industries represent an increasing proportion of the economy and, all else being equal, those with both creative and technical knowledge and skills will, presumably, be better able to adapt to rapidly changing societies.

Creativity leads to sustainable and well-planned urban living and ultimately results in a smart and well-balanced productive lifestyle. Yet, this is by no means an easy task. It requires a sound knowledge of the culture heritage and respect for its diversity inherent in the mesh of the city's culture. Promoting traditional ways of farming or water conservation has shown in the past that it leads us to a more sustainable means of food production with least possible impact on the environment and human growth (UNESCO 2014). Thus, more focus should be paced on the production side to produce, in sustainable and green ways, the products and services demanded by modern societies. On the consumer end, more novel solutions should be developed to create a low to zero carbon footprint and create a more circular economy based on sustainable development goals and practices.

However, creative potential is not equal for every individual and the same measure cannot be applicable to every culture. The capacity of creative expression varies from human to human and from culture to culture. Creative voices are not always well-represented and that can pose a major barrier to human growth. This kind of barrier can be crossed with mobility of goods and unhindered mobility of artists and people in cultural pursuit. Local learning is strengthened when we strive to develop new talents and new forms of creativity among the young learners and our future leaders. For instance, strengthening of local talent and creativity has led to the empowerment of women and girls who helped nurture cultural expressions and as citizens participating in cultural life.

With regards to higher education, sustainable development and creative learning can and should be taught at all levels. Some of the ways colleges and universities can accomplish this are: equip students with the knowledge and skills to think and act like globally (global competencies), engage students in learning activities that require them to interact productively with students different from themselves (intercultural competencies), increase students' abilities to solve the world's most important political, economic, social, and environmental problems facing the planet (problem-solving competencies), and actively engage students in real-world experiences like service-learning, community engagement, internships, and the like that allow them to put theory, knowledge, and skills into real practice that benefit society (ethical competencies).

Transitioning to the creative society

International cooperation with likeminded people seeking inclusive social and economic development can help achieve a society that is transitioning into a creative society. Culture and cultural industries can be a source of creativity and innovation which will help provide sustainable development much needed for our future generation. One of the main objectives of creating a creating society is to measure the impact of culture and its significance in creating a sustainable world. However, the important challenge lies in the fact that we are unable to measure to what extent people in general give importance to individual and collective behavior on sustainability. Values are an important consideration which determines people's consumption choices and patterns and their impact on the planet. Individual values reflect life goals which help determine what is important to people and what consequences they strive for in their lives in general (Rokeach, 1973; Schwartz, 1992).

Transitioning to a creative society needs support. Tapping into the power of creativity can help transform society into a positive force and ultimately benefit future generation with its sustainable development. Cultural and creative industries are one of the most rapid spreading industries in the world. Among the most thriving culture-based industries is that of cultural tourism, art and artefacts and cultural infrastructure which has proven to be pathbreakers in poverty alleviation in the underdeveloped remote corners. These culture-based industries have helped in revenue generation through a greener economy, attracting investments and offering locally based stable and decent jobs. Thus, creative learning is a critical aspect of lifelong and lifewide learning (Watts & Blessinger, 2016).

The concept of cultural tourism has taken its precedents in many parts of the world. UNESCO's practice of marking world heritage sites has generated substantial revenue for local people through cultural tourism and therefore transforming the existing economy into a culture-based economy. Also, these tourism trails or paths are managed by indigenous or local people, preserving their heritage or cultural assets and thereby safeguarding the richness of the society, preventing it from extinction. UNESCO has focused on creating 'creative cities', where imagination, innovation with diverse sounds, images and texts are produced, exchanged or traded (UNESCO 2014).

Culture can become a driver of sustainable growth when managed through protecting urban landscape and places of national and cultural heritage. One needs to boost creativity among the local people, mainly those who are vulnerable and are struggling to find a foothold in main stream society. Promoting cultural diversity, local art, research and innovation in this arena is the formula to transform itself into a culture-based society. Social cohesion and inclusiveness become an important criterion to promote the local culture. The local culture needs to be converted as a revenue generating

system and impact assessment needs to be done to measure the effectiveness of the programs. Sustainable and responsible cultural tourism with intercity networking and knowledge sharing among each other will help society transform into that of a cultural one.

A culturally induced sustainable economy will lead us to a circular economy. A circular economy is one that will work towards reducing the waste of various resources, conserves what is available to us and work towards mitigating environmental pollution. A circular economy will cover a broad scope ranging from industrial applications to product-oriented services where re-use and waste management can become a norm of functioning. In such a system the economy shifts to a more resilient sustainable system. Renting of pre-used material is yet another way to create a circular economy. This is now becoming a wide spread practice among many service providers and product designers who are advocating re-use, refilling and recycling of products.

A circular economy advocates a cradle to grave reusable product with extended life cycle that will help minimize waste and stop creating landfills of toxic products. Circular economy is not a thought to be harbored in the distant past but is a reality that every industry will need to look into and spend its research and development resources to create a sustainable world.

Conclusion

This article has attempted to lay out how humans have progressed throughout their long history, how they have interacted with their environment throughout their history on planet Earth, and how those interactions have impacted the planet. As a consequence of these impacts, this article has discussed the urgent need for all societies to make the transition from unclean non-renewable energy sources to clean renewable energy sources in order to protect our environment and move us quickly towards creating a sustainable environment, and more specifically, towards reaching the United Nations Sustainable Development Goals (United Nations).

Finally, this article has argued that key to achieving sustainability is to see creative learning as a vital renewable human resource. Since human creativity and creative learning are key elements to developing innovative knowledge and skills to solve the world's most difficult problems and since human imagination and human knowledge generation is renewable and, for all practical purposes, inexhaustible within each person and from generation to generation through lifelong and lifewide learning, then it follows that human creativity should be nurtured as every stage of human development and at every stage in the educational system in order to create a more sustainable planet.

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