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Honors 444B

Quiz 1 2018

1. If we assume that all the resources humans will ever use will be from Earth, then a limit does exist on everything. With that assumption, a limited amount of matter will limit all aspects of how we live, including biologically, financially, economically and agriculturally. In an article by Vince Beiserjune called The World’s Disappearing Sand, he exposes the truth to the limit on sand. If a very common resource like sand is already disappearing due to overuse, all resources available to humans now could soon be depleted.

If we assume that humans are not limited to the confines of Earth but can travel throughout the whole universe, it becomes an infinite amount of resources at our fingertips. Many of the discussions we have in class do not consider the fact that Earth will not be our permanent home. Our grandchildren will be the first humans to not be born where every other human has been. Resources suddenly surge into an astronomical scale that we would never be able to consume assuming we will explore the stars of our galaxy and universe.

1. According to the WorldMeter website that is an official tracker of current population data, there are 7.6 billion people alive today. In 1970, the growth rate was around 2% per year, but has reached a low of 1.12% per year in 2018.

According to this same resource, the US has a total population of 326,000,000 as of February 2018. In 1970, the growth rate per year was around .89%. Today, the growth rate is at a low of .7% per year.

In an article by Norimitsu Onishi called “Dangerously Low on Water, Cape Town Now Faces ‘Day Zero,’ Norimitsu describes the situation in Cape Town regarding their water shortage problems. This article shows that the Earth cannot continually support the constant growth of humans as we continue to soar in population. As we begin to see issues with overpopulation and food shortages, scientists cannot help but theorize a current ‘carrying capacity’ for the humans on Earth. Some estimates of 10 billion and 15 billion have been mentioned. It is impossible to pinpoint an exact population that can be supported by Earth. If we were to have this amount of people alive in 1800, most of the population would starve. Humans are a species that can optimize their way of producing and eating food to survive together. We are unable to predict where the improvement of technology would take us in terms of increasing the amount people we can support living at one time.

The demographic transition (DT) graph demonstrates the transitions a country or region takes as it transition from a pre-industrial state to an industrialized system. Keith Montgomery of the Department of Geography and Geology at UWC details the four stages of the DT graph clearly. Phase 1 is named ‘Pre-Modern’ and details a high birth and death rate that has no significant impact on total population. Phase 2 is the ‘Urbanizing and Industrializing’ of a region that results death rate to drop drastically while birth rate remaining static. This cause a drastic change in total population growth. Phase 3, known as the ‘Mature Industrial’ phase shows a steady drop in birth rate due to a number of speculative reasons including the thought that parents no longer need to have so many kids to ensure some survive through life to reproduce. This cause the population growth to still rise but at a slower rate as it approached phase 4. Phase 4, known as the ‘Post Industrial’ phase is when birth and death rate even out to keep population at a static amount.

1. Malthus was a man that theorized that population grows exponentially while food production grows arithmetically. When the population exceeds the production of food, there will be an insufficient amount of food to feed the population enough to survive causing famine across the world and economic spikes in the food industry. He theorized there will be a point in which this occurs that will mark the beginning of horrible disaster for the population of the world that will also limit what the ‘carrying capacity’ of the Earth is. Is he correct? There is obviously an amount of people that would cross that linear line of food production, but should we ever reach it? In an article by Michael Schuman touching on this debate says “If we don’t pay more attention to our farmers, Malthus might come back to haunt us.” There needs to be constant research into healthy farming habits that can continue to extent the linear food production line in order to have enough food to feed everyone. We must also assume that Earth is the only planet that will be able to supply us with food.
2. In an article by Lee Ventola called “The Antibiotic Resistance Crisis,” he details the major causes of the antibiotic resistance we see today. The major reasons include overuse, inappropriate prescribing, extensive agricultural use, and the availability of few new antibiotics.
3. Overuse can be solved by not prescribing antibiotics when it is not needed. Overuse can be extended into the third major reason of antibiotic resistance which is extensive agricultural use. Antibiotics are used more and more to produce a higher amount of meat per animal. This causes the transfer of the antibiotic that bleeds through the meat we eat causing our body to interact with the antibiotic at extremely low doses. Inappropriate prescribing is from uneducated users which can be minimized with further education in the harmful habits that people do when it comes to self-medicating. A solution to the fourth major reason of antibiotic resistance, the availability of new antibiotics, could be an increase in funding into the medical industry to innovate further.
4. By introducing an antibiotic to a patient, it allows the bacteria to meet its enemy. Mutational resistance can then occur that allows certain iterations of the harmful bacteria to be able to fight the antibiotic. This resistance is exactly what biologists call ‘super bacteria’ that have very few known antibiotics that it cannot overcome. This is extremely freighting in the world of medicine because it lets the hospital become helpless in its treatment.

Works Cited

Schuman, Michael. “Was Malthus Right?” Time, Time, 15 July 2011, business.time.com/2011/07/15/was-malthus-right/.

Montgomery, Keith. “THE DEMOGRAPHIC TRANSITION .” Demographic Transition, pages.uwc.edu/keith.montgomery/Demotrans/demtran.htm.