Class Discussion Paper
Part I: Demographic Perspective

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What is Demography?

Demography is defined as the study of population statistics including births, deaths, income, and the incidence of disease. Data can be broken down further, to accommodate for differences such as gender. The information for these studies is typically acquired via population censuses and other statistical records, and is often used to illustrate the changing structure of human population.

However, the exact statistics gathered and the projections extrapolated from them are dependent on the goals of the demographer(s) involved. For example, if a study is searching for correlations relating to the spread of a particular disease, demographers might look at age ranges, medical statistics, and education level in the area. Alternatively, if a study were conducted to predict the immigration rate of a region, a demographer would likely gather data on overall happiness, and statistics which are more economically-related, and would likely have to compare this data against other regions to come to a realistic conclusion.

The science of demography dates back thousands of years, to the ancient Roman censuses. This culture used demography to calculate an approximate tax revenue for a given year, and further military exploits, among other things. Demography was later applied by monarchy throughout the Middle Ages and the Renaissance, as a means of determining the size of their respective empires, as well as determining the degree of an imposing enemy's threat. While modernized, information is still gathered for similar purposes today. Rapidly-evolving technology, over the course of the last sixty years, has made both data collection and data reference increasingly simple and significantly more accurate. Where the Romans went door-to-door to collect this type of information, censuses today are often gathered through computers and the internet, and storing this data for quick retrieval has never been easier.

Practically speaking, demography is applied to a wide range of industries. Governments, for example, use demography to determine the needs of their (and in the case of America, everyone else's) populations. Politicians, individually, use data gathered by demographers to campaign for elections more effectively. Scientists apply the information towards research, forming hypotheses or observing the effects of an experiment with the data. Advertising companies are extremely dependent on demographic research; an advertisement placed incorrectly is as effective as trying to make a sales pitch across the Pacific Ocean using only the power of one's voice.

Though the provided examples have a more narrow view on the study of a population, the underlying goal of the field of demography is to predict the future of humanity. With demographic information we gain valuable insight towards global resource consumption and population growth, and gain the ability to approximately predict the future of our species.

What is the Malthusian Perspective (MtP) on population?

Before discussing the Malthusian Perspective, it is important to note that Thomas Robert Malthus was, first and foremost, a scholar and a cleric of the late 1700's. The Malthusian Perspective on population growth is a rather pessimistic view, essentially postulating that the human population will eventually come to outpace resource availability.

This theory was based on a very simple concept of mathematics. The first sentence in the second chapter of his published work, "Essay on the Principle of Population", states that "*population, when unchecked, increased in a geometrical ratio, and subsistence for man in an arithmetic ratio.*" While the math behind this hypothesis makes sense, it would be reasonable for one to question the basis of the argument; how did Malthus know that the human population was increasing at an exponential rate? Thomas Robert Malthus based his argument on statistics gathered by great cultures of the past, such as the Roman Empire, and compared the demographic data against then-modern records, and discussed this throughout his Essay. Malthus cites an example of a successful culture in the fourth chapter of his papers, mentioning the frugality of the Chinese population combined with a vast capacity for resource production indicates that this particular population has the potential for massive growth.

The system of checks that Malthus implicitly refers to in Chapter 2 of his Essay is further explained in later chapters. Primarily, Malthus believed that war, disease, and famine would be the largest inhibitor for population growth. In Chapter 3 of the Essay, he discusses clan warfare between nomadic tribes, more commonly found in the ancient era. Malthus discusses the heightened frequency catastrophes such as widespread disease and famine, in overpopulated urban regions.

One solution Malthus offers to help reduce population growth without dealing with tragedies, is focused on birth rates. Unsurprisingly (given his background) Malthus urged his readers to practice moral restraint, through abstinence, and to only bare as many children as one can support. He also was in support of sterilization as a means of birth control, however Malthus considered contraceptives an unacceptable preventative measure.

While many go hungry in the world today, and many more succumb to deadly, irreversible diseases, the human population has (so far) largely managed to avoid the catastrophes Malthus argues are inevitable. Advancements in agricultural technology, have lead to an increase in global food production. One of the more notable achievements in this area comes from the German professor of chemistry, Fritz Haber. In 1909, Haber discovered a means by which nitrogen could be extracted from the air, in the form of ammonia (NH_3). The Haber Process is the reason the human population is able to sustain seven billion people. This process is also driving our population towards the estimated twelve billion mark by the year 2050. Additionally, continuous innovations in the medical field over the last century have vastly lengthened the average human lifespan. New, more effective vaccines are being developed and revised health standards contribute to the overall health of the population. As a result, humanity's average lifespan has increased significantly in the course of a few decades; a relatively microscopic period of time, considering our species' 5.4 million-year history.

Who is Thomas Robert Malthus?

Thomas Robert Malthus was born in February of 1766, to a successful family in England. Growing up he received his early formal education primarily at home, and in 1784 Malthus was admitted to Jesus College, in Cambridge. After earning his master of art's degree in 1791, he was elected to be a fellow of the college. In the first decade of the nineteenth century, after marrying his wife Harriet Eckersall, Malthus became a political economics and history professor at the East India Company college.

Throughout his life, Malthus had always taken an interest in the development of populations. He gathered a wide spectrum of demographic data (everything from age of marriage, to economic affairs which might contribute towards longevity), and theorized that humanity was in danger of overpopulation. By this, he was not referring to the amount of space taken up by civilization on the planet; Malthus was referring to the rate of resource consumption by humanity. His data brought him to the conclusion that the human population grows at an exponential rate, while the production of food (resources) is set at an arithmetic growth rate. Logically, it follows that at some point, humanity will suffer from starvation, and Malthus argued that a population should practice abstinence to avoid deadlier forms of population reduction such as famine and disease.

In 1798, Malthus published his paper, "Essay on the Principle of Population" which was only received with acclaim by those in the field of economics. Malthus revised his published work a total of six times, each with updated data and modification to his evolving beliefs, based on his continual research on the topics included in the paper. Its stark, undeniable pessimism struck discord in those who did not see the paper for Malthus' intended purpose. While the Essay does predict a dire outcome for humanity, Malthus makes a point of noting that economic incentives have actually saved the world's human population from encountering this theorized disaster sooner.

The Neo-Malthusian Perspective (NMP) on population.

The Neo-Malthusian Perspective on population growth is quite similar to it's predecessor, the Malthusian Perspective, in that the human population is expanding at a geometric (exponential) rate, while food resources are only increasing an arithmetic rate. Malthus posited that, upon reaching the point at which humanity had outpaced resource production, widespread starvation would take place. Side effects theorized by Malthus include wars (in the name of resource control) and disease (due to an overcrowded population's statistical susceptibility to the spread of illnesses.) Malthus proposed moral restraint with regards to reproduction as an effective utility in the reduction of population growth.

However, as a clergyman, Malthus was strongly opposed to the use of contraceptives. An ideal Malthusian population would abstain until marriage, and would raise children responsibly; only bringing up as many children as one can afford to. Neo-Malthusian Perspective differs on this ideal, and holds that the use of contraceptives are perfectly effective in slowing population growth.

Additionally, Neo-Malthusian Perspective states that starvation is a result of inadequate food production, and extends the original Perspective's claims of a depleting food resource, theorizing the same fate will befall all of humanity's resources in a similar matter. Neo-Malthusian Perspective Some portions of the NMP are even interpreted to state that overpopulation is directly causing worldwide starvation and poverty.

Counter arguments to Neo-Malthusian perspectivists are common, and one notable debate surrounds agricultural resources. NMP suggests that humanity won't produce enough food to supply itself, while critics hypothesize the issue actually lies in the distribution of resources, not in the supply itself. This strikes me as extremely valid, given that the United States contains five percent of the world population, and yet consumes thirty percent of the world's resources.

What is Garrett Hardin's contribution to NMP?

Garrett Hardin was a notable ecological activist and scholar, achieving a degree in zoology, followed by a PhD in microbiology. Throughout his life, he penned a number of books on the topics of human overpopulation, and human impact on the environment, among other topics. Hardin gained widespread criticism for his beliefs from his peers and from those on either side of the political spectrum; his theories ranged from the justification of genocide in the interest of ecological preservation, to advocating abortion as an acceptable means of population control. Hardin even went so far as to breach topics that placed a person's intelligence as a function of their race.

Hardin's belief in imminent overpopulation with regards to the world's natural resources were parallel to those found in Malthusian and perspectives. The distinguishing factor from Malthusian Perspective is Hardin's proposed courses of action with regards to birth control. Hardin strongly advocated the use of abortion, which was (and still is) a severely controversial topic of discussion. This ideology places him firmly on the Neo-Malthusian side of the fence, as Malthus himself was against the implementation of artificial contraceptive methods.

Hardin delves into the scientific arguments relating to the need for resources, stating that the human body "*requires about 1600 kilocalories a day*" at a bare minimum, and that any additional work done, from sports to art, require additional calories. Recovering from the use of this energy can only come from the consumption of a fuel source -- in the case of our species, food. If we wish to maintain our current level of resource production, we must do absolutely nothing, in order to conserve calories, Hardin sarcastically postulated in his work, "The Tragedy of the Commons."

What is Paul Ehrlich's contribution to NMP?

Paul Ehrlich was a notable figure in the development of Neo-Malthusian Population. At the time, the population stuttered at slightly over three billion, and in Ehrich's words, "The battle to feed all of humanity is over..." Author of "The Population Bomb," in 1968, Ehrlich held that industrialized regions would have to self-impose mild rationing with regards to food resources, in order to prevent the starvation of hundreds of millions of people in other parts of the globe.

Malthus was of the belief that, as humanity approached the point of over-population, there would be widespread war and starvation. Ehrlich reinforces this, with a post-World-War perspective, and this must be considered when understanding the direness and severity of his theories. He believed that the event-horizon of over-population would likely lead global starvation, which would set geopolitical shifts into motion, leading towards eventual thermonuclear warfare.

Ehrlich was of the belief that the human population growth should be consciously reduced to zero, or less, and that immediate action should be taken to temporarily increase food production. This proposed solution focused primarily at America, due to the fact that in the late 1950's (much akin to modern-day demographical statistics) the United States were consuming far more resources than any other country. In 2009, when Ehrlich's predictions stated we would be nearing a turning point, the elderly biologist made a statement in which he implied that his book had effectively delayed his predicted pessimistic outcomes for humanity, thanks to the amount of attention the publication gathered.

What is the Marxist Perspective (MxP) on population?

The Marxist Perspective on population growth is actually not directly a theory regarding population growth. It is actually theory which was deduced from Karl Marx's views on a communist population. Essentially, Marxism places the issue as a result of corrupt capitalistic societies, which seek only to profit, caring little for the laborers. He theorizes that capitalism eventually leads to a reduction in labor, in the interest of maximizing profits. Reduced labor leaves a larger unemployed population, and a need for income reduces labor wage further. Poverty and hunger follow soon after this stage, and the social injustice that capitalism fuels reaches it's peak.

This is in contrast with Malthusian Perspective, which states that the impoverished population is the source of social illness, which then leads to problems with population growth. Marx, himself, strongly criticized the Malthusian perspective. Instead, Marxism proposes that the issue actually lies in the greedy, selfish ideals of the successful capitalist whose pockets are lined through blindness towards the working class, which gets chewed up, then spit out, by the system.

In fact, Marxism largely focuses on the injustices imposed by the "bourgeoisie", which is debatably ironic considering his well-seated middle-class upbringing.

Who is Karl Marx?

The Father of Communism, Karl Marx is a name that seldom few people with a high school diploma haven't heard. Born, raised, and educated in Germany, Marx was a known sociologist and journalist, but make great bounds in the field of economics, which lead to the modern understanding of a population's work force with relation to net monetary gains. Marx wrote and published radical newspapers in Paris, until he was exiled in 1849.

A revolutionary philosopher, Marx vehemently opposed capitalism, claiming that the selfish ideals perpetuated in such an economic system would unavoidably lead to tensions that would force its collapse. He gave the system the nickname "dictatorship of the bourgeoisie" and held the opinion that the wealthy perpetuated the system purely out of greed, without consideration of any other socio-economic group.

As a result of the system, Marx theorized that the proletariat (or working class) would volley for political power, and establish a counter to capitalism, he coined "dictatorship of the proletariat." In this government system, social classes based on wealth would be completely eliminated, which is effectively what is known today as socialism. In addition to his published works on the topics, he fought openly for the implementation of socialism and communism, arguing that the underprivileged should start organized revolutions to overthrow their current systems of government.

What is the Demographic Transition Theory (DTT) of population?

Demographic Transition by itself is a model of demographic data, specifically focusing on the changing birth rate and the changing death rate of a population over the course of time, and with respect to the degree of modernization that a population has adopted. The model itself is based on the work of Warren Thompson, a demographer who studied the change in population growth in 1929.

Projections depicted by the model's data currently suggest that, as a population matures from pre-modernism into post-industrialism, both the change in birth rates and the change in death rates decline. The birth rate stays firmly above the death rate for quite some time, until a society is well into its post-industrial era. This indicates that population growth is imminent for developing cultures, and that a population increases exponentially, though the growth itself appears to slow considerably upon exiting the what is known as the "Mature Industrial" era.

The Demographic Transition Theory, therefore, states that a population will increase in size exponentially as it progresses through its industrialization. However, demographics indicate that the post-industrial era brings a slowing of population growth, almost to the point of population decline. These observations are rather interesting, because if one tries to apply the Malthusian Perspective to counter this theory, the data supporting Demographic Transition Theory remains strong. While the mathematics behind Malthusian and Neo-Malthusian Perspectives are logical, they do not necessarily account for the possibility for change in a human population. The data described by the Demographic Transition model, however, is data supported by continually updated demographic statistics, and gives a clear view on the status of population growth with regards to a typical country in each era of development.

What is John Stuart Mill's contribution to DTT?

John Stuart Mills thesis, at it's core, states that the standard of living for a population is key to predicting fertility levels. He believed a population's ideal state is that of economic comfort and stability. Mill felt that the fear of falling down the socio-economic ladder is a strong enough motivator for a population to inhibit its own fertility rate. Mill also believed that women do not want children as much as men do, however this particular argument is widely debatable, and the truth of this statement is likely determined by the cultural norms of the population in-question.

At its core, there is a lot of truth to Mill's theories. When a population is economically stable, it is much more likely to be a happier population. And both happiness and economic stability are key factors in a sustainable way of life. If a population is unhappy, but economically stable, they might emigrate, in search of greener pastures and finding themselves with the means to do so. Furthermore, if a population finds itself in possession of both the qualities of happiness and fiscal stability, the population has more room to grow at a comfortable pace. If there is a booming economy, then a population will likely grow, because the members of said population have the means to support more members.

Conversely, if a population lacks economic stability, and its members, on average, aren't able to support a family, then it is unlikely that the population will grow. Mill may have attributed this phenomenon towards the fear of downfall, which has its merits. In truth, without consideration for human emotion, it is very difficult to logically justify starting a family without financial stability, and (as psychological studies suggest) pure logic is equally important as emotion, in decision-making.

What is Arsène Dumont's contribution to DTT?

Arsène Dumont was a French demographer of the late-nineteenth century. He believed he had discovered a new concept in the area of social economics. Dumont coined the term "social capillarity", and defined it to be the desire for a population to achieve the highest economic standing possible. This theory is slightly in contrast with Mill's beliefs, however Dumont's theorized behavior can't truly be described as a contrary to Mill's descriptions of a fear of poverty, but rather, a more optimistic way of describing the same concepts.

The similarity between Dumont's and Mill's theories, however, stops there. Dumont postulated that, in order to ascend the social ladder, a population must make sacrifices. Bearing children is an expensive endeavor, and so a population looking to achieve greater economic standing is more likely to have a lower birth rate than that of a country already situated in a satisfactory economic standing.

This theory has a lot of merit in the same way that Mill's does. However, as described previously, the two theories are fundamentally the same theory from two polarized perspectives. Mill claims that a population will remain fiscally stable in the interest of self-preservation, while Dumont theorizes that a population will seek financial success. Both of these theories declare that inhibited population growth is a side-effect of these hypothetical populations' goals.

What is Emile Durkheim's contribution to DTT?

Societal specialization was foundational in Durkheim's contribution towards Demographic Transition Theory. Durkheim also focused on the causes of population growth, rather than searching for an explanation for a lack of population growth. With the increasing complexity of a modernizing population, theorized Durkheim, comes an increase in the need for specialized workers. He proposed, "the division of labor varies in direct ratio with the volume and density of societies...", essentially stating that high populations yielded a higher quantity of divisions of labor and that the inverse is also true.

Durkheim's thinking was extremely logical, and is roughly as follows. In early civilizations, populations were not very specialized. The more modern the population, the greater the number of divisions in social structure. Furthermore, if a society is more modernized, there are also many more differing occupations. Durkheim's explanation for this occurrence was increased population. This theory of specialization was derived significantly from Darwinism, and Durkheim openly acknowledges this throughout his career as a social scientist.

What is Warren Thompson's contribution to DTT?

Warren Thompson is often referred to as the founder of Demographic Transition Theory. In 1929, Thompson compiled demographic data from developed countries over the previous 200 years, and used the change in birth rates, change in death rates, and total population data to create the Demographic Transition Model. The Model depicts the rates at which birth rate, death rate, and population change as a country develops.

The timeline axis of the graph is divided into four parts. Stage one (or pre-industrial) describes a population in which the birth rate is roughly equal to the death rate. Interestingly, it is believed that all human populations were at this stage up until the end of the 1700's.

Stage two describes developing, urbanizing populations, commonly seen in developing countries. This stage is categorized by a decrease in death rates due to improved sanitary conditions and an improved source of food, which overall leads to better health and population longevity. Population growth is increased exponentially during this stage

Stage three encompasses matured industrial societies, the result of which is a decrease in birth rates, largely because of the increased availability of contraceptives. The decline may also be due to an increased social standing for women, as well as more accessible educational opportunities for the entire population. In this stage, Population growth is still high, but is beginning to decline from the numbers achieved during stage two.

Finally, stage four is reflective of post-industrial populations. During this stage, both death rates and birth rates are low, and it is even possible for the population's birth rate to fall below the death rate for some time. As a result, population growth during this stage levels off.

What is Kingsley Davis' contribution to DTT?

Kingsley Davis is given credit for naming the Demographic Transition Model, and apparently had a major role in the model's development, however my hours of research yielded very little information on this person. What I did learn is that he is a highly distinguished sociologist of the mid- and late-twentieth-century, who received numerous awards for his scholarly achievements by academic foundations, including the Irene B. Taeuber Award. I also learned that Davis represented the United States in a UN conference on world population, that he has published over a dozen books, and has had many articles written about him in publications such as "Scientific American" and "New York Times Magazine."

What is George Stolnitz's contribution to DTT?

Stolnitz claims credit for coining the term "Zero Population Growth" which describes a population which is neither increasing nor decreasing. Some define the goal of Zero Population Growth to be to meet the replacement fertility rate, but not to exceed it. Replacement fertility rate is defined as the average quantity of children-per-woman which would maintain a given population's current numbers.

"*All nations in the modern era, which has moved from a traditional, agrarian-based economic system to a largely industrial, urbanized face, have also moved from a condition of high mortality and fertility to low mortality and fertility.*"

What is the Modernization Theory (MT)?

Modernization theory is one that attempts to explain the process of modernization in a given society. Modernization Theory accounts for as many contributing factors as possible, with regards to social progress. The goal of the theory is to identify and rationalize the process behind social evolution.

Emile Durkheim was one of the early pioneers in the development of Modernization theory. In his time, sociology was hardly even considered a science, grouped into the same academic category as philosophy.

What is the relationship between MT and DTT?

Modernization Theory seems deeply dependent on Demographic Transition Theory for support, although the development of one only further-rationalizes the other. While DTT seeks to describe *what* it is that populations do over time, MT has the goal of identifying *why* these changes occur.

In Modernization Theory, the data described by the Demographic Transition Theory is used to draft hypotheses and verify conclusions regarding various populations. DTT, however can continue to build and collect data without the help of MT. That said, the data is meaningless without Modernization theory. The respective goals of these two theories, however, are the same: to define the change happening in population growth, and with this information we can extrapolate information needed to preserve the future of the human race.