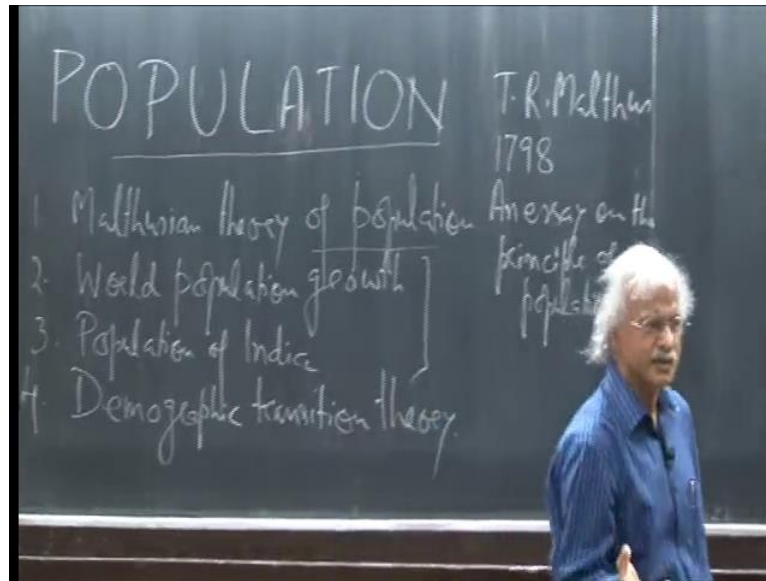


**Introductory Sociology**  
**Prof. A. K. Sharma**  
**Department of Humanities and Social Sciences**  
**Indian Institute of Technology, Kanpur**

**Lecture - 34**  
**Population-I: Malthusian theory of population**

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So, friends as far as substantive issues are concerned this will be our last topic for the course and we are going to discuss the issue of population. Obviously, it is related to the earlier issue of natural and social selection. In discussing about population, I would like to include four topics; one I will say something about Malthusian theory of population. Then, I will talk about World population growth. So, you have an idea of how has the population of the world increased during last nearly 200 years, and what are the recent trends. And then I will come to the issue of Population of India, what has happened to population of India in the recent past and then to explain world population growth and changes in population of India, I will talk about Demographic transition theory.

So, I will state what demographic transition theory is and what have been the major differences, in demographic transition between developed countries and developing countries and this, will be the last substantive issue in introductory sociology. After this, I will only recapitulate sociological theory and may be add something to that and then I want to spend one hour on research methods, and then we will have open discussion. Now friends, the issue of population has appeared here and there in historical,

philosophical, religious, and other forms of literature. You do find reference to population in Indian religious literature also and normally, large population is not considered to be good. Good characteristics bravery, honesty, divinity, humanity, their compassion, love, they are mostly associated with small populations and small groups.

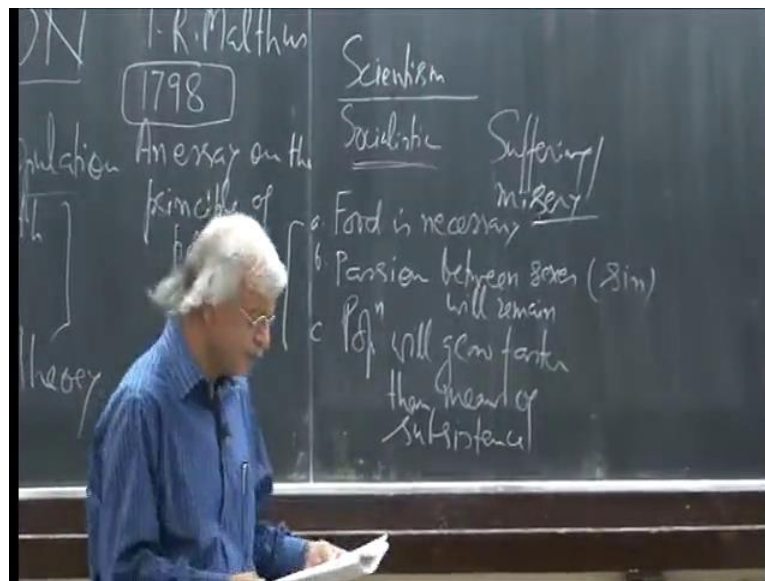
In Mahabharata our heroes which are the symbols of virtues were only limited in number five while, the army of the villains or Kauravas was in lakhs and their references in religious literature that when the earth cannot bear the burden of excessive population. Excessive population is associated with the age of kali, age of sins, then the earth goes to God Vishnu or some God and expresses her problems, large population is associated with problems. In Western religious philosophical traditions also there are references, but there is no serious discussion of population as such neither in economics, nor in political science, even sociologists, sociology we say came into being quite late about 200 years ago. So, sociologists should have been more aware of population trends, but even their there is not much discussion of population, as compared to philosophers, historians, anthropologists, and psychologists of earlier time there is more discussion of population in sociology. Emile Durkheim was aware of population trends, Karl Marx is also written on population though the purpose of writing on population for Karl Marx was basically to attack the Malthusian theory of population.

Sorokin, one day I mentioned Sorokin's name P.Sorokin who propounded his cyclical theory of social change. Sensate ideational are two extreme phases of social change and in between or the optimum or the middle of the role or the best phase is idealistic. Among major sociologists, Sorokin has reviewed literature on population maximally and looked at relationship between size of population and causes of population growth, birth rate, death rate he has also related population size to conflicts, economic development, crime, religion, many other thing. But for a serious discussion of population, we always remember T.R. Malthus, T.R Malthus was a professor of political economy, and he was also a religious priest, clergyman a professor of political economics and a clergyman, a priest. In 1798 he wrote a book whose title was an essay on the principle of population before Malthus wrote this essay, actually this essay is a full length book; the title is an essay on the principle of population, but it is a book it is not a small essay. Before this, the position in the Western world was position on population then population and development go together.

So, population is good population growth is good population is conducive to development and many philosophers had written that growth of population indicates peace, development, equilibrium, justice things which can be called good. Growth of population indicates that something good is happening, that the society is free from war, conflicts, forces of disintegration are under control, and there is agricultural expansion, more food production, in general more economic development. They also believe that growth of population will lead to economic development and the equations were worked out how population growth will lead to economic development.

In this context, in 1798 T.R. Malthus wrote this essay, T.R. Malthus's family used to have visitors in the best intellectual circles of the country at that time. T.R. Malthus knew many intellectuals, philosophers, socialists and development mentalists of his time because they used to visit his family. They were his father's friend and T.R. Malthus had heard them T.R. Malthus had seen that philosophers of that time there were basically two tendencies at that time.

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One a Scientism, you can call it scientism and another tendency among philosophers was a Socialistic tendency. There were some who believed that development of science can solve all problems of mankind. That science will not only contribute to economic production, science will not only produce more, science does not mean only technological development, science also means that man will become more rational,

more acetic, more compassionate, more virtuous, and so in the age of science all problems of mankind will be solved that was the idea at that time. Some people who were great admirer of science they even believed that a time will come when you do not have to depend on agricultural production at all. Men will require food from agriculture may be science will do something may be something in the form of tablets you just take one tablet, and you are well fed you get your hunger is satisfied and your nutritional needs are also satisfied.

And those who will be of scientific bent of mind when science develops they believed this was a belief that when science will develop further then you can see realization or actualization of heaven on this planet earth. Nobody will have any hatred towards anybody, nobody will be jealous perhaps there will be no need because everybody will have plenty of everything. There will be no war, no passion, and no conflict of any kind conflict over land, conflict over money, women political conflicts, jealousy, hatred nothing in the age of science men will be perfect and all his needs will be satisfied.

I can quote some names and some books which contain these idea people who produce this kind of idea, but that will take more time. So, I am only in very very brief term suggesting what was the background in which Malthus wrote this essay. There were others who were socialist, who thought that all problems of mankind and problems same problem poverty, unemployment, inequality, conflicts, disintegration, alienation, dissatisfaction, these problems are because the resources of society or the wealth of society is unequally distributed among different sections and people. Tomorrow, by having a more socialistic orientation by having more equality of wealth of resources you can create a situation in which all the existing problems of society will end. So, for them as for scientist scientism growth of science and scientific temper today's language we call it scientific temper growth of science and scientific temper will be solution to all conceivable problems of mankind. And these socialist thought that a socialistic pattern of society when the wealth of society is more equally distributed then this will be a panacea for all problems of mankind some kind of Ram Rajya.

In this background, Malthus presented a very pessimistic philosophy and what he said he said that food is necessary for human survival unlike other scientist, and others he said food is necessary. And second, he said that passion between sexes will also remains the same, a scientist thought that a scientifically rational more advanced more conscious

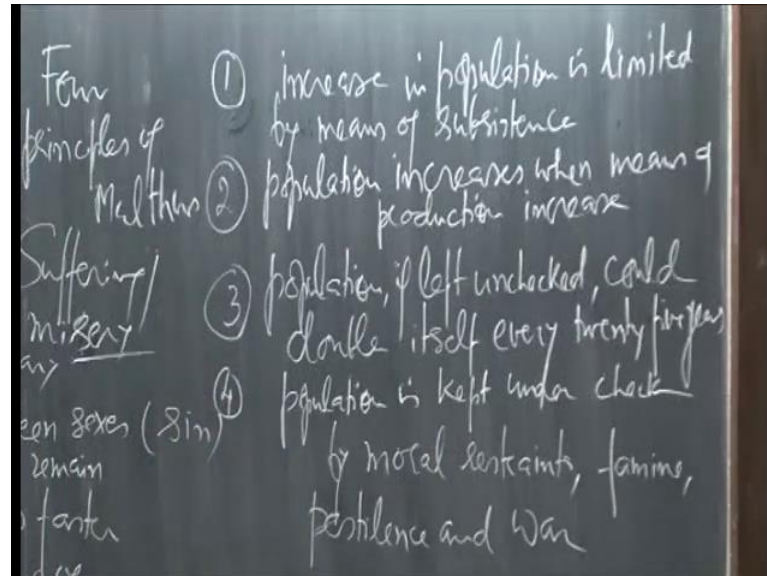
persons will lose passion for sex they will be more ascetic kind. Men will become embodiment of virtues, but Malthus said no; in his book he argues that passion between sexes will also remain same and as a consequence of that he says that population or a tendency in human population to grow means population growth will be faster than the means of subsistence. Population will grow faster than means of subsistence and if population grows faster than means of subsistence or food for a long period of time then there is an imbalance and this imbalance keeps on increasing day by day, year by year, decade by decade, imbalance between population and food keeps on increasing and that that imbalance cannot continue indefinitely.

So, sometime the population will be checked and how population will be checked, population can be checked either if mankind exercise restraint on fertility or childbirth or there are forces natural forces or may be social forces also which lead to higher death rate. So, either birth rate declines or death rate increases and in both the cases Malthus said that in both the cases there is suffering misery in both the cases there is suffering or misery. T. R Malthus is called the doomsday philosopher; because he does not see any progress or he does not believe that well-being or happiness of mankind will continue to increase and why they will be suffering, why they will be misery? Because of conflict between availability of means of production means of subsistence food for him food is the most important thing in production is called means of subsistence. We have to depend on food unlike other philosophers science philosophers who believe that food may not be required Malthus said that no men's dependence on food will continue and agricultural production will determine the level of happiness or unhappiness of mankind. And passion between sexes will remain, he said that whatever is bad in society he was a catholic Christian priest so, naturally he also believe that sex is a sin.

For him sex would be a sin, believing in traditional mythological Christian ideas sex is a sin. But, this sin will remain because according to Malthus if many bad things in society conflicts, wars, jealousy, or many other sinful activities, vices or because of sex then this is also true that all the good thing compassion, love, good things of society aesthetics good things of society are also because of sex and sex will continue. In some sociology books, four principles of Malthus are written; what I am said this is on the basis of original writings of Malthus essay his essay on principle of population is there in our

library you can read from there. But in sociology books I have seen that Malthus's principles of population are summarized in the form of four principles.

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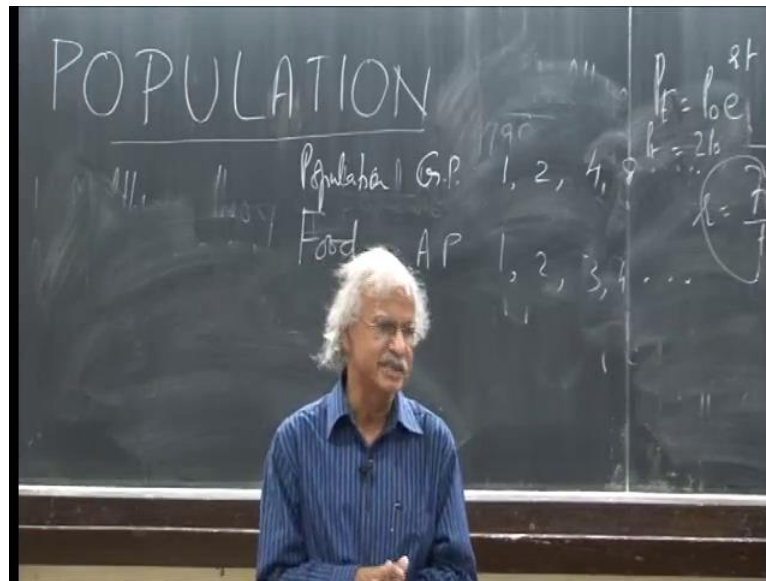


So, let me write those principles first principle increase; these are four principles of Malthus. First principle is that increase in population is limited by means of subsistence, that means population cannot increase indefinitely population growth is limited, increase in population is limited by means of subsistence. At a given level of means of subsistence there is a population maximum population that can survive if population give if population goes beyond that point then it will lead to more deaths. What form death will take that is a different issue, but it will take to a situation when more deaths occur death rate rises. Population increases, when means of production increase and third principle is that population if left unchecked could double itself every 25 years population if left unchecked could double itself every 25 years and 4th principle population is kept under checked by moral restraints, famine, pestilence and war. I thought that, I should also write the principles of population by Malthus as they are given in the book. So, that if a question is asked if a question is asked that what are Malthus Malthus's principles of population we have to write these four things at least plus explanation of them.

First, that increase in population now I will explain these points increase in population is limited by means of subsistence; means of subsistence means food population increases

when means of production increase. So, if there is less food, if agricultural productivity is less if wheat, paddy, pulses are produced less, if fruits are produced less, vegetables are produced less, then population is also less and when there is agricultural revolution. If there is any revolution in food production then the size of population will also increase because population is closely connected with food.

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Third, now he must also tell at what rate population can increase, and what are the possibilities of expanding means of subsistence. So, Malthus says that if left unchecked population grows in geometric fashion geometric progression in 25 years time population become 1,2,4,8. If in the beginning of some period population is 1, then after 25 years it becomes 2, then 4, then 8, it increases in geometric fashion it doubles every 25 years. Malthus also said and he did not simply speculate, he said these things based on empirical data available to him from America's and Europe of that time. Whatever data the data were not very sophisticated in those days, but whatever data he could find from Europe and America of that time he said that population, if there are no checks on population that means, population can grow in a geometric progression 1, 2, 4, 8 every 25 years.

Using the formula of doubling time, that rate of growth a population doubles in time  $t$  then rate of growth is  $\frac{70}{t}$  so, this gives us a rate of growth of  $\frac{70}{25}$  if population doubles in 25 years. You know, this is derived from exponential formula  $P_t$

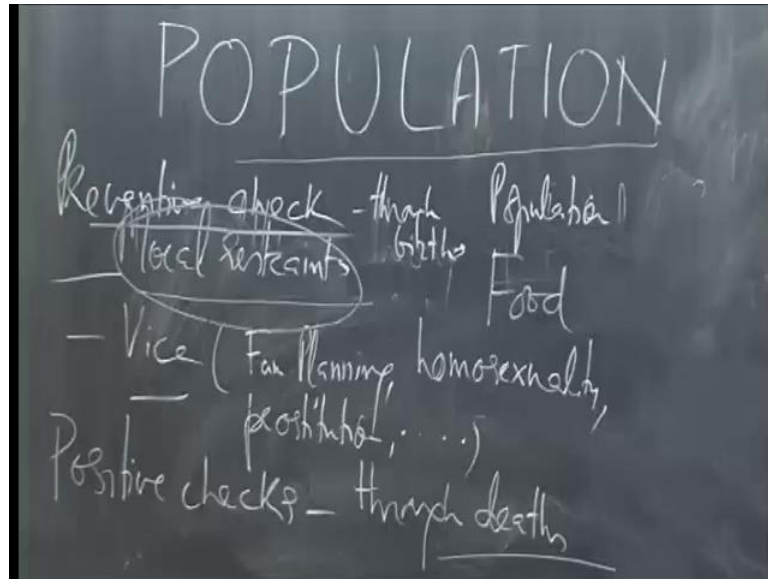
equal to  $P_0 e^{rt}$  and if  $P_t$  is two times,  $P_0$  then the relationship between  $r$  and  $t$  will be like this approximate it it should be point 6, 9, but approximately  $r$  equal to  $70$  by  $t$ . So,  $70$  by  $25$  that means population can grow at a rate 2 point 8 percent per year. Malthus predicted that, in most favorable circumstances not always in favorable circumstances when checks on population if population is left unchecked population can be checked through family planning program, through communication, westernization, modernization, education, development, can make people more rational and they start having less number of children that is a different issue. If there is no check on population if there is no check through control of births and also no check on population due to high infant, mortality, female infanticide, sati, wars, pestilences, if there are no checks on population of any type then the population can rise at such a fast rate as 2.8 percent per year.

This was Malthus's prediction, that population grows in geometric progression food in best possible circumstances can grow only in arithmetic progression so, 1,2,3,4 like that. Population can grow in geometric progression and in these time intervals 25 years time interval food can increase means of subsistence can increase only in arithmetic progression that is also not always, but in best possible circumstances. When there is more land for expansion of agriculture, when there is proper technological development on the field of agriculture, when there is no scarcity of capital or labor then food can means of production can increase only in arithmetic progression.

Now, that means the gap between population and food will continue to increase, but it cannot increase indefinitely, the law of nature is, he says that this law of population growth is valid for all plants, animals, including human beings. No one can escape the law of population and providing a critique of scientific and socialistic theories of his time he said no fancied equality of any kind, no institutional change, no amounts of socialism or communism, can ever destroyed this law of population. May be for a few years may be for a decade you can improve people's condition by practicing socialism, but not in the long run, in the long run the level of well-being of human society depends on the working of this formula on population he is called a Doomsday philosopher.



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Now, how will this imbalance between population and food be checked it can be checked through moral restraints, since he was a Christian priest, so he would not think of any other thing to control births he can think only of moral restraints. And since in Christianity Celibacy or Brahmachari Celibacy is defined as one of the highest virtues, so Malthus said that moral restraints people do not marry and if they marry they live the life of Brahmachari's they do not go for sexual intercourse. Celibacy rise in age of marriage a large number of women or men proportion of women and men not marrying at all, and if they marry not indulging in sexual activity. These are moral restraints, and population must be checked by exercising moral restraints, immoral this also comes under what he called preventive checks so, men are able because men is rational, so men is able to think of preventive check.

Preventive checks operate through births men can control the number of births another possibility of controlling births is vice vice is also part of preventive checks you can control birth by practicing vice, in vice he includes family planning. Interestingly, most people in the world later on during last century in the second part of the last century supported family planning programs in less developed countries by using Malthusian theory, but Malthus himself was against family planning program. He was against use of artificial birth control methods he was against say sterilization and condoms and oral pills or i u c d, because he is a Christian priest and he cannot think of people practicing

family planning to restrict family size or number of children for him this is the ideal thing.

Virtuous, moral, religious, enlightened persons will limit family size; family size means number of children by exercising moral restraints. You can see that, there is a parallel between Gandhian theory of population and Malthusian theory of population. Gandhiji was also a great advocate of population control in our country but he was in favor of population control by using Brahmacharya not anything else. And for Gandhiji, very much like Malthus practice of Brahmacharya is not confined only to achieving the goal of a small family size or reducing birth rate of the country, but Brahmacharya is important for attaining or for realizing Brahman truth for realization of truth

For realization of truth some kind of nirvana or liberation or for the highest possibility of growth of mankind Brahmacharya is must so, Malthus was against this but he is still he included these things in the category of preventive checks. You can reduce population by using these things family planning, homosexuality, prostitution, you see so these are the things in all of them people are indulging in sexual activity, but that sexual activity is not giving rise to population growth that is the idea. So, in both the cases moral restraints and vice there is restriction on number of births, this is religious this is irreligious this is sinful. So, he used the term vice for that and if man does not practice moral restraints and man also does not also go for vice many more things are included in vice but the essential is that these all refer to sexual activities which do not yield in child birth.

Then there will be positive checks, positive checks operate through deaths, while preventive checks operate through births positive checks operate through deaths so, death will rise. How will death rise that is not important there may be high infant mortality rate, child mortality rate, maternal mortality rate, there may be droughts, epidemics, child exposure, violence of all types, homicide, suicides, wars, all those things which increased death rate will come under positive checks. This is positive because this is natural positive in the sense of being natural. Man made checks operate through reduction of birth rate and positive checks operate through increase in death rate now this death rate can be increased by social conditions or by natural conditions.

In 13<sup>th</sup>, 14<sup>th</sup> century in Africa and parts of Europe and then in fifteenth two hundred years later more in Europe, when bubonic plague broke out there were large number of deaths.

In some of the city's population up to half or sometimes three fourth of the population was just eliminated in a few months time due to bubonic plague (( )), tuberculosis, a smallpox, there were so, many epidemics at that time. And Malthus was saying that if the food population balance is disturbed then either men should do something to regain the balance or the nature will do something or such social conditions will be created because of imbalance between population and food that the death rates will rise.

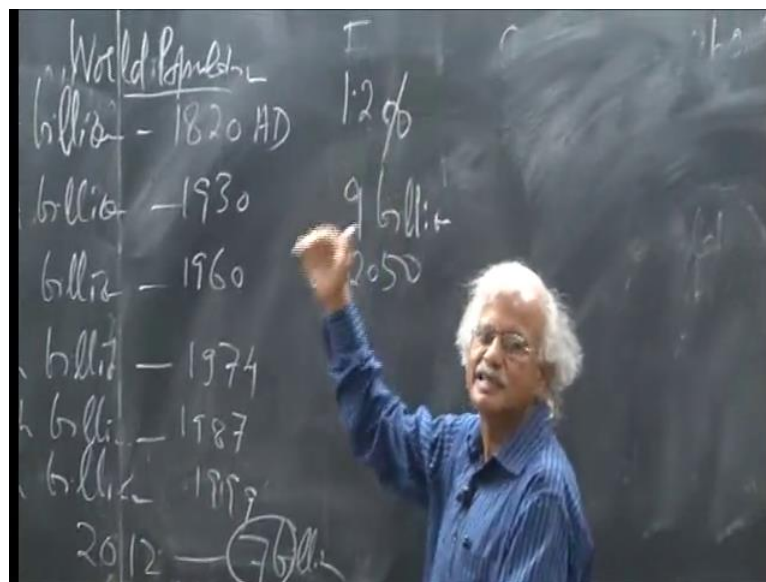
This include both natural factors like epidemics, droughts, excessive rainfall, shortage of rainfall, and wars, and conflicts and all those social conditions which increase the death rate. People may invent new norms, new institutions which will create more deaths female infanticide, sati, child exposure in china, children were just left behind, left, they were just abandoned to die this was called child exposure after birth children were just thrown away social social factor. So, whether it is due to natural factors or social factors population will have high death rate and so, the size of population will decline, this was Malthus.

Now, many things can be said and since I work in this area of population so, I'm tempted to say many things, but I know that within limited time I must also address the other questions. So, let me tell you that ah but one thing I am definitely tempted to say that why Malthus is called a Doomsday philosopher is that in everything you see there is unhappiness, Malthus believed that for happiness of man a faithful loving relationship between a man and a woman is important.

A man or a woman can be happy only in faithful and loving relationship which includes sex. Now, the things which is prescribing moral restraints, according to Malthus this is good for maintaining a balance between food and population, but moral restraint will make man unhappy vice will also vice obviously makes man unhappy and deaths, wars, pestilences, they are also factors of unhappiness, which means that man can never be happy Malthus contradicting the ideas of scientists and socialists Malthus said that he is not very hopeful of a good future of mankind. Because there is a natural law of population which operates on plants, animals, men, all living beings, and the law of population is that population has a tendency to grow faster than means of subsistence available to it.

So, man will never be happy. Man will either exercise moral restraint or vice and if none then positive checks follow so, this is Malthus's principle of population and this essay was published anonymously Malthus was very much afraid of reactions to such ideas. So, he did not write his name only later people came to know that there is some priest T.R Malthus Thomas Robert Malthus who wrote this essay and there was so, much pressure on Malthus to defined his position that this became his mission of life and he continued to work in this field of population throughout his life and published more than six editions of this essay of this book by revising data arguments, by collecting more statistics, by trying to understand more the issues of population. The last edition was published after his death, but his basic position remained same that man can never be happy because the law of population operates.

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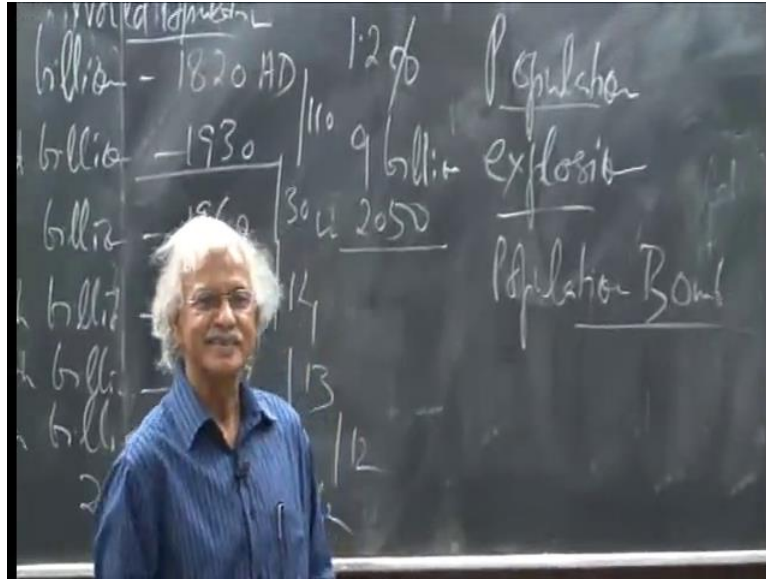
Now, let us look at what has happened, this is a theory, but what exactly happened to human population can human population increase at such a rate. Now, if we look at World Population, I am only telling you some major landmarks in the growth of population. The 1st billion landmarks in the history of world population was region in 1820AD we do not know when did man first appear on the planet earth, but assuming that man appeared on earth some 5 or 6 million years ago in some shape, then you see and may be to begin with there were only two persons one man and one woman. So, in such a long period of history in 50 to 60 lakh years of men's existence on earth the rate of growth of population was so, low you can calculate using that  $p_t$  equal to  $p_0 e$

raised for r t. That the rate of growth of population must have been around 0.0001percent or something very low very low rate of growth of population. In lakhs of years the world population achieved 1st billion mark in 1820 and after that the 2nd billion in 1930. For reaching the 1st billion point the world population took 50 lac, 60 lac years means of subsistence maybe Malthus was right that food was less in ancient primitive less developed society food was less so, population was also less.

As development of society took place and there was more food, more agricultural production, more subsistence so, population is started growing and it reached the first billion mark in 1820. The second billion mark was reached in 1930, third billion mark was reached in 1960, fourth billion was reached in 1970, fourth billion was reached in 1974, fifth billion was reached in 1987, sixth billion was reached in 1999, and today in 2012 we have a population of around seven billion, and there are prediction that our population will continue to increase.

There are predictions that the world population will stop somewhere at 9 billion in year 2050. At present the rate of growth of the world population is 1.2percent per year. So, it is not as high as Malthus thought, 2.8 maximum population growing geometrically at 2.8 percent per year, but still it is raising quite fast 1.2 percent means, if there is no further decline in the growth of population. Then 70 by 1.2 it takes about 60 years to develop the population. If there is no further reduction in growth rate of population then 60 years from now means in 2072, you will be 14 billion, but there are predictions that the rate of growth of world population is declining and therefore, we can stabilize at 9 billion in 2050.

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We will look into why did population increase at this rate 1 billion 50 lack years, 2<sup>nd</sup> billion only 110 years, then only in 30 years, then only 14 years, then 13 years, then 12 years. Almost every decade we are adding one billion population. Now, this explains why after 1930 population growth became an issue in 19<sup>th</sup> century in Europe, but population growth became a real issue in the world, particularly in the context of developing countries after 1930, because this was the rate at which world population was growing and largely due to growth of population in developing countries.

I will stop this lecture by reading a paragraph from an interesting book this is by Ramachandra Guha, India after Gandhi. Recently, this Ramachandra Guha is a sociologist some of you may have heard his name a very prolific writer, and he wrote a book India after India after Gandhi. He is quoting a demographer Paul Ehrlich a biologist, from Stanford University. He wrote a book population bomb and make it he made a prediction that in 1970s the world population will face crisis very negative description of what could happen to world population in 70s, 80s it is horrifying.

Now, Ramachandra Guha is quoting a few lines from Paul Ehrlich's book and he writes to quote the respected Stanford biologist, Paul Ehrlich wrote that while he had understood the population explosion intellectually for a long time. He came to understand it emotionally, one stinging hot night in Delhi a couple of years ago as his taxi crawled through the streets he saw around him that the people eating, people

washing, people sleeping, people visiting, people arguing, and screaming, people thrusting their hands through the taxi window, begging, people defecating, and urinating, people clinging to buses, people hurting animals, people, people, people.

Paul Ehrlich, he predicted that in 1970s in the world including in the developed countries there will be great crisis starvation death and you know the title of his book the population bomb itself connotes that population is growing, population is exploding we started using the term population explosion for what happened to population during this period we use the term population explosion, that population is exploding, population bomb is exploding. And, Ehrlich said that the consequences of explosion of population bomb in the developing countries and when these westerners talk about developing countries they refer most of the time to India, because India is one of the largest developing countries.

So, population bomb is exploding and the consequences of this population bomb would be much more painful and for a prolonged period of time than the the consequences of explosion of Hydrogen bomb, and nuclear bomb. When the atom bombs exploded in Japan, Hiroshima, and Nagasaki people died, but the pain was less, because they died in seconds in minutes in days. In population bomb when population bomb explodes in developing countries, people may not die immediately they may die in 10 years, 20 years, 30 years, but suffering will be much more severe and because of severity, intensity of suffering wars conflicts food shortage malnutrition various types of diseases infections and due to shortage of food fighting with each other insecurity, the consequences of explosion of population bomb will be much more disastrous than the consequences of explosion of hydrogen bomb. This book became very Paul Ehrlich's book population bomb became very famous though today in 2012 very few people talk about such things and I will explain what the reasons are in the next lecture.