Urbanization and Environment
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Module - 02
Incorporating the "Environment" in Urban Planning
Lecture - 07
"Sanitary Cities": Urban, Environment and Modernity in the West

So, today I am going to start with module 2, which is all about Incorporation of the Environment in Urban Planning Development and Management. So, in the first lecture, we are going to discuss sanitary cities, and by sanitary cities, through sanitary cities I would introduce you to the urban context of the modern west, Modern European West.

And I think, it will be very important for us to understand the emergence of the urban in modern west which to a great extent was shaped by the so called environmental conditions that influenced modern infrastructural services in the European cities. So, lecture 7 is all about Sanitary Cities, Urban Environment and Modernity in the West.

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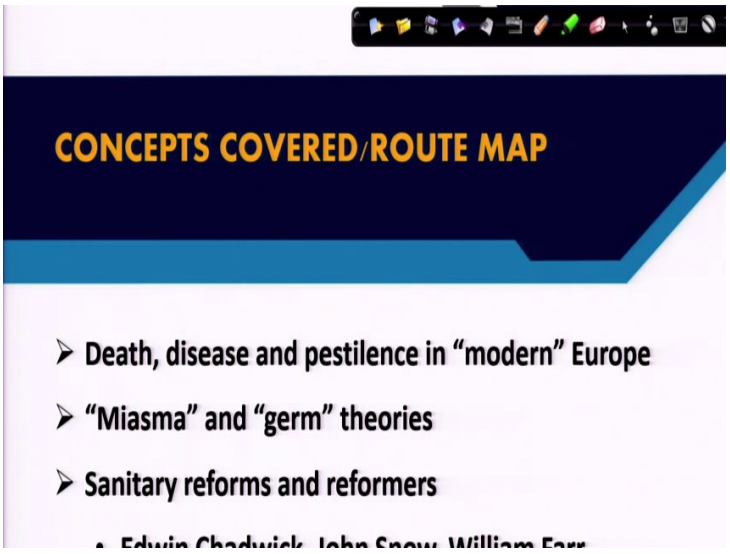

So, the concepts that I will be covering or more importantly you know the route map of this presentation would be, you know I would be shedding light on death, disease and pestilence in modern Europe. And all these things, like for example, death and disease as

outcomes of the European industrialization. So, we will kind of establish the connection between industrialization, mass migration, and epidemics in modern Europe.

Followed by different theories like miasma theory, and germ theories, which emerged and evolved in modern Europe during this particular point of time. And like miasma again, miasma is a particular theory where the idea is that illness and diseases are results of bad air, and I think like one can trace ancient routes or ancient origins of miasma, though this particular term miasma was not used during the ancient times, but the ancient Greek physician, Hippocrates, he said that bad air is actually equivalent to pestilence.

On the other hand, there is Vitruvius. So, Vitruvius in his book called 10 books on architecture, Vitruvius talked about various kinds of bad air like exhalations from marshes, pestilential air, and also unhealthy vapors. But again, as I said that you know the term miasma we do not find this particular terminology during the ancient times and the term became quite famous during the 17th and 18th centuries. But gradually like when germ theory was propagated especially within the context of you know analyzing cholera, when it was for the first time discovered that cholera was not airborne, but waterborne disease. So, then miasma theory was replaced with germ or pathogen theory.

So, we are going to discuss you know these miasma and germ theories and great debates or hotbed of controversies that actually flooded the European scene, you know during this particular point of time when Europe was industrializing and also encountering epidemics. And within this context, we will also be shedding light on the sanitary reforms and more importantly the sanitary reformers who laid out plans for modern Europe.

And again one important point is that though I am saying modern Europe or modern west, but to a great extent my examples will be more from the perspective of UK, where the focus would be on London. So, you can see all these names like Edwin Chadwick, John Snow, William Farr, who will be discussed in these presentations, so they are they were all like London based physicians and also sanitary commissioners who laid out different sanitary reforms for the cities of Great Britain.

So, this whole presentation would finally, you know the essence is, here we would be able to locate the search for and birth of sanitary cities in the west and sanitary cities which can be perceived or considered as precursors of sustainable cities. And sustainable

cities which, we would be dealing with or discussing in the subsequent presentations in this course.

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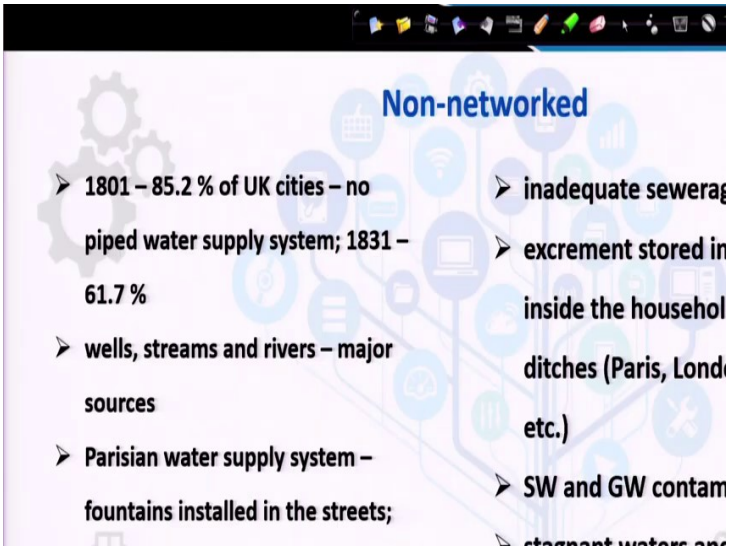

So, to you know to get some information about the background, we need to understand that even during the beginning of the 19th century the UK cities were non-networked. So, by non-networked I mean that UK cities lacked piped drinking water supply services.

So, there is a particular work by Hassan. So, Hassan wrote a paper in 1985, and this paper came out in this journal called economic history review, and in that in the in this in that particular article Hassan pointed out that in 1801, 85.2 percent of UK cities had no piped water supply system. In 1831, the situation was slightly better, but you know it is not that impressive because this figure just, it dropped down to 61.7 percent.

So, the major sources of water for the inhabitants of cities or for the urban residents were well, streams and rivers which were connected to, which were sometimes connected to some other sources as well. And for example, the Parisian water supply system it comprise, it comprise of fountains installed in the streets which again drew water from wells and also from the River Seine.

In the Rome, Rome had an interesting adjustment where we find that you know the water provision was under the centralized control or it was under the domain of the pope, but the roman citizens also they dependent on public fountains or water points in the yards of

houses. So, no network coverage, at least till the beginning of or during the first 2-3 decades of the 19th century. Same goes with the sewerage systems. So, again inadequate sewerage coverage excrement were stored in cesspools inside the households and open ditches. So, it is a I mean it is unimaginable that how modern Europe quote-unquote modern west, still relied on open ditches and this is so true for you know developed countries like Paris, London, sorry, for developed cities like Paris, London, Madrid, etcetera.

So, one can understand that you know the surface water and groundwater very easily got contaminated, and stagnant waters and overflowing landfills were very very frequent. So, this was the context, this was, I mean these were things in Europe, so far as Watsan or water sanitation facilities or services were concerned.

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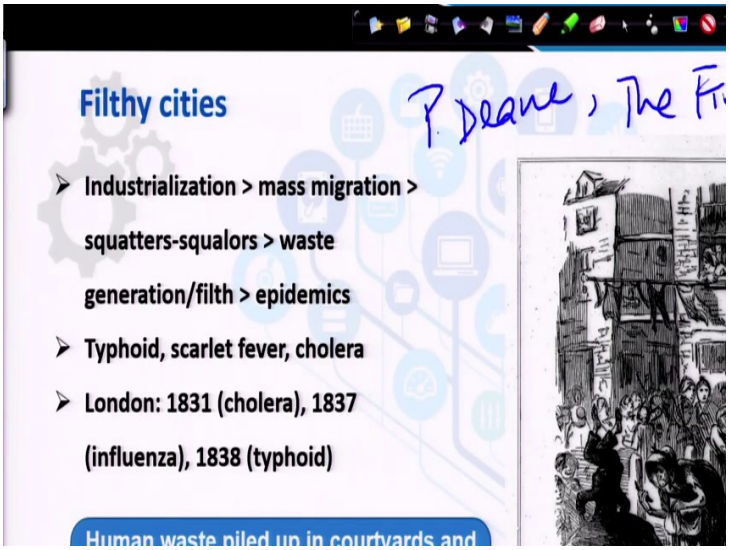

So, you know industrialization, so I remember one particular book, a very interesting book by Philippe Deane. So, this is called the first industrial revolution in England and as students of history, we had to go through this book, it is a very interesting read. And so, there is a debate like when did when this industrial revolution actually started, and why it first started in Western Europe and most specifically England.

So, yes, industrialization occurred in England, the first wave of industrial industrialization or industrial revolution, it caused a lot of changes. So, it was the era of

great transformation for England. And industrialization led to mass migration, and mass migration again is very much interrelated to the birth of squatters, hence squalors.

And again which is directly linked to increased generation of waste or filth. And one can understand how within this context of industrialization mass migration rise of squatters epidemics became quite inhabitable.

And Europe was quite aware of typhoid, scarlet fever, etcetera, but one should understand and this is an important point that when cholera, so when cholera reached London or when cholera reached the different UK cities, it was a major cause of concern because it was a foreign disease. So, it was a foreign epidemic invading the whole nation.

And there were frequent outbreaks of cholera. And for example, this is a very significant site. So, if you go through this site, sometime this science museum website, because this is a very important in terms of you know, in terms of the availability of very rich archival sources and records. For example, this particular picture is also from this website. So, if you want to access historical and archival records please you know visit this particular site, science museum website. So, science museum website, I have taken this quote from there, so where it says that human waste piled up in courtyard and flow overflowed from basement cesspits into the gutters and waterways. So, one can understand that how I mean how filthy the cities became. Yes.

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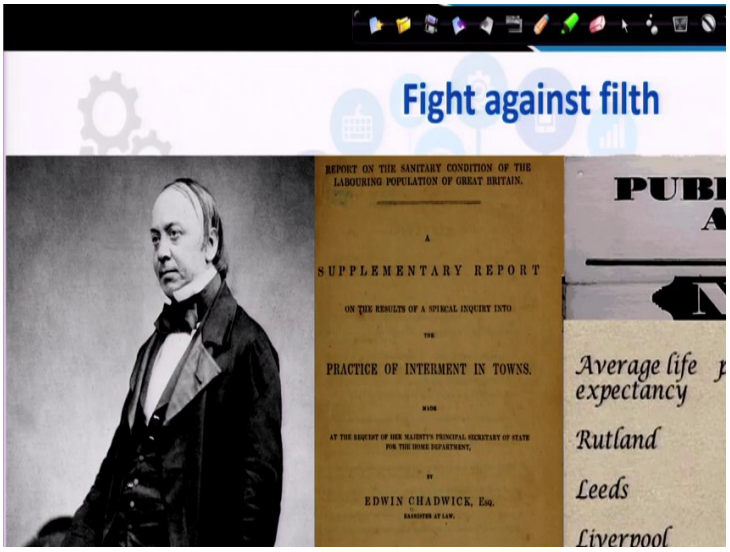

So, when cities became filthy, the fight against filth also started you know immediately and this is the picture of Edwin Chadwick. And Edwin Chadwick is very important or you know it is, he is a significant or renowned name, because he drafted this report which is known as the report on the sanitary condition of the labouring population of Great Britain.

And this report was published in 1843, and where like Edwin Chadwick he used quantitative models. So, he used quantitative investigations to establish direct linkages between poor living conditions, diseases, and life expectancy.

And he so, this report was quite influential, and it drew attention from municipal officials, and Edwin Chadwick for example, he was also the sanitary commissioner of London. And with this particular report the board of health was formed and Edwin Chadwick also became the first director for this board of health.

And another important point is that this report, Edwin Chadwick's report also it influence the passage of the public health act of 1848. So, this report came out in 1843 and finally, this public health act was passed in 1848.

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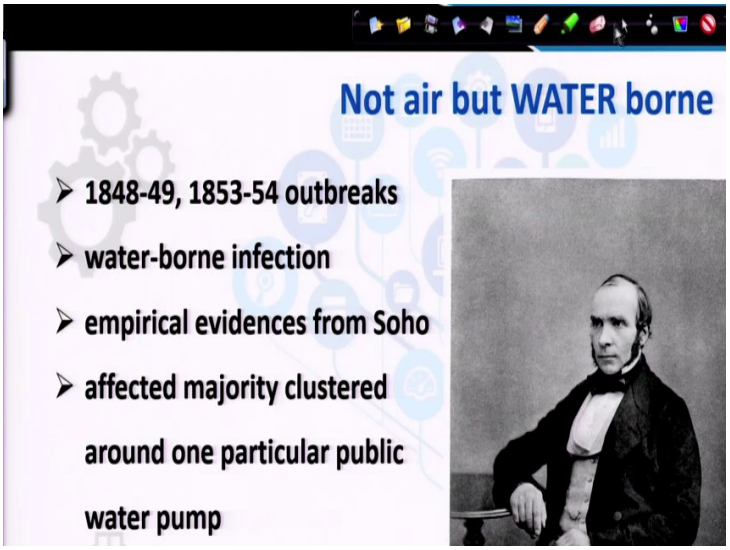

Now, like cholera, the frequent outbreaks of cholera continued. So, the second major outbreak occurred between 1848-49, followed by the third major outbreak in 1853-54. Now, one very interesting development occurred towards the end of the first outbreak

that is 1848-49, when this London based physician John Snow he did some detailed investigations to find out the reason behind the outbreak of cholera. And he said and he kind of you know countered his preceding theories, saying that cholera has its root in water and not air.

So, in this particular way, through his, you know analysis through his investigations, he kind of you know countered the miasma theory and introduced his pathogen theory or germ theory, where he said that you know the root cause for cholera was a germ cell, the cell you know till unidentified during his time or rather when he wrote this first monograph on the mode of communication of cholera.

And so, so when he wrote this particular monograph, he said that he found out, he concluded that cholera was actually a water borne infection. And I mean people were not very convinced with this particular you know with this particular finding because people still believe that this the root cause was a kind of air. But what happened is that you know when the third outbreak occurred John Snow, he revised his theory, he revised in the sense that he consolidated his findings through empirical research through field research. So, what he did was that he conducted detailed empirical investigations in a particular area which was on the London broad street and this area or this region is known as Soho. And he found out that how one particular hand water pump was responsible for the for increased mortality you know in that residential area.

So, his argument was that you know cholera was caused by a germ and the germ actually transmitted from one person to other through drinking water. So, it kind of asserted some pressure on the local officials and the local officials were compelled to remove the handle of that pump. And later it was also find out that that water from a leaking from a nearby leaking sewer also contaminated, you know, the water which the residents got from that pump.

But again, like as I mentioned that the medical practitioners or the sanitary reformers of Snow's age did not you know buy Snow's conviction to a great extent. So, it was initially rejected. But it was later accepted, and this transition, the phase of transition from initial rejection to you know acceptance at a later stage it has a very interesting story and here comes out the name of yes; so, the name of William Farr.

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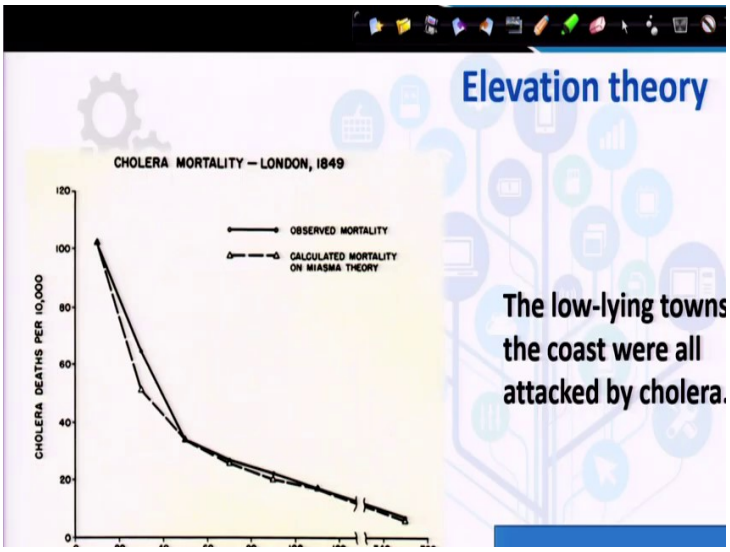

So, William Farr he initially he countered John Snow's theory and he said yes air was mainly responsible for cholera risk. And he not only talked about air, but he also in his analysis or in his research, he also incorporated another crucial variable which is the variable of elevation.

So, his theory was like this, he conducted statistical analysis in terms of by looking into the mortality rates in the different towns located on the banks of the River Thames. And his idea was that like there was an inversely proportional relationship between mortality and elevation.

So, which means that the towns which were located at lower elevations, there the mortality rates from the cholera disease was higher, alright. And what was his argument? How did he justify his proposition? So, he said that this cholera actually occurred from bad air and this bad air rose from decayed organic matter known as miasmata.

So, from miasmata only you know this terminology miasma has been derived. So, he said from this miasmata which is this decayed organic matter, so from there, so this decayed organic matter gave rise to bad air and from bad air cholera actually transmitted.

And so, what happened is that when raw sewage was carried through the through the Thames, so the towns which were located at higher elevation, so when sewage was

transported or sewage travelled from the higher, I mean from the high elevation towns to the low elevation towns.

So, what happened is that the decayed organic matter became more innocuous and you know coming to the lowest, I mean to the town located at the lowest elevation this decade organic matter became absolutely or totally decomposed. Thus, I mean leading to the, I mean, so the final argument was that the low lying towns on the coast were all attacked by cholera.

So, and this is the graph if you see the illustration here, so this talks about, I mean it sheds light on the correlation between cholera deaths per 10000, and elevation above Thames river in feet. But one very interesting thing happened, so when the 4th or the final outbreak of cholera occurred in London in 1866, so in the wake of that final outbreak William Farr, he revised his theory.

Because he could actually find out a coincident between you know this elevation, lower elevation towns and more access of these towns to contaminated drinking water at lower elevations which to a great extent validated John Snow's theory. So, and he finally, concluded in his revised notes that yes, cholera was actually a waterborne disease. So, when it became clear that yes cholera was a waterborne disease.

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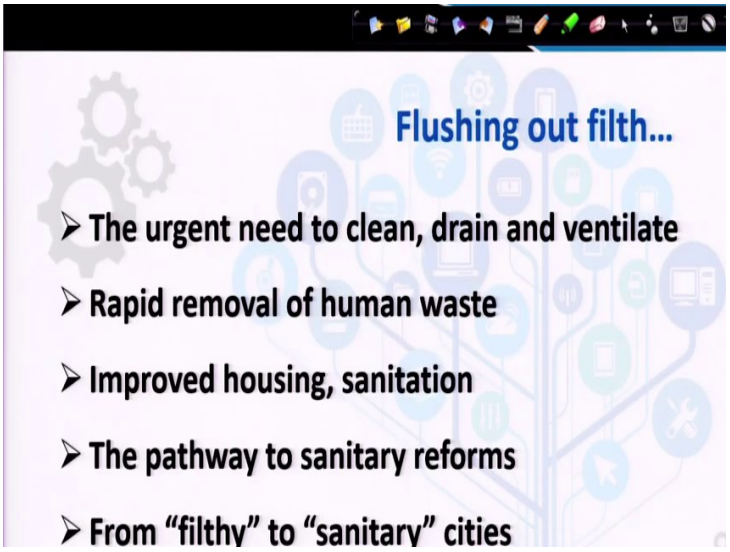

So, the immediate need was to flush out filth from the you know these filthy cities, and there was this the urgent need to clean drain and ventilate western cities, modern western cities this need had to be catered. Along with rapid removal of human waste improved housing sanitation. So, you know the pathway to sanitary reforms was crafted and this transition from filthy to sanitary cities actually happened.

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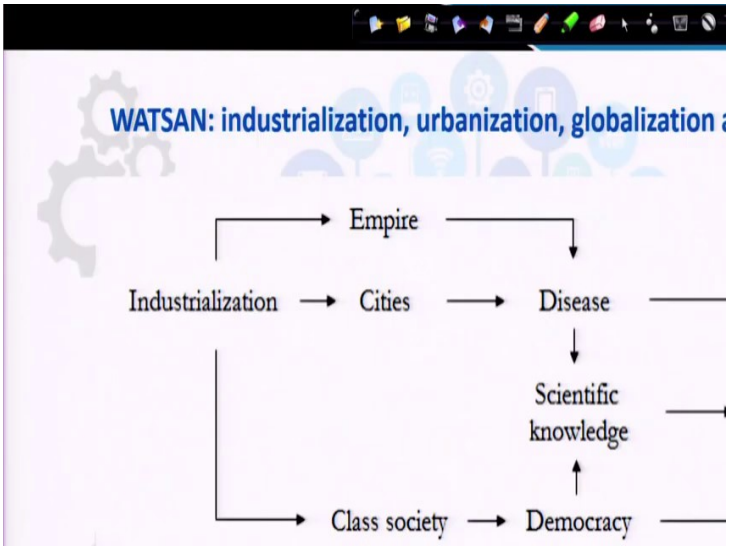

So, this is the final slide for this lecture and I found one particular article, it is it has been cited in the reference list. So, it is there in the reference list. So, please go through that conference paper. It is actually a conference paper by J Abellan. And J Abellan you know he has focused on water supply and sanitation services in 19th, 20th century European cities. And so, this is a conference paper the conference which was held in the University of Salamanca, in September 2017.

And in this particular paper you know this the author J Abellan, he deployed a transnational approach. And he you know kind of he talks about the larger processes of industrialization, urbanization, globalization, and democratization, and also establishes links between these larger processes of industrialization, urbanization, globalization, and democratization and studies the underlying development of urban water and sewerage services.

So, his major argument is that that industrialization and urbanization which occurred in the first half of the 19th century, it actually created the context for the spread of

contagious diseases like cholera, which we had discussed in detail you know in this presentation. So, these created you know the perfect context for these contagious diseases. And then what happened is that globalization, through globalization Indian cholera could actually reach European cities most importantly London in the 1830s.

And when the source, it was proved that you know the source of cholera was actually water, contaminated water, then immediately the need to come up with robust, elaborate, sophisticated you know modern urban utilities was established. So, what happened is that between 1850s and 1870s, the first modern waterworks you know it this waterworks were established and, but during those two decades during, those initial decades or initial years, this could only be accessed by the affluent districts of larger cities.

And it was not accessed you know by the so called marginalized population or marginalized district. But with democratization and from 1870s onwards these services were extended to more popular suburbs and small villages. So, what happened is that there was also lot of pressure, pressure was asserted by the lowland middle income groups, where you know they said that this initially like when this services were established lot of private investments were made. So, they were mainly designed and owned or you know the investments were done by private companies, but you know when these services had a wider spread. So, it become dispersed to more local settlements and you know popular suburbs, then this private venture seemed to be profitable no more. So, what happened is that you know under the pressure from this lowland middle classes, water provision or sewerage services finally, were acquired by the public.

So, it was acquired by the or within the larger domain of municipal governance. And what we find is that in North Europe this process of piped networking of cities was virtually, it was completed it was virtually completed by the beginning of the First World War. And for the cities in the southern part in the in Southern Europe this had to wait till the beginning of the Second World War.

So, I found this you know this diagram and also this transnational approach and also like things happening within Europe you know the democratic trends, and also industrialization, urbanization, this relationship between a colony and you know mother country that is imperialism how all these forces, through the interplay you know this

through interplay of all these forces like sanitary cities within the European context actually took shape. So, this please go through the paper by Abellan.

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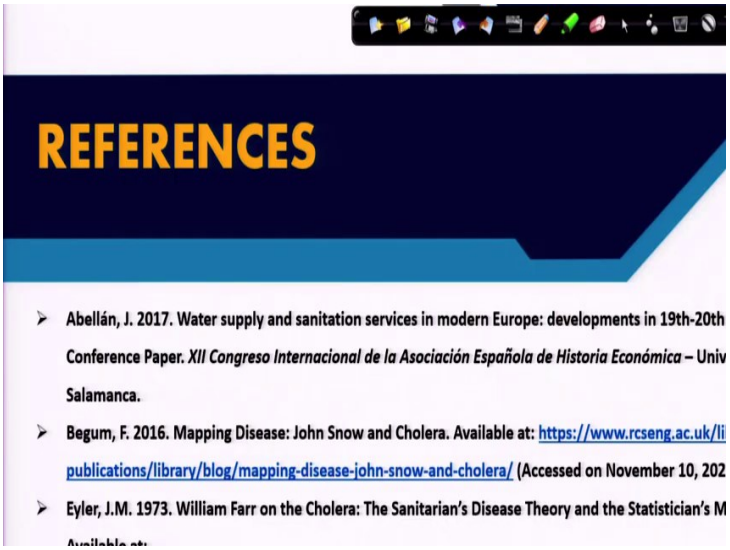

These are the list of references. And the first reference is by is that particular paper which I discussed and this illustration is from this first reference. So, please go through this reference. It is available online.

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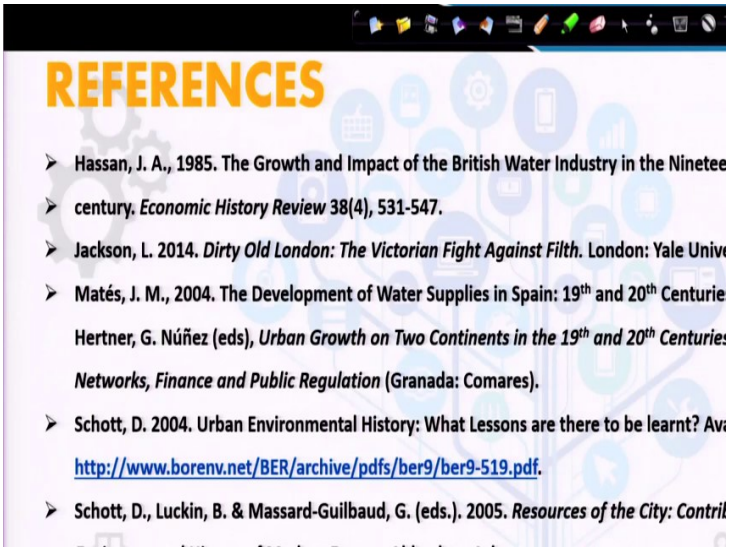

And these are the other important references here. So, this is the site for the science museum website. So, as I mentioned, you can also access this archival or historical documents which are here because it is a fantastic repository.

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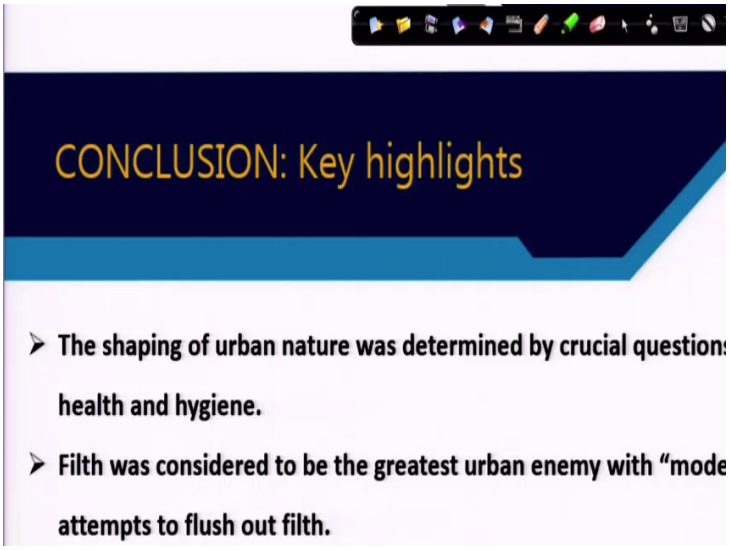

And so, I would like to end this presentation with these final points, with a recap of what we are already discussed. So, the final arguments are in this presentation, we had learnt how the shaping of urban nature was determined by crucial questions of public health and hygiene.

Filth was considered to be the greatest urban enemy with modern attempts to flush out filth. So, here we had learnt about you know some of the sanitary reforms, but more importantly about the theories by the medical practitioners and these sanitary reformers.

But in our next presentation we would be discussing some of these, you know some of these like engineering attempts to flush out filth or waste from these modern Western European cities. And we also discussed contradictory theories, and models most importantly germ theory, elevation theory, miasma theory, etcetera which dominated the modern urban western scene with the common purpose of designing.

So, the So, the reformers where, they were planning the reformers and the urban planners, their major agenda was to design and innovate sanitary cities and in order to tackle filthy environment. So, this you know the sanitary cities can be kind of understood

as an outcome you know as an outcome of Europe's, you know attempts to kind of Europe's attempts to leave a healthy and hygienic life.

So, good environment was a major cause behind the emergence of sanitary city. So, the term itself you know speaks a lot, sanitary or sanitized. So, what is important is that the major agenda was to tackle bad environment. So, in order to tackle filth, in order to tackle health and hygiene, these sanitary cities were designed, you know these sanitary cities emerged.

But then the question is what had been the long term socio-ecological implications of these cities which were driven by networked infrastructure, so what kind of long term implications it actually had on the environment?

So, this is something which we are going to take up in our next presentation. So, the final argument is that this search for and birth of sanitary cities very much you know kind of geared to the idea of providing a better environment and better living conditions to people, how or why they ended up in kind of crafting long term and large scale implications on the environment.

Because maybe some unintended consequences were not considered when these cities were designed and innovative. So, something which we will be taking up in lecture 8.

Thank you.