International Studies in Vernacular Architecture
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Lecture: 16
Disasters Vulnerability and Traditions

Welcome to the course International Studies in Vernacular Architecture. Today, we are going to deal about a module of natural hazards and environment. And within that, we are going to discuss about the basic concepts of Disasters, Vulnerability and Traditions. When we start about the very fundamental concepts of the disasters vulnerability, let me explain you with a very small example.

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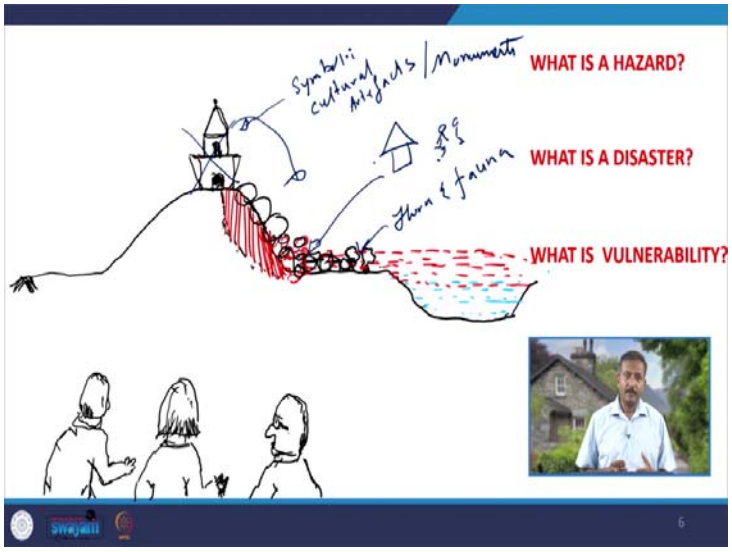

We want to discuss about what is a hazard, what is a disaster and what is vulnerability. Now, let us imagine a situation that there is an ice mountain next to the bank of a river. So, imagine the same situation a temple is placed is constructed on the top of the mountain. And there is a small hamlet on the bank of the river and this beautiful setting people come to watch the setting from different places and for various other reasons, it could be for spiritual reasons, it could be to see and explore this area. So, many tourists come over and many local villagers also come over to this temple.

Now, until this point, it is all fine. Let us imagine due to some cloud burst or certain flood situations or if there is any glacier lakes or burst which has resulted into flood situations, one fine evening, we can see a rise in the water level and started rising up, up and up. So, the first impact it is having an impact on the agricultural fields. And later on, it started gradually

affecting the houses of the people and some of the people may have lost their lives and the settlements and gradually it started affecting the health.

So, the water started penetrating into the mountain soil and it gradually for years and years it started affecting this particular hill and sometimes, the often see part of the land has been slided and this erosion is continuous and what we actually see is part of the mountain have fallen down and now, gradually even this mountain may fell down.

So, now, let us take this simple concept when the water level have raised due to the flood occurrence, it was a hazard, it was an actual hazard. When it started affecting the flora and fauna that is where it is impacting the wildlife, it is impacting the livelihoods then it started affecting the dwellings then it started impacting the people living there.

Then, it also started having an impact on the symbolic cultural artifacts or monuments. So, in all these three cases an impact is seen whether in terms of the livelihood, whether in terms of wildlife, whether in terms of flora, which has been protecting the settlements, it has an impact. Similarly, the habitats are affected. And now, their symbolic association, the semantic associations with these religious buildings or the cultural buildings have been affected. So, it is not just a question of a building, but it is a question of their association with that building.

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So, in reality, this is how it looks like, this is a place near Barsu in Uttarakhand, where we were studying. So, what you can see here is a village and this is called Swarigad. So, in 2012-13 disaster, this particular channel it has slided and some of these boulders have fallen down

and even till today, this particular movement have started indicating that the part of these houses were affected. So, though they are looking as far away, but still, there is a lot of impact seen in the nearby settlements because of this activity. Similarly, when you see a 2003 Bam earthquake.

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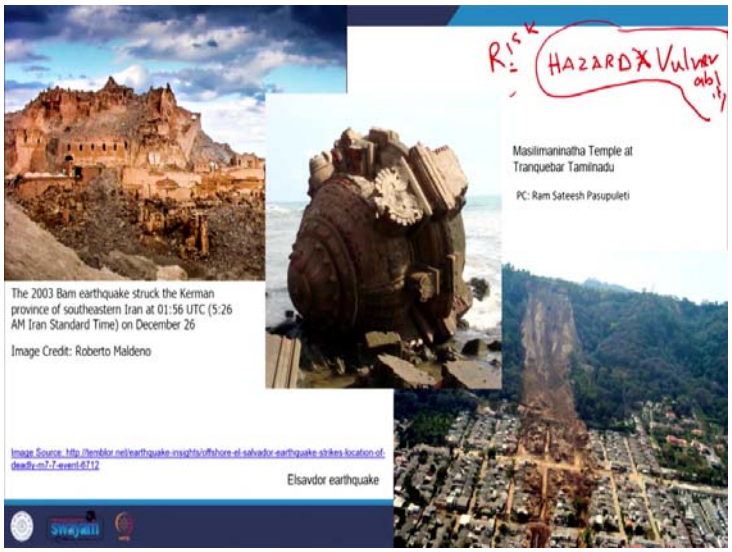

This is where you can see their monumental buildings, their forts, their temples, many of them are damaged. This is one of the example where I was working in tsunami affected areas in Tamil Nadu. So, this is Masilimaninatha temple, which the whole Gopuram has fallen down. And this is pic from elsewhere when landslide happens, how it affects the habitats. So, this is the scenario. So, this is where we are talking about the hazard is a simple natural process, whether it is a flood, whether it is an earthquake, whether it is any other hazard, it is a natural process.

But then what we really have to understand here is, who are frequently affected what kind of impact it is made, on whom and when. For instance, when the tsunami have stuck up in 2004 in the Indian subcontinent, many fisherfolk have lost their lives. Later on, one huge tsunami have started in the Japan but maximum of maybe some few thousands have died.

Comparatively, the scale of the tsunami was much huge and it was an urban disaster, but still they were able to cope up with that having a very minimal impact on their livelihoods or their lives. But whereas in our condition, in the Indian conditions or in a developing countries conditions so, this is not the same case.

So, there is talks about when we are subjected to a particular hazard, how we are going to cope up with it, how we are susceptible and prone to these natural hazard impacts. So, when we actually multiply with vulnerability, so, when the hazard component multiplies with the vulnerability, this is where we talk about risk and that becomes a disaster, it was a natural hazard, but then how the vulnerability components creates a situation for a disaster.

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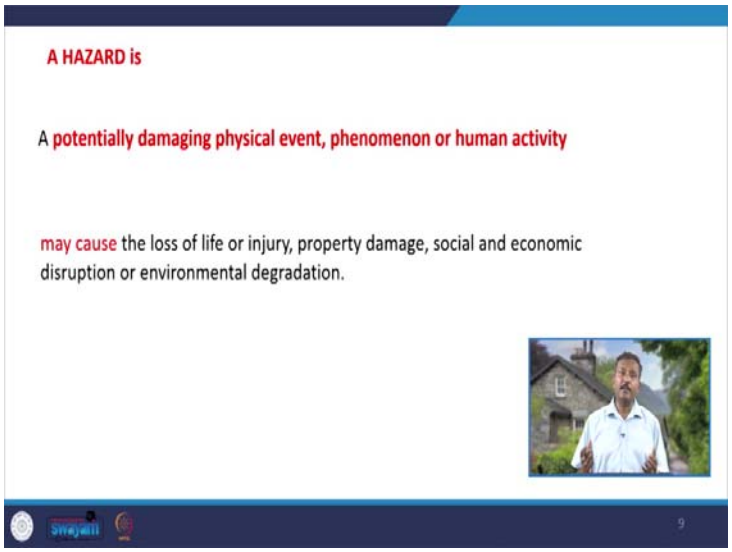

So, hazard is simply a potentially damaging physical event a phenomenon or a human activity and it may cause the loss of life or injury, property, damage, social and economic disruption and even environmental degradation. But then there is a disaster is when it is multiplied with the vulnerability component of a particular group or a particular society. And that is where the disaster risk comes.

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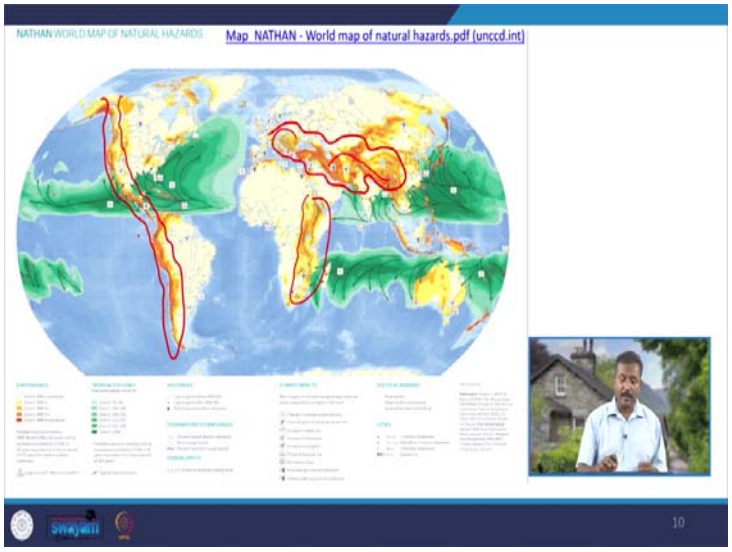

Let us see the NATHAN world map of natural hazards. So, if you look at this map the series of earthquakes as started grading different geographical aspects how the tropical cyclones where and when, how the intensity based on the historical database, so, they try to look at it, but if you look at it, some of the common phenomenon one thing which you can accuse like some of these bells. So, what actually we can observe here is, there is some common trend because many of these are actually mountainous regions, you have the rocky hills, you have the Andes, you have the Hindu Kush mountain regions and also mountainous regions.

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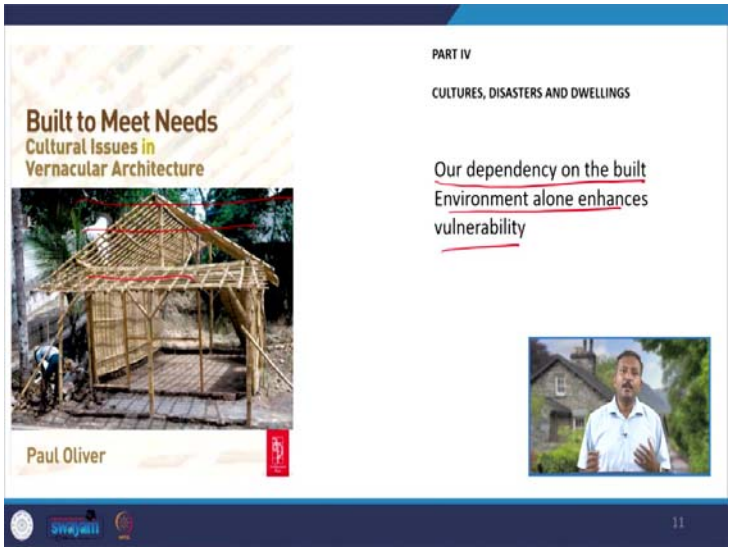

And if you look at this overlay of different aspects of these disasters there are certain common scenarios which you find what you find in South America and what you find in

India something similar something common in place, let us see what how we can look into that. So, Paul Oliver have actually come up with the cultures, disasters and dwellings how what is the role of culture in shaping this disaster practices so, that is where he actually argues, brings an important point that our dependency on the built environment alone enhances vulnerability.

So, here when we talk about the vulnerability because the more dependent we become on to the built environment, and that is where it is directly proportional with the vulnerability component. So, in his seminal work of built to meet needs, cultural issues in vernacular architecture. I am going to talk about a few examples, which we have spoken about and also the techniques of how we can understand the macro scale to the micro scale understanding.

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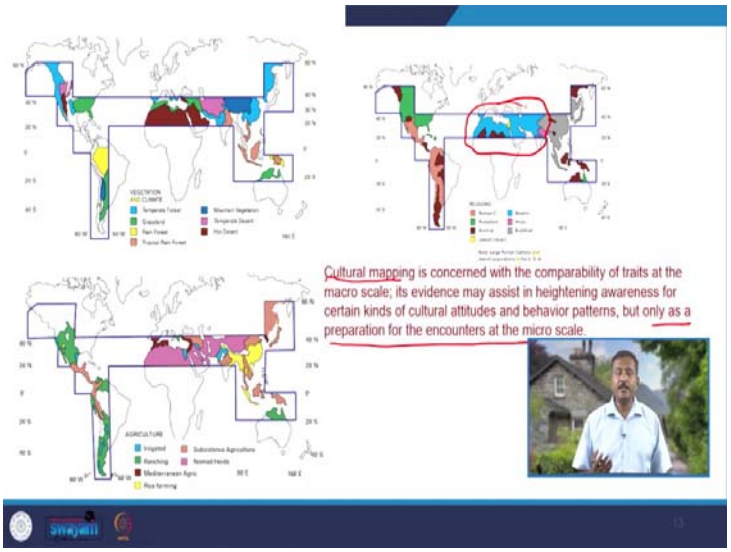

So, let us say, when we talked about yes, there are Rockies, there is a Andes, there is a Hindu Kush mountain regions. So, there is if you add one more layer into it that is where you actually can see there is a Craig belt and now the Craig belt which actually passes through these particular parts of this world. So, that is why you see most of the Turkey, Iran, Afghanistan, you see, the northern part of Pakistan, you have northern parts of India and the Chinese territories and some of the South American and North American territories, which are frequently prone to these earthquakes.

So, because they are lying on the Craig belt, now you start adding layers by layers of information on to it that what kind of soils they share, it is like, you can see the desert soils,

because it is all the physiographic conditions, they are all influenced by the external environments what kind of climate it has.

The languages if you see most of them, they speak Arabic here. And similarly, you see the important evidence of the earth building earthen building material is seen in this part of the world, where you can see the Adobe constructions in Mexico and similarly in South America, and you may see in the northern part of Africa and as well as in the northern part of India, Asia, sort of the Middle East.

So, what type of vegetation it has, what type of agriculture it has, what type of religions who are mostly affected by these disasters that is where you can see majority of the Muslim population lives in these particular regions and because of that, so, in that way, there is an overlay of information's whether it is a language, whether it is geography, whether it is a type of soil, everything.

So, this method is referred to as a cultural mapping. And it is mostly concerned with the compatibility of the trades at the macro scale we are talking at more of a global scale or inter-continental scale and its evidence may assist in heightening awareness of certain kinds of cultural attitudes and behavior patterns but only as a preparation for the encounters at the micro scale.

So, for instance, let us say we plan for certain reconstruction in these Iraq or these kind of countries. So, we can see certain similar attributes that have contributed to in that particular region, whether it is a type of climate, whether the nature of soil the kind of religion, the main dominant religion, so, they are how they behave, it has shaped their behaviors so, all these can actually could be related to or cross reference to each other.

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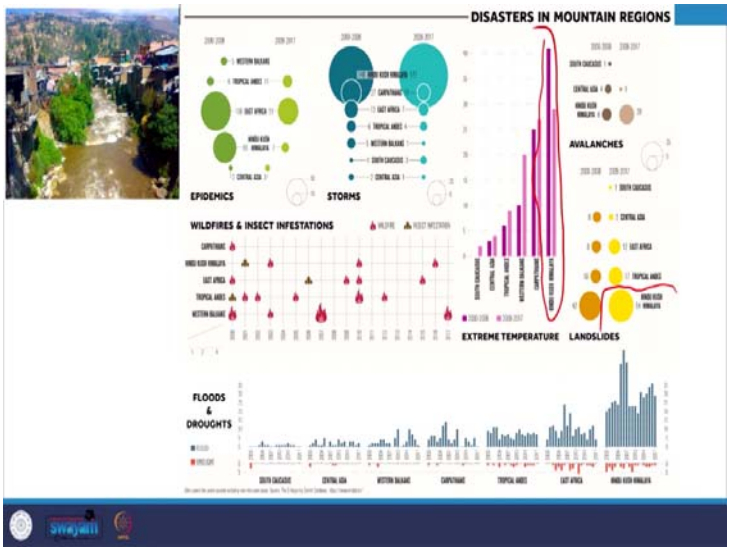

And as I said, many of these disasters especially the earthquakes, they are evident in the Craig belts and also many of them are evident in the mountainous regions. So, the EM-DAT information talks about the mainly the Hindu Kush mountain region, that is where the temperature is rising and you have these Himalayas, many of the avalanches are the root causes, there is a wildfire, there is a insect infestations, there are a lot of multiple disasters, which are actually been evident in these mountainous regions.

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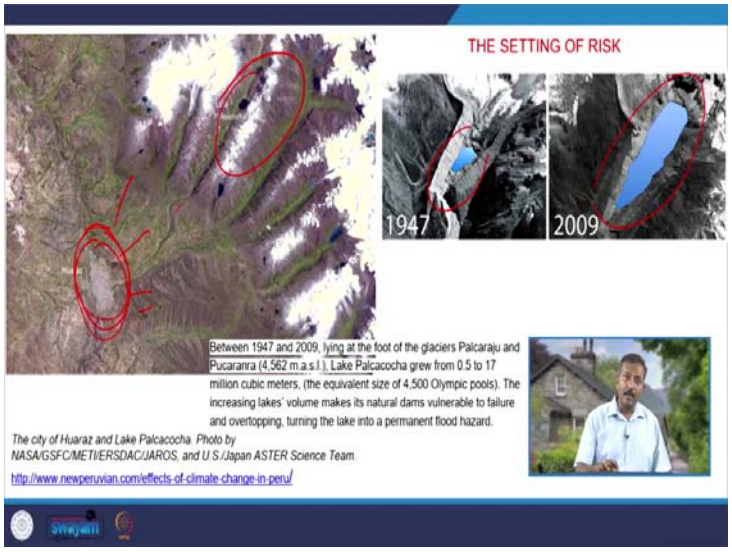

So, the photograph which you are seeing is somewhere in South America, the hole in the Huaraz. This is the place where a small circle mentors and that has been affected in the recent disasters in the last decade. And if you really look at why the floods have affected this part of

the settlement and what are the root causes for it. The root cause is not just something near the settlement, it radiates the reason, is radiated from the outburst of the glacier lakes, which on top of the mountains, for instance, if you see this particular lake Palcacocha grew from 0.5 to 1.7 million cubic meters, which is equivalent to 4500 Olympic pools.

And in 1947, this was the size and 2009 it has grown up enormously and that has started breaking down the natural barriers. And that is how huge with a great force it started flooding and the nearest settlements are often flooded and they are being continuously affected.

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One of the classic example on the similar note one, we can the recent disaster in the 2012-13, where we have seen the Kedarnath dham and the Uttarakhand state where the Chorabari lake Chorabari, it has busted and it has caused divested experience disaster impacts on the hoteliers, on pilgrimages, and the army has to go and lift many people back.

So, it was one of the important learning, but we have to see that this happens actually not the reason, it is not just only at Kedarnath, it might be miles and miles away from it. And not only that when we look at a disaster context, sometimes the cause may be across the geopolitical boundary, maybe if tomorrow if China or some other territory builds a dam across the Brahmaputra River, yes, it will have an impact on the Assamese border or any other villages on this side.

So, the reason may not be at this stage at this micro level, but it can spread across different boundaries. So, that is where the latent conditions that may represent the future threat,

because what will be our future possible threats and these are all some hidden possibilities something else is happening somewhere, but it is affecting in some other manner.

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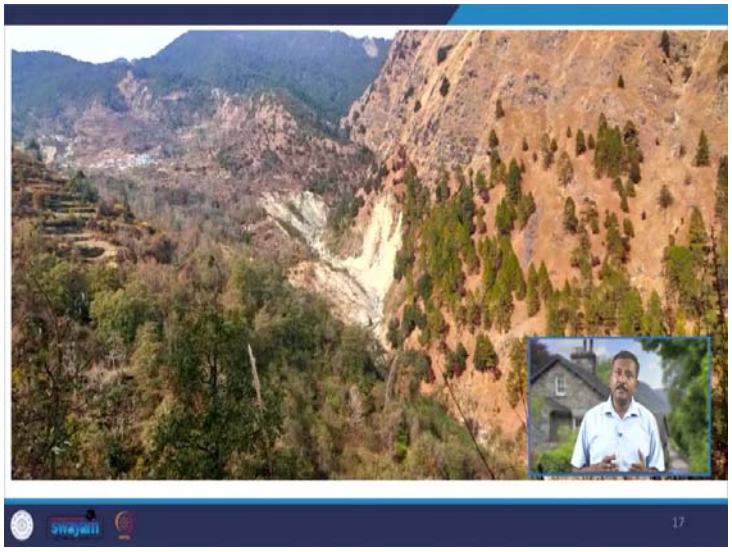

And this is where we can see because one aspect, we are talking about the climate change recently the frequency of the floods is also becoming evident, and which is again causing certain landslides, which is having an impact at these villages. And in the same village, now, what happened to these traditional dwellings so many of these stone construction which are made for their local climatic conditions and local living conditions, for instance, we have these traditional dwellings, where the ground floor is used for these cattle and upper floor used for the human the families to live in.

So, now, many of them have got damaged because they are continuously getting cracks in the for the past 80 years, because people believe that that is the whole landmass is sliding down and gradually including the newer constructions, they frequently getting damaged. And this is one more important aspect is it is called Gharat. Gharat is the traditional water mills of Uttarakhand. They run basically there are flour mills, which are run by the water force they just constructed across near to a stream, so that there is wheel attached to it and which is attached to your stone boulders.

So, it actually creates a setup for flour mill and without any electrical energy people rely on these natural forms of water mills so but even till today, because many of the streams have disappeared. And now people are not using these natural water mills, but they obviously have become dependent on the external sources, whether it is a nearby town or whether they are relying their life on electricity many other, so they are becoming more dependent on it. So, earlier, if you look at it, there are many practices which are gradually changing with the slow onset disaster situations.

Now, many of these houses are abandoned, because people are scared because they are often developed many cracks and they are not able to live it in it. So, most of them, they are using it as a storage for or maybe they are using it for putting the dry leaves. And sometimes they put their cattle in some occasions so in that way, many of these traditional dwellings they are overlooked and newer forms have done, even then they are also not sustaining for these present conditions.

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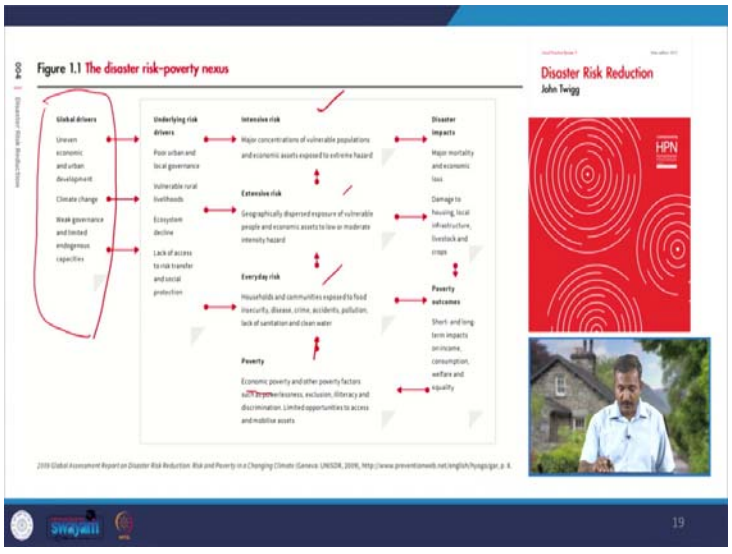

So, this is a very fundamental understanding of what is the hazard? What is a disaster? What is vulnerability? And let us take to some of the frameworks. There is John Twigg, one of the important experts in this particular field of disaster studies and Ben Wisner. So, I am just trying to bring certain frameworks what they really relate with this hazard and risk.

So, one is they talk about the disaster risk poverty nexus, the global drivers because we the whole world is not uniformly distributed to all wealth and natural conditions. For instance, Ghana is blessed with some gold mines, but it is still not in a very rich condition.

Similarly, if you take the Middle East before 1950, the situations of the Middle East was different, but after the oil revolution, the whole fabric of the Middle East have different but maybe after 100 years, things will change. Maybe even the war situation in this Ukraine and Russia, it also have certain impacts because now, every small thing which is happening at a micro level may have an implication from a larger events which are happening at a global level it could be because we are all unevenly distributed.

The second is the climate change is an ongoing phenomenon, which has been evident in many aspects and the weaker governance and the capacities to the individuals and the societies that also have certain control paradigm in it. So, they actually also determine these underlying risk drivers, the poor urban and local governance, vulnerable rural livelihoods, ecosystem declines and lack of access to risk transfer and social protection.

So, that obviously to intensive risk, extensive risk and everyday risk so, for instance, we have the crime, we have accidents, we have pollution, we have lack of sanitation. So, all these are everyday risk and the poverty because the most underlying driving factor is the poverty because the disaster is happening here and San Francisco and Japan have this maybe similar richer scales, but how we are able to cope up with it, whether the poverty is also determinant in this or not.

The economic poverty and other poverty factors such as powerlessness, exclusion so, is it a particular group for example, refugee population in a developed country, are they having equal access for protecting themselves in such kind of situations so, they have limited opportunities for a particular social groups. So, this is where that becomes a basic fundamental driver tool, which leads to these everyday race, which takes us to the extensive risks and the intensive risks and that is how we get these disaster impacts and have a long and short term these disaster impacts.

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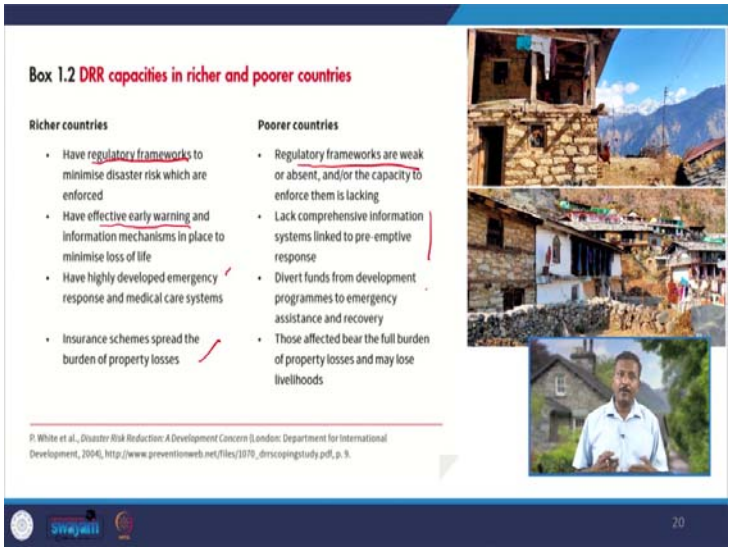

So, as I just discussed with you, the richer countries and the poorer countries, the DRR is how it is different. So, first of all the richer countries have the regulatory frameworks, they have well established frameworks, how we can minimize the disaster risk, and they are strictly enforced, when poorer countries they may be having, for example, we have the coastal regulation zone, which has been modified maybe 20, 23 times, which has been started in 1991. But it has been modified further but they are weakly enforced in the poorer countries. So, similarly, they have effective early warning systems information mechanisms, so that they can minimize the loss of life. So, that is important.

For instance, in the Indian tsunami, the waves took nearly 180 minutes to reach to the Indian subcontinent. So, this is where the lack of comprehensive information both at the central

level, the state level and the district level, how it will have an impact. And similarly, they have the highly developed emergency response and medical scale systems.

And whereas here we have to divert funds from the development programs to the emergency assistance, the insurance schemes here now, of course, now, in developing countries, also the insurance schemes are slowly picking up their pace person who builds the house, are they insuring it or not so it is, the developed countries are much ahead of it.

So, there are pre-disaster vulnerabilities and the post-disaster vulnerabilities because it is the same place in village where I have doing my study, just immediately after the disaster, I could see there is water problems, there is everyday problems, imagine in the same village after 2 years, with the similar problems.

So, even before disaster or after disaster, still they remained the same in many in some of the, of course, they take some time to change over but then disasters are considered as an opportunity or the agents of change, we can take that as an opportunity to make it better that is where we refer it as a build back better.

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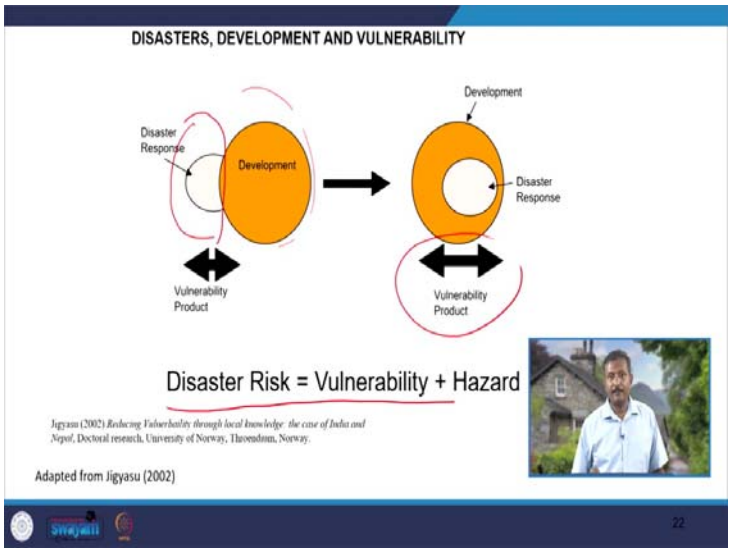

So, in 1980s, whenever the disaster strucks the development is followed after the impact of the disaster. So, obviously, thinking that the vulnerability product should be lessened, but the reality is the disaster response is within the development. So, that is where the reality is the vulnerability product is more emphasizing on the definition of this, the formula of the disaster risk, disaster risk is equal to vulnerability plus hazard. R is = vulnerability + hazard.

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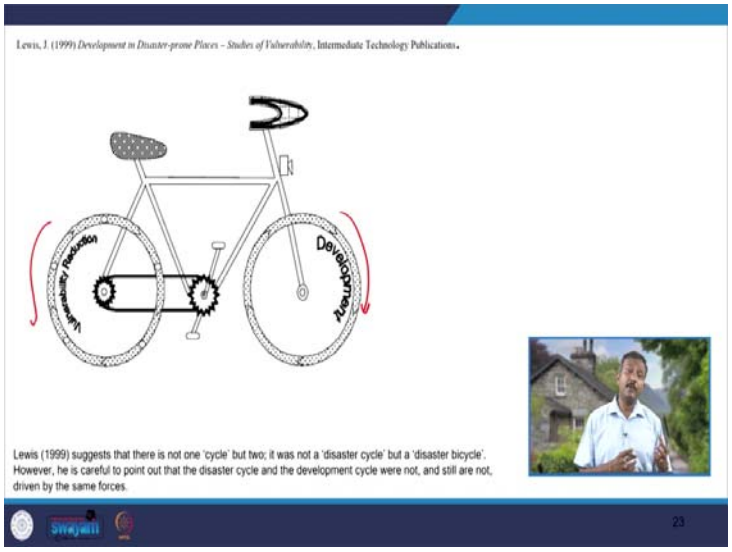

Now, Lewis, he talks about not just a cycle disaster is not a cycle process like you have the very usual development process the disaster happens then the relief and response then you have this rehabilitation process. Then you have the reconstruction process, then gradually, it merged into the regular process of development. But what he tried to say is, disaster is a bicycle, it is a two forms of cycle. But then it is not the same way the development and the vulnerability reduction, they may not run by the same force, because vulnerability is driven by a different set of forces altogether.

So, it is not that, we run the development the same way that vulnerability also will run the same, it is not in the same way, there might be some cultural factors associated to it, there might be some socio-economic factors associated it, there might be some demographic factors associated to it, there was a very complex phenomenon, which actually determines this vulnerability reduction.

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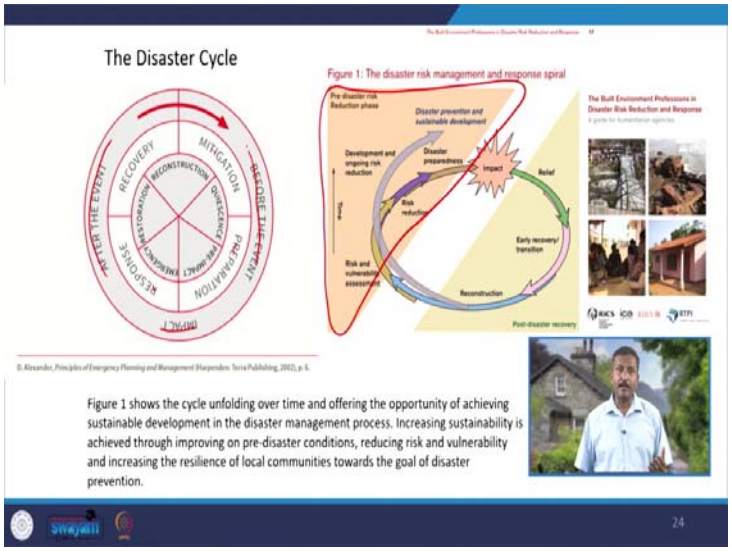

So, some of the very fundamental aspects of the disaster cycle, as I said, we have the before the event, and the impact, and after the event, so we have the mitigation, preparedness, response and recovery. So, we have these quiescence and pre-impact, emergency, restoration and reconstruction.

So, it is the kind of principles of these emergency planning and management and whereas in the disaster risk management and the response spiral, for instance this is a cycle what you can actually see is, if you improve on the pre-disaster conditions that can actually reduce risk and vulnerability and increase the resilience of these local communities.

And so that it can prevent a disaster, it is not. So, most of the times the politicians, they hardly tend to look at the pre-disasters fails, mostly they look at the post disaster because that is where the tangible outcomes are appearing by, you have the houses, the number of houses we have constructed.

But how about preparation of it, how if the disaster strikes, what we should do, how we can create an early warning system, how we can educate the woman, children, everyone so, I am also giving some references for you the built environment professions and disaster risk reduction and response, where Tony Lloyd Jones with the max lock center group, they are talking about, whose role is what and when, in what phase of the disaster continuum process, what is the role of an architect, what is the role of a planner, what is the role of a surveyor, what is the role of an engineer.

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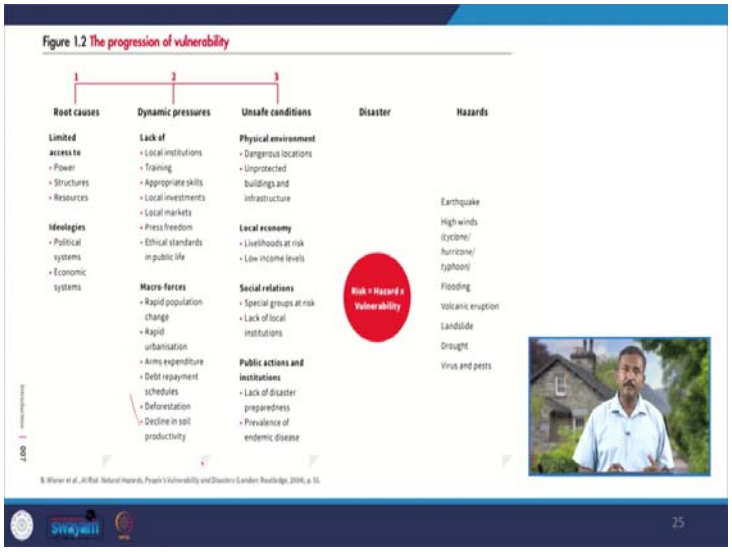

So, the Ben Wisner, he talks about these, the progression of the vulnerability, we have the root causes, because there is a limited access to power, structures and resources, for example, in the tsunami, many of the women have died, because they were not able to know how to swim that has really hindered their capacities. Similarly, for example, in Middle Eastern countries like Saudi where earlier woman had some limited access to driving or any other some of these no going out or so, like that, a particular group of the society has some limited access.

So, this could be due to various political ideologies, due to various economic aspects these are the root causes and which create a dynamic pressures lack of local institutions, lack of training, lack of appropriate skills, lack of local investments, lack of local markets, press freedom like in the communist countries, the press freedom is also a matter of discussion, and the macro forces, there is a demographic change rapid population and rapid urbanization. And imagine right now, there is a investment on war situation anytime because now, the government has to sanction certain budgets to these purchase of the arms expenditure.

Look at the context of Sri Lanka, how the whole situation have changed, so, decline in the soil productivity. So, all these are the dynamic pressures, which actually result to unsafe conditions, with the physical environment, local economies, the social relationships and lack of disaster preparedness. So, in that way, they start building the pressure and creates an unsafe conditions.

And on one side, the hazards come, which is natural phenomenon. And this is where we observe that this is where a disaster pops in, this where the hazard multiplied with the vulnerable situation, which has been coming through the Global pressures and the dynamic pressures, and which has resulted in unsafe conditions.

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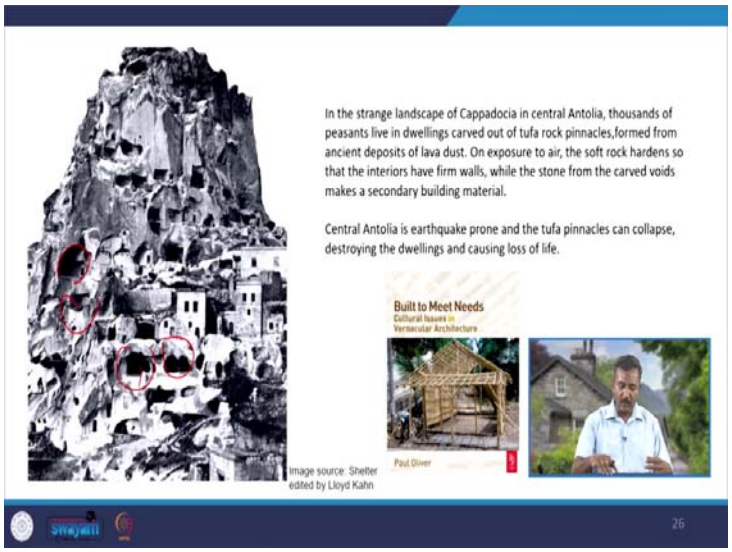

So, just quickly, to wrap it up, I will just brushed through a few cases which even Paul Oliver have talked about. So, especially in Central Anatolia, we have this collapse in a Greek village, where the tufa pinnacles are there and because of the wind erosion, the mostly they keep collapsing now and then.

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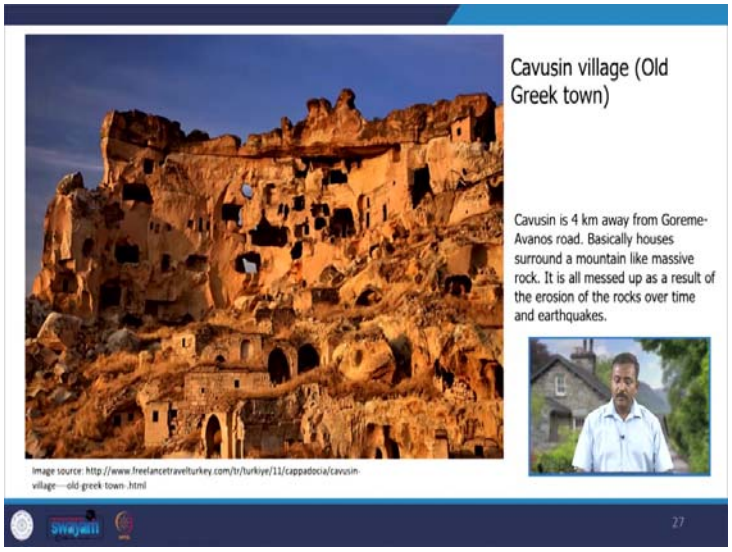

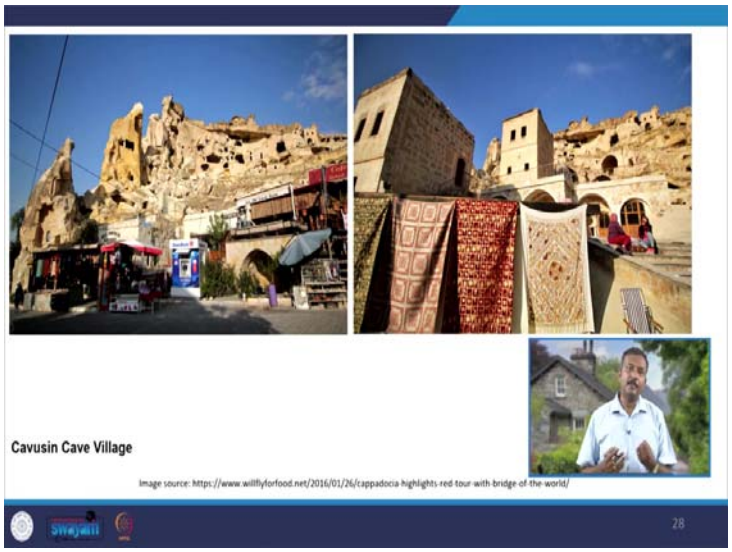

And so, it is one of the example which refers to the Cavusin village is in a Greek town and here it is a huge rock tufa pinnacle and because of the wind erosion, mostly the small rocks are falling down#over time and also the turkey is this particular belt is also lying in the Craig belt. So, obviously, there is a time frequent earthquake are happening and many of these people who are leaving earlier the one who are getting affected.

So, the government or the local they have offered them some other place to relocate, but somehow what is interesting to see here was they have denied that particular locations and then they came back and they started building on the foothills of these tufa pinnacles a small houses, because why do you think they have done so, because their economies are dependent on these tourists who are visiting these places. And on the tourist economy that is where they can sell their blankets, the carpets, their artwork, their restaurants, business, so, the economic driver is an important aspect and people have decided to come here.

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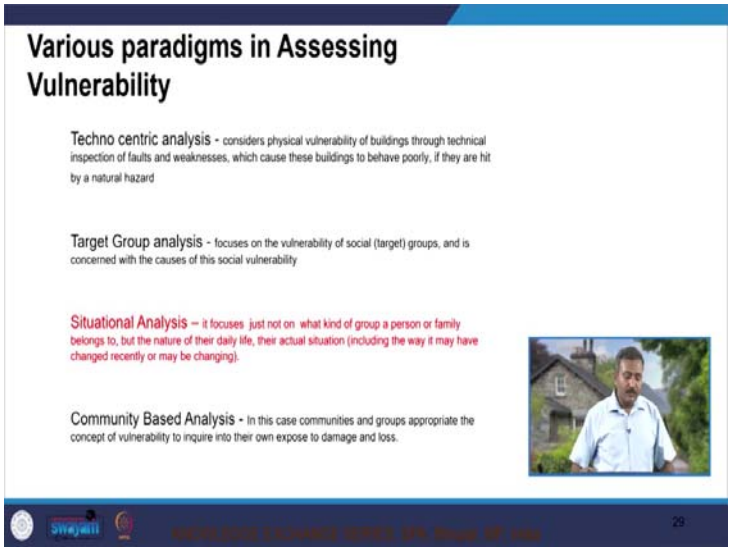

So, let us also look at the what are the various paradigms that when we actually discuss or to assess the vulnerability. One is the techno centric analysis, when some disaster happens, a team of engineers go and inquire about why these buildings have fallen down, what was the failure, what was the reasons behind this failure, but the second analysis in later on 1980s, where they are looking at why every time a particular group is affected, in this particular place. So, this is where looking at the social aspect of it. Now, the target groups who are these targeted groups every time.

The third aspect is a situational analysis, because the situations keep changing every day. Span of 10 years, many things change by so, that looks at that how the everyday situation is changing. Whereas the community-based analysis, where we talk about the NGOs, most of these NGOs, they make them communities aware of what their problems were and then work with the communities to deal with the situations. So, this is a kind of community-based analysis.

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Now, another example, which I would like to give you is the Gibellina earthquake, which Paul also referred is at work and built to meet needs. And this is where in 1968, in the western Sicily, about 1 lakh people have become home homeless and as a huge earthquake, have major earthquake have had this particular province. And now, once after that, that was the time where they were looking at disasters can be an opportunity for making a bigger change. So, that is where that time the mayor Corra's idea was to promote a cultural renaissance through an urban reconstruction of this Gibellina.

So, he brought the modernity as a symbol and he brought a lot of artists, engineers, it became a living laboratory and thus many architects and artists came together and they formulated certain concepts. And they developed a lot of cultural artifacts, like, for example, this new cathedral by Ludovico Quaroni. And the plazas they have developed by Torre Civica, so and also the housing, they developed a very organized form of housing what you see in American towns.

And also, that is where they looked at it. But at that point of time, there are only 5000 residents. But they planned it for the 50,000 residents at that point of time. So, this is where the streets could now, earlier, the neighbors were in more intimacy. Now, they are not even related to much of each other because every house is more of an individual entity. So, the whole house form have reshaped their intimacy with the neighbors.

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And also, these artists because of various other issues with the political budgets and other things many of these unfinished artifacts, because most of them, they relied on these artists to

complete the job. But then there were other financial issues, and most of them are lying over. So, these are all hidden and abandoned sculptures all over the town.

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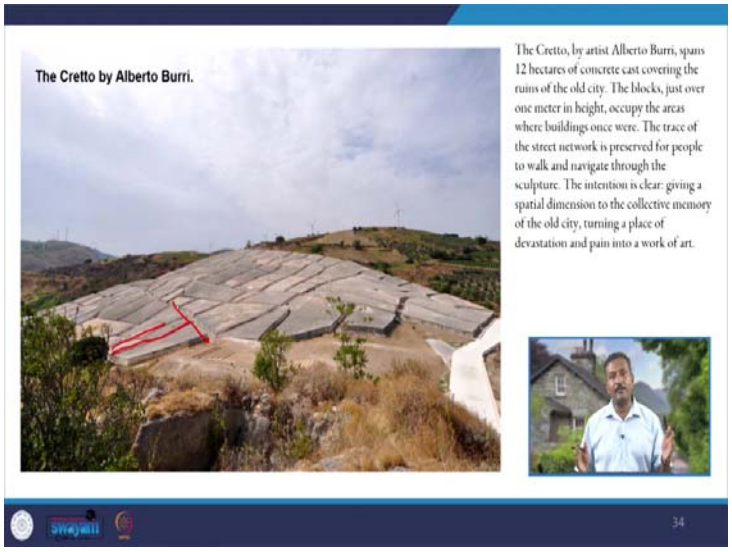

And what do they do with the actual town, which was affected. So, in fact, them converted that into a monument called 12 hectares, they made these actual paths the streets as a kind of path so that it traces the image of that old settlement. And they want to give a spatial dimension to this collective memory of the old city and but just completely sure 12 hectares, of the land is shredded with concrete.

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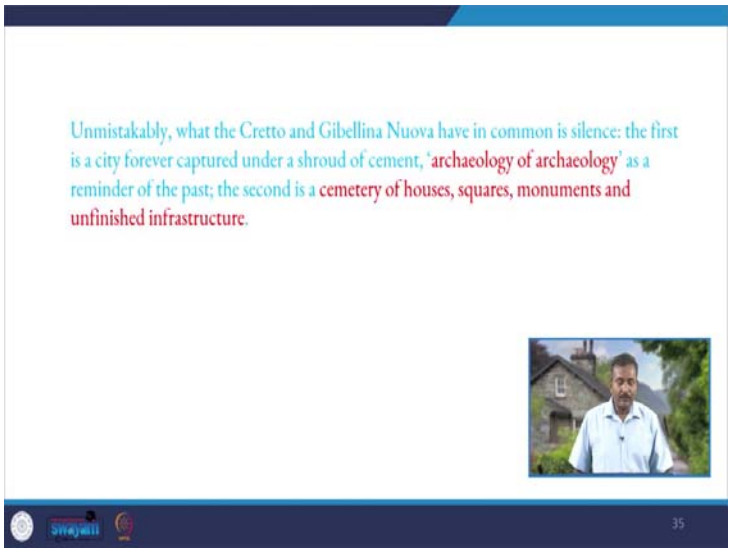

So, that is where some of the scholarly experts talk about what the Cretto the new players and the Gibellina Nuova have in common is silence that visit the old place or the new place. The first one is a city forever captured in the shroud of cement. Archaeology of archaeology as a reminder of the past. The second is a cemetery of houses, squares and monuments and unfinished infrastructure.

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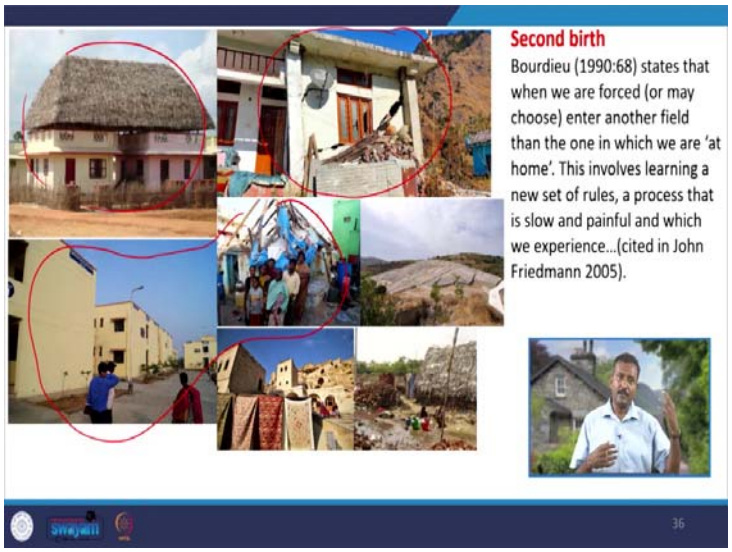

So, there is not many people around. So, with this, I would like to do a summarize of there is various other cases we will be discussing this is a case and tsunami affected areas in Tamil Nadu, is the case in Hudhud, the fisherman communities in Visakhapatnam and will be of course, this is in Uttarakhand which in our coming lectures, we will be discussing about it, but I would like to conceptualize this whole understanding of why culture is important. And in a Gibellina case, you actually really understood the estimation of under expansion of the city with much more than what they needed what it has resulted in.

So, similarly, Bourdieu on a similar context, he talks about when we are forced or may choose and are enter another field than the one in which we are at home. This involves learning a new set of rules, a process that is slow and painful and which experience. So, here what he really meant was when you are so, there is a concept of fields and games.

So, while playing any particular game in a particular field, it follows a set of rules or set of instructions but when you are actually force some player to move to some other field and play some other game, obviously, he has to learn some different rule, he has to apply certain understanding of that particular game and that field so, this is where same applies for the

human processes when they are interacting with a new set of changes, how traditions evolve, how the traditions get adapted to new things how they resist, all these aspects are a very complex phenomenon. So, this is where we refer to the second birth, so, in the next class, we will be talking about the concepts of the second birth and across various cases. Thank you very much.