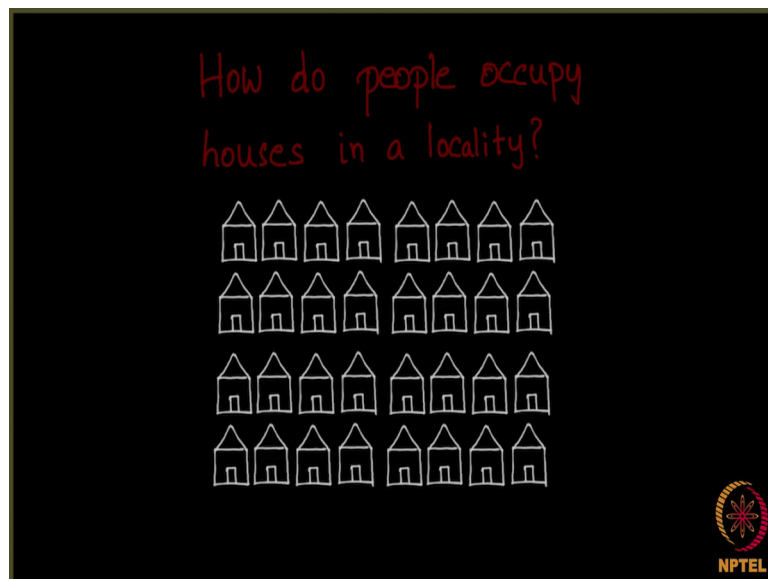


Social Networks
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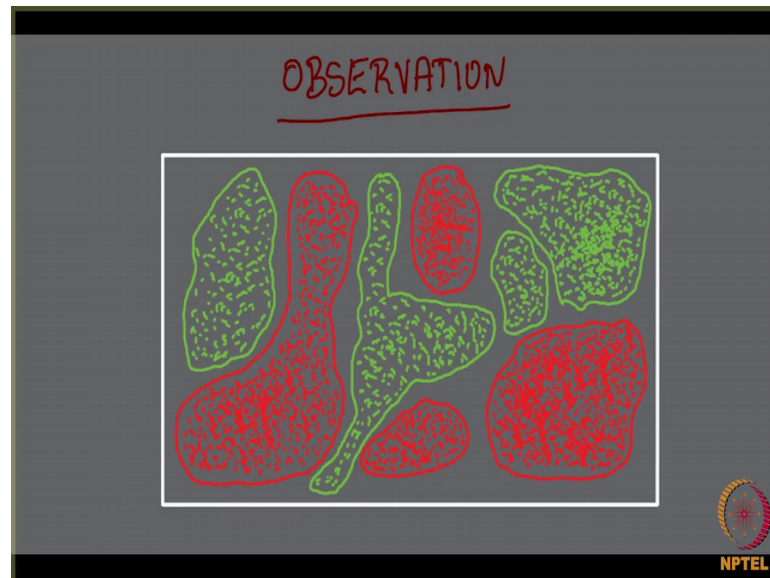
Lecture - 54
Homophily (Continued) & Positive and Negative Relationships
Spatial Segregation: An Introduction

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So, let us discuss an interesting question on how do people occupy houses in a locality. So, assume you had a few houses and you want to choose a house for yourself what kind of house will you like living in that you think who your neighbors are matters to some extent would you like to be in a locality.

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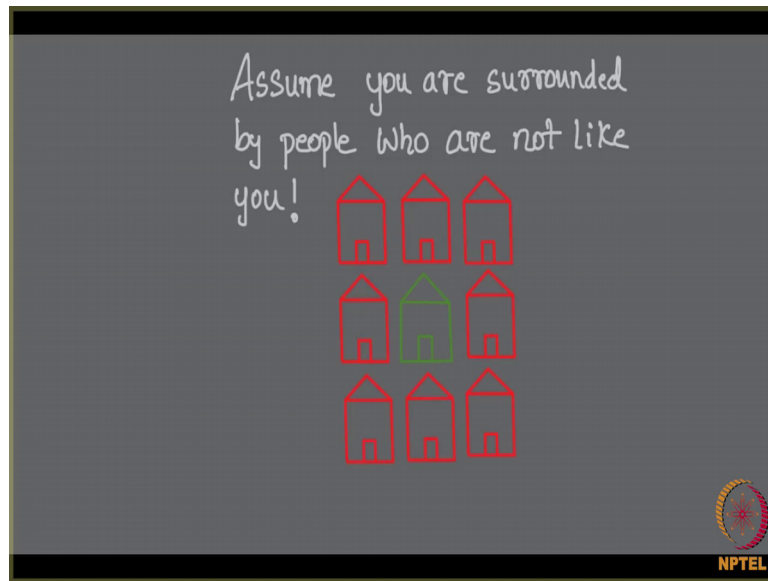


Where your neighbors are someone with whom you cannot have a conversation or your neighborhood is full of people who are unlike you would you like staying in such locality.

Now, here is an observation made several times in the literature. The observation is people are known to go and occupy a place a locality or a city uniformly at random, but which time they sort of start segregated by segregating I mean they all get together. You will see clusters of different types of people here is a type of people let us call it type green they all are together, they all are together and there is this type red as well they all are together too. Then you can see the clustering happening here they wish to stay with each other people have observed why exactly this happens as I told you this is not observed initially they come and occupy the place uniformly at random, but which time you see this kind of segregation that I am showing here.

They get segregated into different classes. So, assume in the united states you will see a lot of Indians, Chinese and people from other countries, but you will see that Indian tend to sort of stay with each other in colonies and there will be colonies of Chinese as well although there will be some sort of mingling, but there are places where you will see only people of one type this is observed in many places. So, assume you were to live in a foreign country or even in your own country would you not like to live in a place where you are surrounded by people who are of your type.

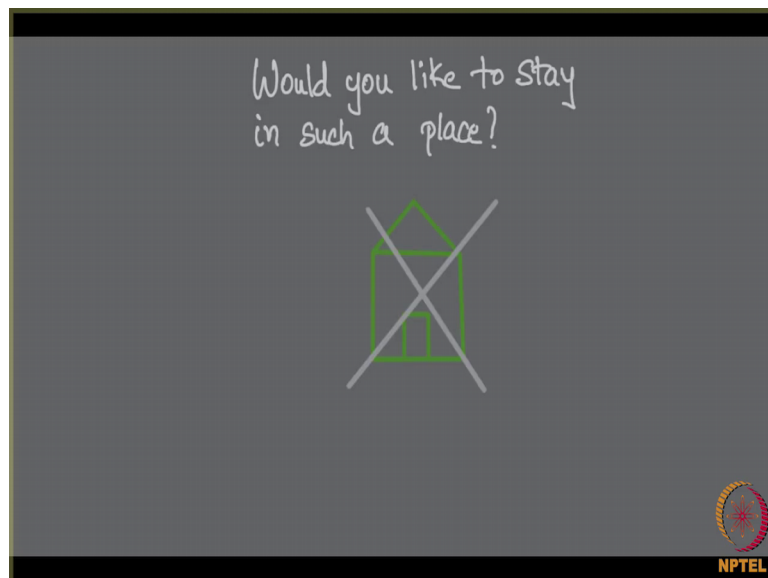
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Now this is observed and let us assume you are surrounded by people who are not like you it is observed that people then they came to migrate.

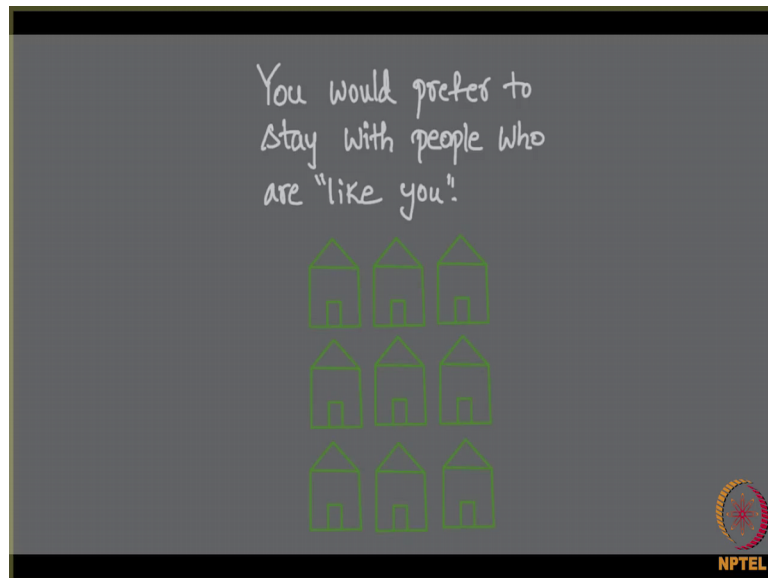
This is you and you are surrounded by people who are unlike you what will happen?

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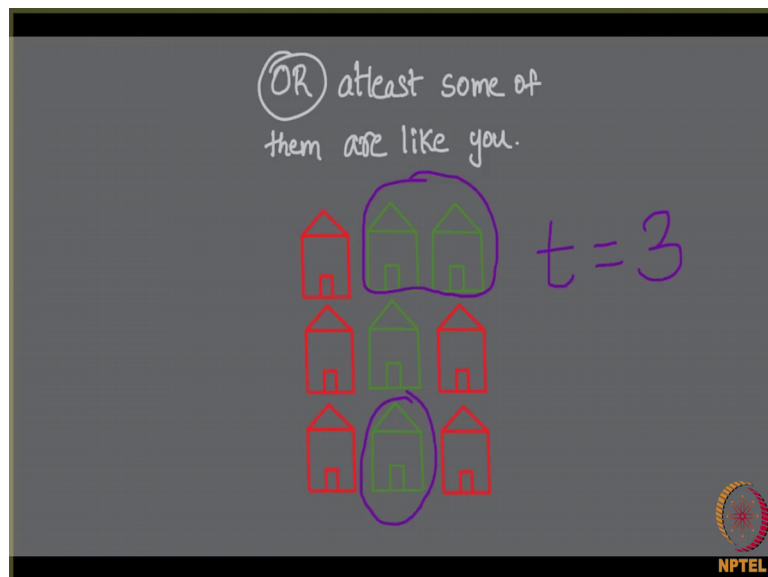
Nobody would like to stay in such a place would you like to stay in such a place absolutely not mostly not.

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But then would you not prefer to stay they your type of people are present right. So, people who are around you are all like you anybody would like to stay in such a place not just this. In fact, at least some of them should be like you right at least some of them should be like you for example, you are here.

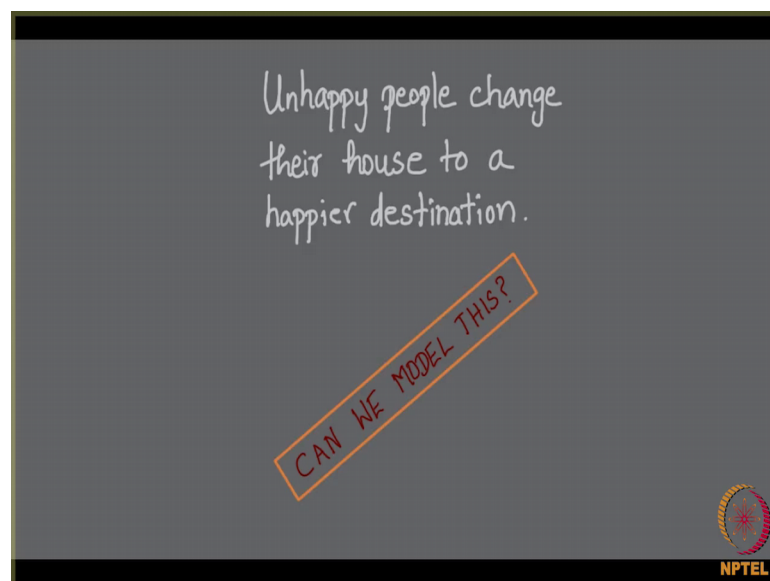
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And you are surrounded by at least some 3 people who are like and the other one 2 3 4 five people are not like you would not care much.

So, let us call this the threshold value t equals 3 which means whenever take a pos and understand what I am saying this is the important concept in this lecture wherever you are surrounded by at least t number of people out of 8 people who can surround you in a neighborhood 3 behind 3 in the front and 2 people on a sideways. Let us say at least when you have t number of people who are like you then you will stay there if they are not if you are not surrounded by people at least t people who are like you then you will migrate here are 3 people who are like me and my threshold is actually 3.

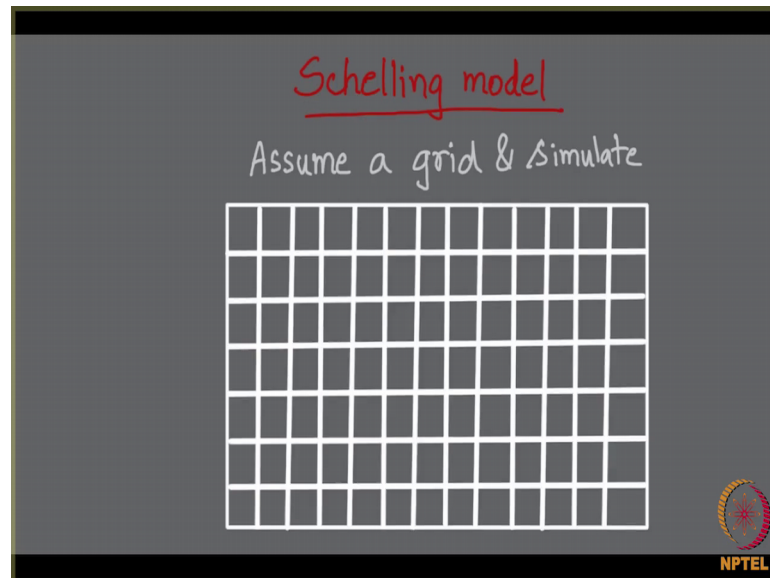
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So, I like living in such a neighborhood.

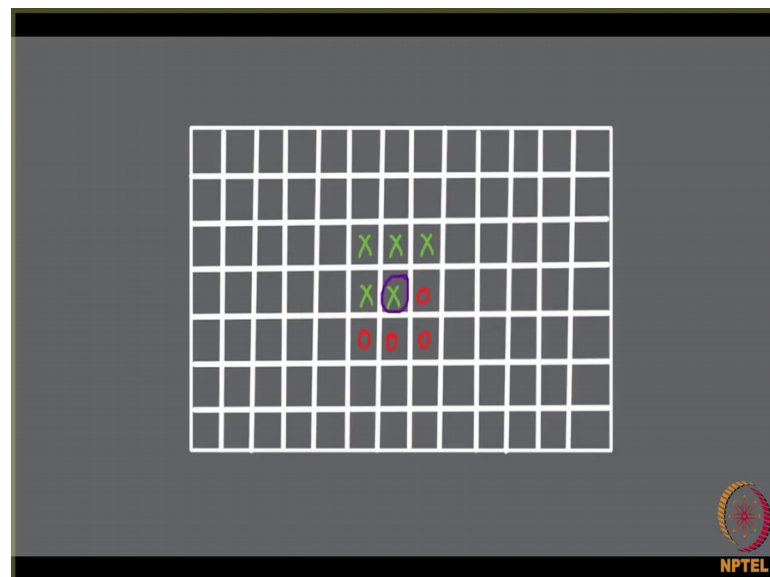
So, it is believed that unhappy people change their house to a happier destination by unhappy people I mean people who are surrounded by less than t number of people in the previous case we saw t was 3 which means this fellow was happy if in case this particular thing instead of being green was red. Then he would be unhappy because is neighbors would be less than 3 can we model this as a question can this be modeled can we model and see what exactly happens when people are unhappy and they migrate they come and occupy place uniformly at random a house uniformly at random in a city and then later they realize that because of the neighborhood they want to move to some other place.

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How do we model this there is a very popular model called the Schelling model it is a very interesting model very simple and straight forward simulation it goes like this we assume that a grid simulates city grid is a analog to a city and we simulate the behavior of people.

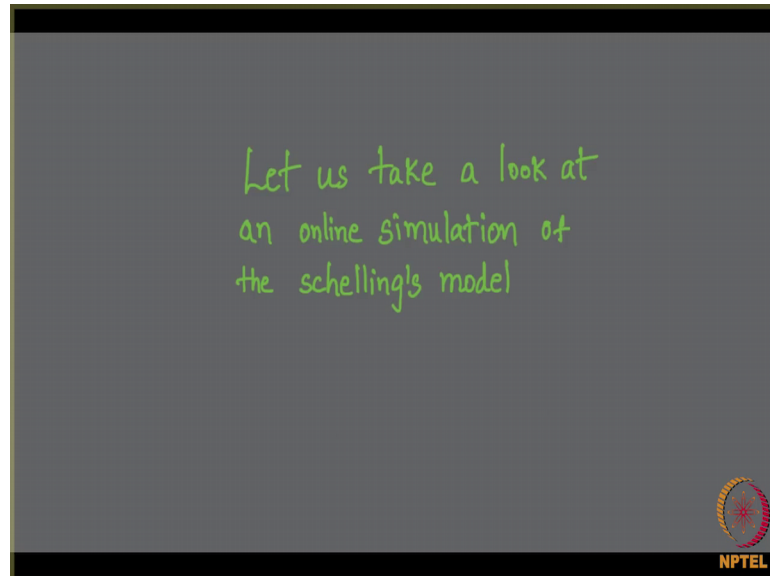
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How do we do that we take a grid like this and then we put into for 1 parity that is let us say type green and then oh; for a red parity type red. So, this particular person x is

surrounded by the 4 red people and 4 green people as I told you if the threshold is 3 then this green fellow is actually happy.

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Now, let us take a look at an online simulation of the Schelling's model. What is Schelling's model? Schelling's model simply says that as and when people are unhappy because they are surrounded by neighbors below their threshold value, what do I mean by that sounds a little (Refer Time: 07:02) all I am trying to say is my threshold is 3 or may be 2 if I have 2 people in my neighborhood who are of my type I will stay there. Otherwise I will move. Let me take a big grid and then try simulating this and seeing. Let us see what one can observe. There are a lot of online simulations of this model I am just going to open a browser right now and then I am going to show you one such simulation.