Session 10

# Meeting Summary

**Date: Saturday, 20th September 2025, 14:59-16:59 GMT+05:30**

**Meeting Summary**

**The meeting on "Exploring Interactionist Perspectives" covered various aspects**

**of interactionism in communication, emphasizing the importance of**

**open-mindedness, adaptability, and creativity in engaging with diverse**

**perspectives and difficult personalities. Key discussions included the role of**

**repeated interactions in network formation, the relevance of actor-network**

**theory in understanding social and technical dynamics, and the significance of**

**being present in class for personal growth. Historical analyses highlighted the**

**interdependence of individuals in processes like Portuguese expansion and**

**colonialism, while also addressing the evolution of trade dynamics and**

**agricultural practices influenced by the East India Company. Additionally, the**

**conversation explored the role of fuel cells in transitioning to alternative**

**energy sources, underscoring their dual function in energy transformation and**

**network connectivity.**

**AI Insights**

**The meeting titled "Exploring Interactionist Perspectives" demonstrated**

**significant challenges in establishing a comprehensive action plan, as evidenced**

**by the absence of specific tasks or deadlines. While there was a moderate to**

**high level of commitment from participants regarding engagement and**

**understanding of various topics, explicit personal commitments to future actions**

**were lacking. Feedback engagement varied, with some participants actively**

**reflecting on discussions while others did not seek further clarification. Goal**

**clarity was inconsistent, with some discussions providing clear insights into**

**specific topics, yet failing to articulate actionable, measurable goals.**

**Overall, the meeting highlighted a need for improved planning and goal-setting**

**to enhance future discussions and outcomes.**

**Topics & Highlights**

**1. Interactionism in Communication**

**\* Key Learnings | The principles of interactionism include being present,**

**responding to gestures, and improvisation, which enhance communication**

**effectiveness.**

**\* Key Learnings | Everyday conversations often focus on protecting personal**

**interests rather than exploring shared understanding, limiting effective**

**communication.**

**\* Key Learnings | Creativity and change in communication arise from**

**exploring hidden explanations that accommodate differing views.**

**2. Engaging Difficult Personalities**

**\* Key Learnings | Understanding that preconceived notions can hinder**

**engagement with difficult personalities is crucial for effective**

**communication.**

**\* Key Learnings | Observing interactions and being adaptable can lead to**

**better understanding and reduced internal conflict in professional**

**relationships.**

**3. Engagement with Materials and People**

**\* Key Learnings | Understanding the need for engagement with materials and**

**people is crucial for personal development in a complex world.**

**4. Network Formation through Repeated Interactions**

**\* Key Learnings | The concept of social construction of technology and**

**actor network theory explains how networks emerge and persist.**

**\* Key Learnings | Repeated interactions can lead to the emergence of group**

**characteristics and network formations among individuals and artifacts.**

**\* Key Learnings | Relationships can form not only between people but also**

**with objects and artifacts through continuous interaction.**

**5. Actor-Network Theory in Technology**

**\* Key Learnings | Actor-network theory provides insights into why certain**

**networks do not emerge despite efforts.**

**\* Key Learnings | Understanding actor-network theory helps in recognizing**

**the social and technical dynamics in technology development.**

**\* Key Learnings | Engineers and innovators are inherently sociologists,**

**influencing society through their artifacts.**

**\* Key Learnings | Recognizing biases in technology development is crucial**

**for effective engineering practices.**

**6. Engagement and Presence in Class**

**\* Constructive Feedback | Speaker emphasizes the need for direct engagement**

**and communication in class instead of gossiping about frustrations.**

**\* Key Learnings | The speaker highlights the importance of making the time**

**spent in class meaningful and engaging for personal growth.**

**7. Network Formation and Stability**

**\* Key Learnings | Understanding the phases of network formation, including**

**enrollment, resource allocation, and points of passage, is crucial for**

**stability.**

**8. Actor Network Theory and Centrality**

**\* Key Learnings | The interplay of social, economic, and technical**

**dimensions in networks was highlighted as crucial for understanding their**

**emergence.**

**\* Key Learnings | The discussion emphasized the importance of understanding**

**networks through repeated interactions and the role of artifacts as**

**mediators.**

**\* Key Learnings | Centrality in graph theory was introduced, explaining how**

**the position of nodes affects network stability.**

**9. Portuguese Expansion and Interactionism**

**\* Key Learnings | The conversation emphasized the need to focus on the**

**network of interactions rather than individual contributions in**

**historical contexts.**

**\* Key Learnings | The discussion highlighted the importance of**

**understanding interdependence in historical processes rather than**

**attributing outcomes to a single individual.**

**\* Key Learnings | The theory of interactionism suggests that people are**

**active agents, and outcomes emerge from their interactions.**

**10. Historical Perspectives on Colonialism**

**\* Key Learnings | The discussion emphasized the importance of analyzing**

**history from multiple perspectives, not just the dominant narrative.**

**\* Key Learnings | The speaker highlighted the historical trade routes and**

**the technological limitations of maritime travel during the colonial era.**

**11. Navigational Advancements in Maritime Exploration**

**\* Key Learnings | The role of specialized navigators was introduced,**

**emphasizing the need for trained individuals to perform calculations for**

**navigation on ships.**

**\* Key Learnings | The importance of persistence and patience in exploration**

**was emphasized, highlighting that significant discoveries often require**

**extensive experimentation over long periods.**

**12. Historical Trade Dynamics**

**\* Key Learnings | Understanding the historical context of trade dynamics**

**reveals how relationships evolved and influenced modern trade practices.**

**13. Historical Context of the Karnatic Wars**

**\* Key Learnings | The Thomas Bernard survey conducted in 1767 provided**

**crucial data for tax collection, highlighting the challenges faced by the**

**East India Company.**

**\* Key Learnings | The East India Company engaged in military actions during**

**the Karnatic Wars, leading to significant local impacts and changes in**

**governance.**

**\* Key Learnings | The East India Company transitioned from trade to tax**

**collection after the Karnatic Wars, indicating a shift in their**

**operational focus.**

**14. Community-Based Agriculture Model**

**\* Key Learnings | The introduction of the 'pata' system by the East India**

**Company changed agricultural practices and led to social unrest.**

**\* Key Learnings | The community-based agriculture model had a systematic**

**output sharing mechanism, leading to higher yields historically.**

**15. Historical Interpretation and Bias**

**\* Key Learnings | The significance of Kanchipuram in the establishment of**

**cooperative banks and local governance in India.**

**\* Key Learnings | Understanding that historical narratives can be biased**

**and the importance of exploring multiple perspectives to gain a**

**comprehensive view.**

**\* Key Learnings | Recognizing the impact of power dynamics and resource**

**access on community relations and historical movements.**

**16. Discussion on Fuel Cell Technology**

**\* Key Learnings | Fuel cells can act as both mediators and intermediaries**

**in energy transformation and network connections.**

**Agenda:**  
Agenda for Coaching Session (with Timing)  
  
Opening & Check-In (5 minutes):  
  
Brief discussion on how the coachee is doing and current challenges.  
  
  
Goal Review (10 minutes):  
  
Discuss progress on previously set goals and evaluate.  
  
  
New Learnings & Feedback (10 minutes):  
  
Provide insights, suggestions, and feedback for improvement.  
  
  
Action Plan Development (10 minutes):  
  
Create a clear, actionable plan for the coachee’s development.  
  
  
Wrap-Up & Support (5 minutes):  
  
Confirm next steps and what support is needed.  
  
  
  
Total Duration: 40 minutes

# Transcript

**Speaker\_01 - 00:00**Beach Resort, that too.  
That's yes.  
No, they're enjoying.  
Good, it's in beach resort.  
 **Speaker\_02 - 00:08**They can't accommodate here.  
 **Speaker\_01 - 00:09**See how much mail he's sending.  
They can't keep net zero five.  
We don't even order to it.  
Pointless.  
institute without what  
 **Speaker\_02 - 00:32**do you  
 **Speaker\_04 - 00:37**mean Is the AC on?  
 **Multiple speakers - 00:48**Yes sir.  
 **Speaker\_05 - 00:55**Okay, last couple of sessions we discussed about the theory behind the interactionist perspective, right.  
What does interactionism actually mean?  
how is it different from a functionalist view of the world and a conflict view of the world.  
But to cultivate that interactionism, the three principles you need to regularly practice is first is being present, second is how you are responding to gestures, third is improvisation.  
Why is our everyday talk mostly stuck is because we carry some perception of the world and most of the communication or interaction we see it as a way of protecting that perception.  
So I have some logic in my mind and I have some interest to my own personal interest.  
So talk is seen as a way of convincing the other person to accept your viewpoint and therefore protecting your interest.  
 **Speaker\_05 - 02:14**So when you have situation like that where party A and party B both are thinking in the same way that each want to protect their interest.  
So what happens?  
All communication is about finding logic which you can convince the other person that he is wrong and I am right.  
Worst case where both of them are arguing in the same way and cannot find any other way forward then you end up with a compromise.  
Oh you take little I will take little.  
This is what you will see majority of our everyday conversations, personal life, professional life, you will only see these two predominantly.  
You will not find the third one.  
 **Speaker\_05 - 03:06**Third one requires you to ask the question, maybe I don't have what I think may not be right.  
Neither what he thinks may be right.  
there is some other explanation.  
So, can we jointly explore what is that hidden explanation which is putting us in the situation where we are thinking we are confronting each other, but maybe there is a different explanation which can accommodate both our views.  
So, if you get into that state of mind, then you are exhibiting that interactionist way of looking at the world.  
just because I am socially engaging or more extrovert does not mean an interaction is perspective.  
We can be an extrovert and try to exploit others.  
 **Speaker\_05 - 04:06**We can be an introvert and try to exploit others.  
But are you open to the possibility that your idea or your perception or your interest could change.  
If I get explore this, maybe I will lose something.  
Are you open to that?  
Maybe you will gain something.  
You do not know.  
So, when you get into that state of mind, that is where you can actually see interactionism.  
 **Speaker\_05 - 04:41**That is why we will see that 99% cases we will not notice that.  
99% it will be the first two types of only.  
But creativity when you observe very closely creative processes change processes very closely, there these situations of this kind of perception or way of engagement will be there.  
That is how change happens.  
Something flips from one to the other.  
How does that happen?  
So, for example, one of the clients that I was working with, it was a company that, so there are a group of managers in that company with whom we are trying to build some kind of rapport and a dialogue.  
 **Speaker\_05 - 05:38**And typically in outsourcing arrangement The client always thinks that the supplier is taking away their jobs.  
Supplier thinks he has to talk to the client only when there is an opportunity.  
So, if there is a sales opportunity then they will go and talk.  
If there is no opportunity they will not go and talk.  
Client will talk to the supplier only in relation to the projects which he has given and see whether the projects are being done properly or not.  
Typically, this is the kind of dialogue you will find.  
So, there was a case where I was exploring something else which is neither this nor that.  
 **Speaker\_05 - 06:24**So, I was going and asking are there any problems that really of interest to you which are not getting solved today by any of your existing partners.  
Could you be interested in talking about that?  
So, their question is why are you wasting your time or why should I talk to you?  
So, some people responded like that, but some people started saying I give you one problem and tell us what you can do about it.  
So, he gave me a problem which to a large extent nobody will go back because he is politely saying don't waste my time by giving that problem saying I hope you will not come back.  
because you cannot resolve that is another way by which people talk.  
So, you cannot assume that they are interested in giving you work.  
 **Speaker\_05 - 07:23**They are only politely saying there is no point in engaging.  
So, in that particular case I had done some research and went back and presented one perspective which for some reason there was something in it for him he could see some value in that.  
and these are not paid engagements.  
There is more business that I am getting out of this.  
But when you saw the value he said why don't you come and talk to the other senior managers in that company.  
So that is how I started a process which ended up I was speaking to several people but there was one person who was still not approachable.  
So many people said he will not even talk to you he can he is very aggressive he will not like working with Indian vendors and so on.  
 **Speaker\_05 - 08:15**So I did not go and approach him for about six months I was talking to various people but almost when we reached about eight nine months and in between one workshop happened where I was sharing a table with him but in the three hour workshop he never looked at me.  
Three people were sitting in that table but he never looked at me.  
So that is the kind of relationships you will have in many environments forget about corporate and even in personal life you will have situations like that.  
Now, how do you engage a person like that?  
So, after about 9 months or so there was some situation where I had to reach out to him.  
So, then I asked for a meeting and I got a meeting.  
Why?  
 **Speaker\_05 - 09:02**Because this person's secretary is also a secretary to another person with whom I was having regular meetings.  
So, she probably assumed.  
that if I am having meetings with this person also may be interested in the meeting so she set up a meeting and on the day of the meeting he came into the meeting and said what is this meeting who set up the meeting because yes he didn't authorize that but his secretary made an assumption that maybe  
right and once he got into the meeting he said I am not interested in knowing what you are doing?  
Then I said fine, what do you want to talk about?  
Then he asked me a question, we lost one project during that time.  
So he said do you know how why you lost that project?  
 **Speaker\_05 - 10:00**Then I said I know because we did not factor some hardware side of the story, so therefore we lost the project.  
We did not expect that answer.  
normally what happened you will defend why you lost means immediate reaction will be no other person did something or something else was missing so we did win the project.  
I said the reason why we lost is this his immediate reaction was maybe we should talk I will set up another meeting not today but come and talk this is what happened.  
if I assume that this person is too rigid he will not talk and all that I won't even approach them.  
When I approach them it is somebody else who has made the meeting possible who does not know anything about our relationship.  
And when he comes into the meeting he says I do not want to listen to what you are going to say and he starts off with a question and puts you in a difficult spot I only respond to what I thought happened more.  
 **Speaker\_05 - 11:12**But it can also change situations like that.  
So, having a preconceived notion this is what the world is like, this is what people are like, this is what this person is always like, you are carrying lot of unnecessary baggage.  
It is useful in certain times for quick decision making in certain scenarios it is useful, but it can also become a. rigidity, especially if you are interested in innovation, change, design, solutioning and so on.  
For this kind of thing you need to have a relatively free mindset do not carry too much baggage.  
Like last week also we had lot of fights arguments between faculty on some issue.  
Majority of the arguments are all coming from this person did this at that point of time so I have to punish it.  
he might have done that but I do not have real visibility into that what happened.  
 **Speaker\_05 - 12:10**So, I cannot base my judgment on what somebody is saying, I am not seeing that.  
And everybody gets angry with me because I am taking I am trying to support somebody, I am not supporting anybody.  
I am only looking at what is happening in that situation and responding to it.  
So, after that if you get angry and you change your face and walk like this.  
There is nothing much I can do.  
These things keep happening every day but if you become more observant in terms of what is being spoken, what is happening then you can understand these things better.  
You may not be able to resolve the relationship, but you can understand better and you will not have too much internal conflict to deal with.  
 **Speaker\_05 - 13:03**that is what is the value of this interaction is perspective.  
So, how did we cultivate this or how did we give you chances to develop this go back to this model whatever you did in the foundation course and up to first six sessions in this course was all about materiality engaging with materials variety of materials it is paper color pen pencil right scrap art  
scrap material collage all of them they are all material engagement, flute.  
By working with materials you can develop different understanding of yourself like another example I will give you this flute a few of us are trying out somebody in the who is still working on that yeah he gave me a difficult thing one day matron I can't sing because it has that ma pa transition  
which is I am nowhere near that.  
I am not able to spend that much time practicing.  
But what I noticed now I have got four flutes of different levels.  
 **Speaker\_05 - 14:09**One is just a flute on the street when people sell right.  
So that kind of flute and one little sophisticated like that.  
So I was trying this mappa transition from this high end one not able to do second low end one I could partly do it.  
Then only I understood why I am able to do on the low end is because I am low level there.  
So only that is matching my level at this point of time.  
It is only when I improve my skills a little more maybe the better instrument will work with me.  
Only when I put more effort than the next level instrument could work with me.  
 **Speaker\_05 - 14:49**But at this level the lowest instrument which does not give the best quality sound but I am able to play that to an extent manage that.  
right not with the higher end instrument.  
This is what material engagement can tell you.  
Many of you may think these are all silly activities, nothing to do with engineering, I am supposed to be electronics, computer science engineer, what has this got to do with algorithm, all the story.  
You go and read, I put one paper in the course portal.  
on why computing is needs to be a social science.  
This is a more recent paper which has come out in the ACM ergonauts a series of articles, but you can go and see why social science is really required for computing and how computing whatever we are seeing issues out of AI and all that there is a good discussion on that.  
 **Speaker\_05 - 15:55**That is the second part, the relationality.  
We do not live in isolation.  
We live in a physical world along with people.  
So, I need to know how to engage with materials, I need to know how to engage with people.  
So, when it comes to people, all these aspects become very important.  
So, developing an interactionist perspective gives you a lot more flexible way of surviving in an increasingly complex world.  
if you are in a unitary world like there is only one dimensional way of looking at the world then that functionalist logic will make sense.  
 **Speaker\_05 - 16:39**But today we are in a very polarized world if you have two people there are two factorial or if you have three people three factorial type of situations are there right.  
So and you have n number of people it is n factorial.  
We used to have like that.  
When I was in IIT, we used to have a department where six, seven faculty were there.  
But the number of groups within that is factorial six.  
Each person is one group, two people is one group, three people is one group.  
So you do not know when you talk to a person which group you are talking to.  
 **Speaker\_05 - 17:24**So people relationships are of a different kind.  
That is what all this theories last few weeks we discussed is about how do you develop a different kind of relating to people that is the relationality.  
Third one is what we will talk today is the temporality time dimension what is time where do we actually live are we living in the past are we living in the future what does it mean to live in the present So, some of the activities that we did in the last session is all about staying in the present,  
spontaneity and all this are related to how much you are present in that moment.  
And if you break down each moment into something interesting there is a lot to see.  
Have you seen a movie recent movie called Musica?  
No?  
 **Speaker\_05 - 18:19**If possible go and see.  
That particular person in that movie has some straight where if he sits in any place, he sees a pattern of music happening around him.  
In the gestures of people, in the actions of people, in the sounds that are emerging, he starts seeing sounds in that or musical patterns in that.  
That is the kind of immersion that is required in the present moment.  
So, that is the third So, these three qualities if you make an effort to constantly improve yourself, how well you are engaging with materials, how well you are engaging with people, how much you are present in the moment and how well you understand the time dimension both the past and where it can  
lead to.  
Then you will start becoming a different kind of person.  
 **Speaker\_05 - 19:21**So, go to the next one.  
So, we already covered this last session interaction rituals.  
You would have seen samgata event you participated right, some of you participated and some of you might have gone home during that period or any club.  
You go and see some places will be more vibrant compared to some places.  
So, if you pay attention to why this is little more vibrant and why that is not so vibrant, it all boils down to that shared mood and the mutual focus of attention.  
How will that come?  
It only comes through the way people are engaging with each other or with things around them.  
 **Speaker\_05 - 20:14**When that happens and it reaches certain threshold, then you will see three kinds of things emerging.  
Is there a change in the emotional energy of the individual?  
That is what is the first one, the point five on top, right.  
Because I participate in a group activity, do I see a change in my emotional energy?  
That is point number one.  
Second is the next one which is point number six.  
Is there a kind of a group solidarity or a group emotion?  
 **Speaker\_05 - 20:48**We like being together.  
Is there a feeling like that?  
Third is are there any visible symbols of membership which are emerging?  
Symbols means it could be science, it could be artifacts, it could be anything like it is a common meeting place, it could be having tea common place, whatever it is.  
These are your symbols of the group membership.  
So when these three things repeatedly happen and people come back and meet each other for this again and again, then only groups start emerging.  
a group characteristics become more visible.  
 **Speaker\_05 - 21:28**If you go back and see the 12 increment from this perspective, you will see how a group actually emerges from that process and how a new set of values, new set of behaviors are emphasized by the new group which forms.  
Go to the next slide.  
So, this is about the past few sessions.  
Now, today we will talk about what happens when this repeated interactions take place over a period of time.  
So, from an interactionist perspective we said it is the micro interactions which lead to formation of some kind of structure.  
It is not the structure which is influencing interaction, but interactions can lead to formation of a structure.  
What kind of structure it takes shape is what we said is a network.  
 **Speaker\_05 - 22:22**network of connections which emerge between different objects and people.  
So, that is what the social construction or what is called social construction of technology and there is something called actor network theory which explains this kind of network formation over time.  
Why networks emerge under what conditions they emerge under what conditions they persist under what conditions they break down.  
that is what this particular theory talks about.  
So, I have taken two historical cases for us to understand how this change happens.  
We will discuss both the cases the I hope you have read that electric vehicles case study we will do that first I will do the second case study then we will come to the first one.  
Go to the next slide.  
 **Speaker\_05 - 23:20**So, what happens suppose you take how do repeated interactions lead to network formation.  
So, you go back and see what you were doing in the foundation course initially it was all doing individual activities right each of you were doing some individual task.  
Then we gave you a group task which is the flute making.  
So, because of working jointly with the flute.  
some people would have developed some kind of relationships among themselves.  
I like working with this person, I like working with that person.  
I do not like working with this person.  
 **Speaker\_05 - 24:06**And similarly, some attachment to some artifacts could have also emerged.  
It could be somebody wants to stay with the flute, somebody does stay with the tool which they used to make the flute or somebody thinks studio is a place to work with.  
or somebody thinks canteen is a better place for us to engage, whatever it is or your room is a better place to engage.  
So, some kind of relationship start forming through repeating certain activities.  
So, for example, you can look at A1, A2 and O1 or something as a formation of some relationships.  
Now, when you keep repeating this process, this can start changing.  
So, in this collage we have given you asked you to form a different set of larger teams gave you a different activity out of that interaction something else would have formed.  
 **Speaker\_05 - 25:00**The same team may have continued from float to here or something else teams could have changed.  
So, new nodes are coming into the network and again repeated interaction happens.  
The character of the networks keeps changing.  
The nodes keep getting added, removed.  
relationships keep strengthening or worsening that is how some shape of the network starts emerging and the areas where it becomes more dense and repetitive and they are continuously meeting that is where people will start showing tendencies of forming a group and start drawing a boundary saying we  
are a group this is what membership in this group means right those kind of things start happening.  
red line or the kind of boundary formation starts emerging there.  
 **Speaker\_05 - 25:52**This is how networks typically evolve.  
But really speaking, even though the red line emerges as a boundary, it is only in the mind.  
You may say I belong to this group and we all should do this and anything outside the group is bad.  
We all inside are good.  
These kind of definitions start coming, but reality is you are still a network, you are creating a sense of a boundary and then sense of a group membership.  
But the reality is you are still connected to some people and keep talking maybe the frequency of conversation could have gone down that is what it is.  
So, a network we was more interested in seeing how this network is emerging rather than how the red lines are emerging.  
 **Speaker\_05 - 26:46**Red lines are all mostly imaginary driven by interests of people to and artificial they are not real connections.  
It is a kind of group membership and an assumption of a formation of a group.  
Go to the next slide.  
So, if you take a product or any tool what is happening when I keep working with the tool or this thing, it also becomes part of my network in some way your school bag or college bag, your water bottle, they are all part of the objects which are constantly you are interacting with and they are  
becoming part of the network that you are involved in.  
You have this classroom, this fan etcetera, they are all part of that.  
So, this is how relationships emerge between not only people but also with things and some artifacts.  
 **Speaker\_05 - 27:46**which survive this and become dominant their products are like that.  
Some artifacts they start making more sense to people and they take a more permanent role in this network.  
So, if you look at how products are brought in how they become part of a everyday phenomenon and how they become part of a network which enable certain activities between people.  
So, you can visualize this whole thing.  
from what is called an actor network theory point of view.  
Why it happens under what conditions it happens how it survives that is what actor network theory essentially says.  
Now, actor network theory is also part of sociology, but it comes from a strand in sociology which is related to study of technology.  
 **Speaker\_05 - 28:42**History of technology when people have analyzed they have come up with a slide different way of looking at social and technical together.  
Because sociologists to a large extent only consider social which is the groups and people.  
They ignore all the physical artifacts and they do not pay attention to that.  
Technologists on the other hand will only look at the physical material aspects and ignore the social.  
So, what active network theory essentially is doing is.  
our reality is both social and technical it is neither only this or that.  
So, how do you bring social and technical together to understand what is happening?  
 **Speaker\_05 - 29:27**That is what active network theory primarily is trying to do.  
Go to the next slide.  
Now, why this is happening is you can read this book, I think it is available in the library and the two chapters which I have given you are from this book, the both the Portuguese expansion and this one.  
So, the claim of the book is that engineers and innovators are partly sociologists.  
Whether you like it or not, you may say I do not have anything to do with social science.  
you are living in a society and producing artifacts which can influence that society.  
So, you cannot say I do not want to know socialism.  
 **Speaker\_05 - 30:23**Otherwise, you are acting out of your common sense which is highly problematic.  
You are acting out of a certain theory of the world which is highly problematic.  
like what I told if you carry the functionalist view and conflict view which is generally dominant among people who even if I do not train you in sociology, these two perspectives you will find in a lot of people.  
And if you carry those two perspectives to creating technology, all those ideologies will come into that.  
In both the creation of the technology, use of the technology and justification of the technology, these ideologies will So, it is important that you understand that what biases you are bringing in the way you are developing and using technology.  
That is why this clearly says engineers and innovators whether you agree or not are already partly sociologists.  
If you are sociologists are you aware what sociology is how it is affecting what you do right that is what we presented to you in the last few sessions understanding those three theories is extremely important.  
 **Speaker\_05 - 31:34**to know what you are doing, how you are doing and why you are doing.  
Any activity you take, you have done samgata event or some people have been coordinators, what are you actually doing?  
When you are to do an event, what do you do?  
You have to plan something saying, okay we will organize something.  
Then if I have to plan something, I need to put a structure to that, I need to mobilize people.  
to be able to fund that, I need to be able to mobilize people to get infrastructure to run that activity and I need to get participants to come and participate in that.  
What are these?  
 **Speaker\_05 - 32:21**Is there all relations people related things and you are doing that with no understanding of social and we conduct the event sometimes we will congratulate ourselves sometimes we will get frustrated we will fight.  
Do you know why that is happening?  
Why you are congratulating or why you are fighting do you know?  
If you have understood a little bit from what we discussed in the last few sessions, you can make better sense of why this kind of how your interactions are shaping the activities that you are doing.  
go to  
the actor network theory can be a useful tool for you to understand especially people who are interested in building solutions as engineers everybody should be technical solutions or whatever it is then understanding actor network theory can give you reasonable ways to navigate and see what kind of  
network is forming, why is it forming, why something is not forming at all in spite of all your effort sometimes networks do not emerge.  
 **Speaker\_05 - 33:48**So, why is it that they are not emerging this kind of things you will have a better appreciation for that.  
So, the last two people there can you please come here this two of you can you please come  
 **Speaker\_01 - 34:15**Can  
 **Speaker\_03 - 34:41**you please help understand what we were discussing?  
 **Speaker\_01 - 34:43**That guy won't do that.  
Yes, all the things to do.  
Badrish actor network.  
You are especially in the actor network?  
No, I am asking that about the nodes.  
An actor in theory and about Amy.  
No, I am just asking it if he is writing what Sahar is telling or is he already written or not?  
 **Multiple speakers - 35:11**You know that row, last row there.  
 **Speaker\_05 - 35:13**quite a few people I would like to invite here to share what you are really understanding from what we are talking to.  
So, look at this situation we sit in a class we probably have something else to do see the 12 agreement how it keeps repeating every scenario you can see we are not interested then why am I sitting here I am committing three hours for this.  
to do something else then what were you doing in that class if that is something you are doing now then what were you doing in that class doing something else related to that so you are never present in any scenario now if I say something how would you react you are not able to talk you are not able  
to engage in that dialogue but you will have lot of opinions you can go back and say hundred bad things about me.  
What is that?  
That is what is gossip, that is what is background thing, but why is that happening?  
Why can't you engage directly saying I don't understand for this reason?  
 **Speaker\_05 - 36:38**Whatever you are saying does not make sense to me because my life is like this and I do not see how this connects to me.  
Why is it difficult to say that?  
Why am I sitting here doing something else?  
You are wasting your time.  
What did we get out  
 **Speaker\_06 - 37:15**of  
 **Speaker\_05 - 37:25**this?  
It is not just to highlight those two guys and punish them or anything.  
It is general message for all of you.  
If you are investing time in something, make it count for yourself.  
If you cannot find that engaging then your body should say I am not finding it engaging and what is the reason for that you should discuss.  
Why are you going through a torture where you cannot discuss about it but frustrated about it and end up doing something else and talking something else behind the screen.  
if I cannot speak here I should not go and speak something else outside.  
 **Speaker\_05 - 38:21**In fact in my family also very early we used to have this arguments and all somewhere I decided if I cannot speak in this kind of thing then I should not speak about it somewhere else.  
What is the point in going and telling okay this is bad this is bad but I am only abstracting the problem out of this context.  
and I will only add distortions to that.  
Everything matters is what we are doing here and now.  
If here and now has no meaning for me, both of us are wasting time there.  
 **Speaker\_06 - 38:59**Go to the next.  
 **Speaker\_05 - 39:06**So, there are basic four or five concepts in understanding or applying actor network theory.  
The first one is called the word actor.  
Actor essentially means a very generalized view of any element that is important in that situation.  
That element can be a person, that element can be a company, that element can be an object, that element can be anything concept, can be anything.  
Now, this is where the power of actor network theory is.  
comes out very strongly that even though it comes from sociology, they do not restrict themselves to studying only people because you cannot study people in isolation from what they are doing you have to study that whole context.  
So, the moment you say whole context anything your bag could be a playing an important role in this whole thing.  
 **Speaker\_05 - 40:09**So, if bag also has a role to play I have to take bag as a factor that I need to consider in the discussion.  
So, this is what first concept of actor network theory that is the definition of an actor is a very generalized definition that is why the word used is heterogeneous actors.  
Heterogeneous means actor can be of any type it can be a concept it can be an object it can be a person it can be a company it can be a group it can be anything.  
second part is so when a network has to form it is not just one actor but a group of actors have to come together.  
Any organization which has to emerge it is not one individual, a group of entities have to come together.  
That is what is called an actor world.  
What is the group of entities or elements or actors which are coming together in this scenario which are important in the scenario that is what is the actor world.  
 **Speaker\_05 - 41:18**And actor world will be heterogeneous because the actors can be of anything.  
Now just because a group of elements are together does it mean it has become a group we have seen unless there is some kind of interaction which happens between the actors.  
the groups will not emerge.  
So, what kind of interactions really happen and how these interactions are facilitated?  
That entire thing is called a translation process.  
Just because I have a collection of students here and myself and Dr. Narendra and TAs are sitting here, we are not a group.  
There is a core structure, there is a boundary given to us, but we are still a collection of individuals.  
 **Speaker\_05 - 42:19**We do not have anything common.  
So, for the commonality to emerge, somebody has to or a group of entities have to play an active role in translating this into a network.  
that is what that word translation means, a collection of factors can they become a reasonable network where there are relationships collection means there is no relationship.  
Can I take a collection of entities and lead to something where there is some kind of relationship between those entities.  
This process of moving from this state to this state is called the translation process.  
So, what happens in the translation is.  
these are the four elements or three elements which are important.  
 **Speaker\_05 - 43:09**The first is typically in any translation process there is a spokesperson.  
Somebody who takes the lead to trigger the transformation or translation process.  
So, which is that entity which is taking the lead to trigger this translation that is known as the spokesperson or spokesman.  
Second, whoever takes the lead tries to enroll people to be part of that new network right.  
So, they will mobilize and say why do not you join this etcetera etcetera.  
That is the enrollment process.  
Now, in enrollment what is important to understand is it is not just asking you to be a member of this.  
 **Speaker\_05 - 43:58**When I ask you to be a member of this new network, I am asking you to take a new role We talked about the basic concepts in sociology, status, role and on.  
So, I am asking you to take a new role which means you may be doing something else, but if you are part of this network you need to do something else.  
So, I am giving them a new role that is what is end role meant.  
Now, you may be comfortable with that may not be comfortable with that.  
So, if you are comfortable with that.  
you will enact that role.  
If you are not comfortable with that you may stay here and still do something else.  
 **Speaker\_05 - 44:45**So, that possibility that you are not 100 percent inside this network exists right that is what is the enrolment.  
Then just because I enrol people have a spokesperson the next phase is some amount of resources have to be devoted to change or create new activities where these enrolled people end up performing new activities.  
So, which means some resources are required for that is the part which is called the displacement.  
And then finally what is called a point of passage, point of passage means does this new network of people, does it survive when it is given an external test, does it survive the test?  
or will it collapse if it survives the point of passage then you can start saying that a network has emerged.  
So, you go back to the 12 angry man and see this if that shift between guilty to not guilty that is like a point of passage.  
So, every time one person gets added to that network stability starts increasing until that network stability starts increasing until then in the initial stages when they are discussing there is no network there is a spokesperson we lead person eight or juror eight has taken the lead to  
 **Speaker\_05 - 46:26**initiate a discussion but he has not enrolled people into that enrollment happens only after taking two three risks and somebody does in a closed ballot one person says not guilty, then one person has enrolled into that.  
Then there is a lot of discussion which goes on they bring various artifacts to discuss further that is the displacement process.  
There is a sustained effort to explore that problem further.  
But it is only after more people every time that happens whether they cross the point of passage or not.  
If suppose after one iteration, two iteration, nobody has changed to not guilty that would have collapsed there.  
It is only because more and more people are converting that it is slowly moving towards a broader network which is becoming more stable.  
Same thing you go back and see your assignments how you are doing as a group how you have formed who was the spokesperson.  
 **Speaker\_05 - 47:35**what kind of enrollment happened in forming your groups whether doing this activity scrap art or whatever it is has it led to any formation of a stable network and your examination or assessment is a kind of a point of passage.  
At the end of assessment if we say this is not a useful product then your teams may dismantle.  
they immediately arrive at a conclusion saying whatever we did it is not working right those kind of things can happen.  
You look at your semester to semester or in the journey in this college you can also see from this perspective you got enrolled into the college then there is a translation process all this coursework is a kind of a translation process then you have exams at the end of every semester which is like a  
point of passage.  
when you keep crossing that point of passage one by one some network starts emerging in your mind your connections with various skill sets that starts stabilizing and when you find internship when you find placement that is all a kind of network expansion which is constantly happening around you.  
So, you can understand different phenomenon from this perspective how it is leading to formation of a network, but these are the four concepts that you need to be clear in terms of how the translation happens.  
 **Speaker\_05 - 49:13**Many startups they can start with an idea, but until they get a proof of concept until they form a team they have a proof of concept somebody invest money in that at least they find one customer these are all points of passage.  
just because I have an idea does not mean it will become a successful company.  
Some employee has to join you or some team member has to join you, then only it will go to the next step.  
Then you should have some proof of concept to at least show it to some customer.  
It is only when your first one customer at least agrees and willing to buy that.  
Then you have gone to a stage where validation is there.  
after that only somebody may be willing to invest in the company, if you have to scale up or grow somebody has to pour money, then the investor has to believe in you.  
 **Speaker\_05 - 50:09**So, only when an investor puts money then new potential for scaling happens.  
So, entire startup journey can be seen like this and many times you keep failing because these points of passage we cannot cross and the companies which do not cross these things will keep not falling.  
That is why there is what is called valley of depth in a startup journey, 99 percent or 90 percent will fall into the value of death they will not recover.  
Next concept to know is what are these nodes or actors in a network, what kind of behaviors they can exhibit.  
So, in actor network theory they recognize two types of behaviors, one is called a mediator, the other one has an intermediary.  
Intermediary means the actor is not changing anything.  
It is receiving information, sending information, it is working like a messenger.  
 **Speaker\_05 - 51:07**Mediator means it is actively changing the input into something else.  
It is playing an active role in changing the situation.  
So, you look at the artifact in that movie the knife, knife brought into that movie's discussion.  
Is it an intermediary or is it a mediated.  
Because of the knives presence the story changed right.  
It has mediated.  
So, we may think what is an artifact what to do with this artifact is playing a role of a mediator there.  
 **Speaker\_05 - 51:49**It is not just people it is the artifacts which are playing that role right it is not an intermediate So, there can be people who work like intermediate who are there but their input output, they are not actively participating in the process.  
So, that is what the mediator versus intermediate makes.  
And then the last part is the shape of the network and the position of the node in the network also matters.  
since you are computer science you will do not do you know concept called centrality?  
So that is one concept in graph theory called centrality that is how well a node is connected in that entire network how deeply the node is connected in the entire network.  
You can assess suppose you have a network of elements and relationships.  
you can take any element and assess how deeply it is connected in that entire network.  
 **Speaker\_05 - 52:56**So, it is called a centrality scope.  
Centrality scope tells you that if I pluck that element out of the network especially those which are highly connected if you pluck from that network can collapse.  
So, that is another important concept of actor network theory is the position of actors in the network also matters.  
especially when you are tinkering this electric vehicle case study, this is a very important point which explains that case study.  
The position of the network position of the IC engine in the society is like it is at the heart of the network.  
So, you cannot pluck it just like that if you pluck it the whole network will collapse.  
So, there will be lot of effort to sustain the position of the network or the nodes.  
 **Speaker\_05 - 53:49**So, the EV case study is more related to that.  
So, the last point is that instead of understanding each dimension in isolation, whether it is social, economic, technical in isolation, it is the intertwining of these things.  
how these networks are emerging out of the interplay between various actors is what is worth studying.  
That is what is the main theory behind actor network theory or the principles of actor network theory.  
So, just to summarize what it says networks emerge through repeated interactions.  
The networks may involve different types of nodes which are called actors.  
There is typically you will find somebody or some entities taking the lead in terms of being a spokesperson for that and playing a role in enrollment and translation to build that network.  
 **Speaker\_05 - 54:59**But any network survives if it crosses certain points of passage for every network there will be some point of passage relevant to it has to survive cross that then only the network becomes stable.  
those which don't cross the point of passage will break down.  
Again the process starts.  
This is the way perspective of network after network theory.  
Now, compare this with the interaction rituals theory.  
What interaction rituals theory says?  
Repeated interactions with the common focus of attention and a shared mood.  
 **Speaker\_05 - 55:39**If it reaches certain threshold it can lead to change in the individual emotional energy or group solidarity or emergence of common symbols of group membership.  
When these three things happen, then the probability of the person coming back and joining the group and repeating the process becomes higher.  
That is how groups emerge.  
That is the interaction rituals theory.  
But the emphasis there is more on how these interactions happen, how the symbols of group membership emerge, how emotional energy of individuals changes.  
In active network theory you are not looking so much at the properties of individual nodes here, you are seeing overall pattern over a period of time.  
Why some things emerge, why don't some things don't emerge.  
 **Speaker\_05 - 56:29**Go to the next slide.  
So, you can take a 5 minutes break.  
then I will talk about one case study this case study I want you to discuss and answer right the elected vehicles the Portuguese case study I will explain take five minutes  
 **Unknown speaker - 56:56**break.  
 **Speaker\_02 - 57:04**Thank  
 **Unknown speaker - 57:29**you.  
 **Speaker\_00 - 57:32**Thank  
 **Unknown speaker - 58:01**you.  
 **Speaker\_04 - 58:03**I  
have a very good flavor.  
Come on.  
Mmm.  
 **Unknown speaker - 58:31**Thank you.  
 **Speaker\_04 - 58:32**oh  
 **Speaker\_06 - 59:00**Thank  
 **Unknown speaker - 59:30**you.  
Thank you.  
Thank  
you  
Thank  
you.  
Thank you  
 **Speaker\_06 - 01:01:49**Thank  
 **Unknown speaker - 01:02:16**you.  
 **Speaker\_06 - 01:02:47**Hmm.  
 **Speaker\_00 - 01:03:10**Thank  
 **Unknown speaker - 01:03:28**you're happy.  
 **Speaker\_03 - 01:03:29**N  
 **Multiple speakers - 01:03:44**to the I to the end to the end to the team.  
 **Speaker\_03 - 01:03:50**I saw you, I saw you.  
End to the I to the team.  
 **Speaker\_01 - 01:03:55**I saw you do that.  
What?  
Probably 10 times.  
Yes, he's falling into it.  
 **Speaker\_03 - 01:04:05**How much is this one packet?  
It's not Indian.  
How much is it?  
 **Speaker\_01 - 01:04:12**It's not written.  
 **Speaker\_00 - 01:04:20**I'm  
not  
sitting there.  
What will your girlfriend?  
So, we discuss  
 **Speaker\_01 - 01:04:56**two, one is one, one is one,  
 **Speaker\_05 - 01:05:10**one is the Portuguese expansion case to do.  
which happened over a period of 200 years.  
So, when you look at something like this the first question which should come to your mind is can one person's intention try this change over 200 years process?  
Can one person decide and try this change which happened over 200 years?  
because normal tendency is for us to any situation you will start finding who did it, who is that person behind  
it.  
Without understanding that even whoever it is, it is the interdependence between people which leads to certain outcomes.  
 **Speaker\_05 - 01:06:11**If you have a passive set of people, then finding that one person who is driving this passive people may be useful.  
But if you look at the theory of interactionism or symbolic interactionism it says people are active agents.  
So, if there are active agents one person cannot decide and drive everybody towards one direction.  
what emerges is because of interactions between several people something emerges.  
And when we attribute success or failure, we may be distorting in some ways to finally say only this person contributed to this.  
So, actor network theory, interaction is theory all of that essentially ask you to focus on the process of interaction and not necessarily that one person who is probably influencing the whole process.  
Pay attention to how the network of interactions is creating that scenario rather than one individual or a group of individuals who are influencing it.  
 **Speaker\_05 - 01:07:37**So, that is the slight shift in perspective required when you are trying to analyze situations from an active network theory foundation.  
So, this Portuguese expansion who discovered India?  
Vasco de Gama that is what we would say because we do not know what India is right we are Indians we do not know what India is Vasco de Gama discovered India right that is how we.  
I have brainwashed ourselves.  
What is the relationship of Kanchipuram to this entire story?  
Do you know what is the history of Kanchipuram?  
 **Speaker\_01 - 01:08:24**What is Kanchipuram known for?  
Triplatidium.  
 **Speaker\_04 - 01:08:28**Temples.  
hotels.  
How many  
 **Speaker\_05 - 01:08:42**of you visited Kanchipuram?  
What did you visit in Kanchipuram?  
 **Multiple speakers - 01:08:56**Which temple?  
 **Speaker\_05 - 01:08:57**Which is the oldest temple?  
 **Speaker\_02 - 01:09:04**Which is the oldest temple?  
 **Speaker\_01 - 01:09:10**It is the world heritage site.  
Oh that one.  
Kailasnada temple.  
I think it is.  
Kailasnada temple is the world heritage site.  
 **Speaker\_05 - 01:09:20**It is around 800 daddy or something like that.  
How many of you visited Mahabali Puram?  
Mahabali Puram.  
Relatively more.  
What did you see there?  
Beach.  
 **Speaker\_01 - 01:09:38**Temples and beach.  
There are some architecture.  
 **Speaker\_05 - 01:09:42**So that's again another world headed side.  
So what is that, is there any significance of Kanchak Puram?  
other than temples.  
Yeah, art, architecture, temples, all that is fine.  
What else is the significance of this place?  
So, if you look at the political history, there is something more significant that you should know about Kanchiburam.  
Kanchiburam is supposed to be one of the places where the transition of British from a trader to administrator was actually triggered.  
 **Speaker\_05 - 01:10:33**So, if you read British history what all of us would have studied in school, there is a certain explanation of history saying that somebody came, looted everything and then went away.  
That is the theme you will find.  
in most of the general history that we study in a social science, right.  
But is there another way to look at it?  
How come somebody came did everything what were people doing here?  
They were all passive people not doing anything?  
Why is it that somebody could come and then change everything?  
 **Speaker\_05 - 01:11:23**what role did people here play which way have also contributed to this?  
That question not many will ask and if you say then it becomes political issue.  
But if you look at history, history is all based on analysis of the past, you are not there, I am not there.  
what we are only analyzing is some traces of documents and artifacts which are left out and people are interpreting what might have happened based on that and not all the information is available not all the information you and I can read there are scriptures on temples and other things but not many  
of us can read or interpret that but is there a different argument to this that is what this perspective brings out.  
Now, this is not 100 percent truth because this is an interpretation based on various data points.  
So, it is always open for debate, but what you what is important to know is there is another story to this not just what is a dominant story that we might have heard but there is also another viewpoint.  
 **Speaker\_05 - 01:12:48**Do we have the maturity to listen to these different viewpoints and try to understand it ourselves.  
That is what is really required.  
So, if you look at Portuguese or Pasco di Gama, he came in 1498.  
But where did this journey to India start or the interest to come to India started somewhere in the 1300s go to the next one.  
 **Speaker\_02 - 01:13:24**So the spices?  
 **Speaker\_05 - 01:13:25**Yeah just one click on it one by one.  
So in around 1200, 1300 there was a lot of trade happening between India and Middle East and the Europe mostly in cotton.  
right cotton material fabrics there was already a trade.  
So, if you go back and see historical you will also find in some of the southern parts of Tamil Nadu the Roman coins.  
So, how did Roman coins come here?  
So, there must have been some trade which was happening between one part of the western side of India.  
the Middle East and Europe.  
 **Speaker\_05 - 01:14:18**But much of the trade used to go through Middle East and then to Europe that was the path.  
So in Europe when people had a demand for things they used to go to a place called Venice and buy materials and then take it to Europe.  
So Venice was somewhere like in between these two the east and the west you take Istanbul and others they are like the places which connect the east and the west.  
So, much of the trade used to go there and somebody else used to buy and there.  
So, what was happening the technology available for people to travel on sea was limited to what is called the galley.  
Galley is a vessel like this which is narrow.  
or width is low but length is higher and it is operated by people.  
 **Speaker\_05 - 01:15:21**There is no steam power or wind power discovered at that time.  
It is only manpower.  
So, if you want to go longer you need more people.  
But the main purpose for which people were using this vessel was to go and fight with local places and acquire wealth.  
It was a war vessel.  
So, war vessel requires more people and people need to also row.  
So, you see the fitment between the kind of technology and the kind of purpose and how these three, four pieces were fitting together.  
 **Speaker\_05 - 01:16:04**But if you have a vessel like this and you are carrying people with that, people need to be fed.  
people need water.  
So, you cannot travel very far from the coast, you have to travel very close to the coast.  
So, the nature of solution the technology the people capabilities all that is very closely tied to traveling close to the coast and this was the model which was helping them go from Europe to Venice to buy the materials and then come back this was what was going on for some time.  
But when people came across this new materials from coming from a place called India they as a natural thing was why can't we explore a direct path to India.  
So there are traders who are thinking why can't we go and get it instead of getting it from some other source why can't we directly grow to the source.  
So there are spices there are cotton and so on.  
 **Speaker\_05 - 01:17:05**So people started thinking how do we go to a place called India and how do we reach that.  
So, this is where one of the groups which showed active interest is Portuguese and sponsored by their king, they started experimenting with how do I find this new pathway to India.  
So, they sponsored some traders to go and connect with this place and bring back trade.  
But the traders when they use this vessel and they started traveling towards Africa, they were trying to find an alternative path.  
So, they started exploring from Portuguese to Portugal to towards Africa and they had to travel close to the coast.  
So, they hit upon a certain place called the Cape Bajador which has a very rocky area.  
So, because the boats had to travel close to the coast and it was a rocky area and the sea was choppy the boats used to crash.  
 **Speaker\_05 - 01:18:12**So, there are lot of traders who went but never came back because the ship was lost or people lost their lives or whatever it is but they kept experimenting go to the next it was around this time that the compass mariner's compass was also.  
So, people started seeing the value of okay, I can find direction if I have this compass at least I know north south and I can figure out direction.  
Now when I have click another one yeah.  
In the meanwhile the quality of ship building also started improving.  
So, people started discovering the power of wind and also building a little more robust ships.  
bigger ships.  
Now you see the moment they discovered wind power my manpower can go down.  
 **Speaker\_05 - 01:19:10**I need fewer people, I can build bigger ships.  
But bigger ships means they have to travel deeper in the water, they cannot travel close to the coast, they have to go deeper in the water.  
Now because compass is becoming available, this became feasible that now they can go away from the coast, they can carry bigger ships.  
so that they can bring more material back and they can use fewer manpower.  
So this made it possible that they could bypass this rocky area and start traveling further down.  
But still there was a problem people were going down but not coming back.  
So they were also trying to figure out what was happening.  
 **Speaker\_05 - 01:19:59**there are ships being sent, but they are not coming back either they are getting lost or going somewhere else, they are not coming back, go to the next.  
So, this is where he is the brother of that Portuguese king, he started supporting some more missions to find out and see how what is this issue and how to solve it.  
So, in that process one ship or accidentally came back.  
So, when they came back they started understanding on what basis they came back and this deeper knowledge about what is the characteristic of that ocean or the sea that properties they started understanding.  
So, what they noticed there was there was a natural movement of water currents which is pushing the ships down.  
So, the ships cannot come back in the same path.  
there is a natural water current so it cannot come back in the same path.  
 **Speaker\_05 - 01:21:01**One ship had accidentally gone west and then found that there was a pathway to come back because there was some circular motion that they could exploit in the natural flow of water in that particular place.  
So the wind movement and water movement it is there in that part of the world was discovered by repeated experimentation and trial and error.  
That is how one team discovered.  
So, now if they have to come back from Africa to Portugal, they cannot come back in the straight path.  
They have to go west and then use the currents to come back towards east.  
So, it is like a loop that they could discover there.  
That is what is called the Volta Domar, a peculiar combination of winds and currents.  
 **Speaker\_05 - 01:21:51**This people discovered through trial and error.  
Now, here you can see the time frame it is already 1440s, 140 years duration experiment.  
So, all of you guys you want to build something and if it is not working you immediately decide it won't work and then reject the idea, reject the  
team, 140 years work.  
Today the timelines have shrunk.  
Today product innovation happens at a much smaller time scale, but still lot of persistence and patience is required for exploring anything new.  
Just because I do a one prototype or something expecting some miracle out of it is full hearty.  
 **Speaker\_05 - 01:22:42**Go to the next one.  
So, today you have many of these academic conferences etc.  
Similar thing was organized for people to start asking deeper questions about especially if ships are traveling they need lot of data to be calculated to understand their location and navigate the ships.  
So, they started creating what is called data tables right document around the post and different latitude longitude locations lot of data they started collating by bringing together astronomers, ship mariners and other people and then putting creating what is called a kind of a conference for  
people to create this data.  
Still there was another challenge.  
The next challenge was even if this data table is there go to the next one.  
 **Speaker\_05 - 01:23:42**Even if this data table is there by the time the ships also became more powerful they could carry.  
amination and guns kind of thing also evolved.  
But there was still one major problem which is how do you do the calculations in the ship?  
How do you use actual calculations of star position, the data tables and compute the exact direction and locations based on the locations compute the directions which they need to take.  
They needed some specialists who could do this calculations on the ship.  
So, they started training people who could do this activity.  
Otherwise, it is the ship's captain or a few people who used to do that, but later they realized the importance of having some specialized people who can collect this data and compute and then tell the ship captain what direction he needs to take.  
 **Speaker\_05 - 01:24:33**This is where they believe somebody like Columbus because of the calculation mistakes he went the other direction.  
This is what is called astronomical navigator.  
that role which was created where somebody could collect and compute this data to provide directions.  
That is what is called the astronomical navigator.  
It is only after this that Vasco da Gama's trip actually got sponsored and he came.  
So it is not that Vasco da Gama discovered India if you say.  
it is not just Vaspodigama.  
 **Speaker\_05 - 01:25:15**If all these previous things had not happened, Vaspodigama could not have come.  
So, when you look at history, we ignore lot of things and say this person has come so he has contributed, but he could not have contributed if all these other building blocks were not there.  
So, if you want to understand how some network has emerged, it is important to go back into history and see how this different building blocks emerged which allowed something to happen.  
Now, you can see these are all different states that Walter Domer is one point of passage if that had not happened they would not have come down they would not have really gone further because they did not find a way to come back to this thing.  
So, what is the point sending a trader who cannot bring the material back it is only after you crack that problem then the next problem then the next problem at each stage.  
you are trying to strengthen the network, the ships are becoming more powerful, the instruments are becoming more powerful.  
Therefore, something else is becoming possible.  
 **Speaker\_05 - 01:26:21**And even Vaswadi Gama when he came first time, he asked to enter into trade with the local king.  
The local king already had trade agreements or relationships with people from the Middle East.  
So, there were lot of Arab traders who used to come and do trade there so they said we are already doing this trade we do not want to work with you right because it is again this group is already working another outsider comes they feel he is an outsider so they didn't they sent him back so then  
Vasco da Gama when he went back second time he took lot of arms with him and forced the local king to work with him by destroying the ships of all the Arab traders.  
Here there is a difference.  
Vaspati Gama was sponsored by the Portuguese government whereas the Arab traders were mostly individuals were doing trade.  
So, their ships and boats and all were relatively small whereas he could bring an additional force of weapons and others and force the king to change the trade relationship.  
 **Speaker\_05 - 01:27:34**That is how the Vaspati Gama's entry happened.  
and with the in Cochin so if you go back and look at Cochin you will find still lot of concentrations of Muslim names and other things right so they all come from that old trade which was going on and some relationships are already established those relationships were disrupted to create a new kind  
of relationship right with Portuguese so this is what 1500 1498 or something Now, then what happened?  
When did British come to India?  
In between Dutch also came and went.  
British came to India only in 1600. It was almost 100 years after Portuguese.  
But the difference was A group of British traders, it was not sponsored by the British government or the king of England or anything like that.  
 **Speaker\_05 - 01:28:54**It is a group of traders who now found that there is an opportunity to go and trade with India.  
So they started raising resources for putting together ships and people who could go and trade.  
So, when they started putting together these resources they need to raise money.  
So, they went to the public and raised money by issuing what is called a stock.  
So, what you call stock markets today started there.  
So, that is why East India Company is called the first global corporation.  
Because that company it was set up by raising funds from the common public.  
 **Speaker\_05 - 01:29:40**to do business or trade with India.  
So, using that money they brought some three ships, then they came to India, they set up some three four locations in one in Surat and one in the east Nusli Patnam and Pulikad.  
So, these were the three initial locations of the east India company.  
 **Multiple speakers - 01:30:03**Then they started fighting with the locals next.  
 **Speaker\_05 - 01:30:09**So, around 1640 is where the East India Company is one of the employees in the Masli Patnam East India Company, he traveled south and he found that they could set up a new trading post in a place called Madras.  
So, what you call as Fort St. George today which is the state government buildings that is the place where the East India company set up a trading post.  
Trading post means they will buy all raw material from the towns they will bring it here and load it into the ships.  
So, when their ships come back they will unload material here.  
So, it is a kind of a trading post they called it factory right.  
This was this happened in 1640s.  
French entered Monticherry in 1670, which is almost 70 years after British came, but French were sponsored by the French government.  
 **Speaker\_05 - 01:31:25**East India Company came as a company, right, but French came as a government sponsored entity.  
So, when they came here, These people brought their Anglo-French war which was going on in the Europe, they brought that war here and started fighting with each other.  
So, in the first couple of, I think first war, the French actually defeated the East India Company here and took over their assets.  
Some of them escaped to a place called Satras, there is another place SADRAS, right.  
So, one of the employees in that who escaped was called What was that?  
Next.  
Robert Clay.  
 **Speaker\_05 - 01:32:32**Now, Robert Clay's history is He is born in a family of nine children and he was a kind of a vagabond in the sense he was fighting with people in the streets and all.  
So, somewhere his father found that maybe putting him into some company will make him more responsible.  
So, he found a job for him in the East India Company as a writer.  
Writer means they basically like an accountant.  
They document all the transactions.  
which the company is doing with the local people.  
How many grains, how many quantity of this material, textiles, etc.  
 **Speaker\_05 - 01:33:06**per case and all.  
So, it is like a record books they maintain.  
So, those books are all like this huge size books are there.  
It is written in the calligraphy kind of thing.  
You will still find that if you go to the Tamil Nadu archives, they may have samples of those books.  
So, that is how they used to maintain the documents and send it to Britain.  
for the company's record purposes and all.  
 **Speaker\_05 - 01:33:30**So, he came as a writer, but since he had an instinct of fighting and the company for its own protection brought some arms and others, these guys regrouped and started fighting with the French.  
So, you see here East India Company, it is like the company has sent some people along with the workers to safeguard the company's interests with some arms and others.  
On the other hand, there is a French one which is more sponsored by their government which is there.  
So, these two started fighting.  
That is what is the Karnatic wars which happened between 1740s to 1750s.  
Three wars happened here.  
Most of them happened around Kanchipuram.  
 **Speaker\_05 - 01:34:20**Between Kanchipuram to Chennai.  
in this location these wars happened it is in the third Carnatic war that the British became overpowered the French and emerged successful.  
So and they did it with fewer number of people some tactical brilliance helped in their favor so they did that.  
In this fight some of the temples were also damaged.  
the temples in Kanchakuram, the French had used it as a fortification and some damages happened to the temples as well.  
In between there was another issue with Chimbu Sultan trying to enter this region and there are some fights going on between them and other things.  
So, that part we can leave it out for now.  
 **Speaker\_05 - 01:35:17**After the war was over, after the Karnatic The East India Company went back to the Nawab of Arquard and asked them to pay for the services that they had offered to fight on behalf of the Nawab.  
So here this is where the shift starts happening.  
So East India Company spent its resources to fight against the French on behalf of the local Nawab.  
So, they went back and asked you pay us the dues, we spent all these resources fighting this war, you pay us back.  
So, the Nawab apparently said I cannot pay you, but you can use this portion of the land and collect taxes from it and recover your money.  
So, he handed over a place called Jagir, Jagir includes this Chengalpet what where we are now this Chennai, Kanji Puram, all these regions put together is what a high tax revenue earning portion for him he gave it to the East India company and say you collect taxes from this location.  
Now the East India company was in a dilemma they are traders they came for trade how do they go and collect taxes from people.  
 **Speaker\_05 - 01:36:41**So between go to the next one.  
So, there was an estimate of some 400,000 pagoda means it is it is an equivalent car to the British sterling, but it was more powerful than the British sterling.  
What is the British pound value now?  
18. One pound is 120 or so.  
In those days it is one pagoda was more than say three sterling.  
that was the economic exchange right.  
So, their estimate was some 400,000 pagoda is possible in this region.  
 **Speaker\_05 - 01:37:37**So, they started ask them to collect taxes, but they were not knowing what to do.  
So, they organized one survey which is called the Thomas Bernard survey which happened in 1767. They need a detailed data collection about all the households in this region, each street who is staying how much is the all that and they gave a report it took seven years for them to complete the survey  
but they gave a report saying similar amount is possible some 380,000 potential is there some report like that they have given.  
Now that is the most sensitive document as far as this region is concerned.  
It is after that still there was a problem for the East India company to actually collect this.  
So, they started going into villages or towns and started collecting.  
What they found was they were only getting about one third of that amount.  
 **Speaker\_05 - 01:38:40**So, when they were getting only one third of the amount, then the question was why is it that I am only getting one third?  
When you are claiming 400, I am only getting 130. So, they started investigating this further and then they appointed what is called the first collector.  
So, today you are the collector role right.  
The collector is essentially a revenue collector or tax collector.  
So, the first person who was appointed was called Lionel Place.  
This happened somewhere in 1790s.  
Lionel Place was appointed as the collector to formally collect taxes from this region.  
 **Speaker\_05 - 01:39:22**So, in order to collect this tax he started adopting different strategies which also led it became little bit problematic.  
But one of the issues that they actually had was the East India company was asking for payment in cash whereas the local community used to follow a kind of agriculture which is community based agriculture.  
because if you look at this entire region it is not rain fed it is rain is not regular.  
So they have lot of water tanks here.  
So they store water and they had certain model of agriculture which is outcome based in the sense collectively if they grow something that output is shared among the entire community and they had very detailed documentation of who will get how much.  
So if there is a barber in the village he has a certain share of that output.  
if there is a guy who is raring ducks for him to bring the ducks into the farm there is a certain proportion of the output which is reserved.  
 **Speaker\_05 - 01:40:33**Why he brings ducks to the farm is to fertilize the farm and also eat the worms.  
So like this they had a very systematic way of connecting the dots and then a model where it's a community based sustainable agriculture kind of model was there and some economists have said the yield at that point of time was far higher than what it is today in terms of the agricultural outcome.  
So, when this was happening when East India company asked for payment in cash they said we cannot pay you in cash we can give you the output we can we can share the grain.  
East India company said what will I do with your grain?  
I do not want your grain you pay me in cash.  
So, what they used to do they used to maintain a duplicate book saying my output is only one third of the total.  
So, they used to maintain double books one book for themselves which documented how much is the output how it is shared one book was maintained for the British to show that they only produce less so they will only pay less tax.  
 **Speaker\_05 - 01:41:47**So, now you see I will be all very pious people and that is how we have painted and some of the historical thing that we are all great we are historic all that right there are proofs here also.  
So, it was a different perspective which was presented and the then the somewhere the East India Company realized this issue then they said they brought in a role saying anybody who wants to cultivate in a common land has to take our permission and you have to upfront pay the tax for the amount of  
land which you are taking for cultivation.  
So, it is input based and cash based.  
So, if you want to cultivate in a common land you need to take what is called pata, they introduce that word pata saying, it is a permission for you to I am giving you I am this land belongs to me I am allowing you to do cultivation in this area if you are doing you pay me so much and you are free  
to do what you want.  
This is the model which is what the riot quarry model started coming.  
 **Speaker\_05 - 01:43:01**So, there are different interpretations of this.  
So, some people say this model helped decouple the Zamindari system and brought the power to the common man that is one interpretation, but what it actually did was some of the people who are doing this cultivation they said we will stop doing cultivation.  
We will cultivate for ourselves our minimum requirement which we have we will do it we will not cultivate in the common land.  
So, when they did that it led to a disruption in agriculture and disruption in the labor force.  
There are lot of people who are dependent on this.  
they all had to migrate out of the villages and there was a famine also which came.  
So, both things happened at the same time.  
 **Speaker\_05 - 01:43:52**So, there was lot of social unrest which got created.  
Then the East India Company realized that this Lionel place by sending him there to collect taxes has actually worsened the situation.  
So, what he did in order to rectify this situation he said I will spend some more money to bring people back into the villages.  
How by repairing the tanks and repairing the temples so that people can come back into the villages.  
So he spent more money of East India Company to address this problem and that is where the East India Company finally fired him.  
They removed him and appointed the next person, the Munro or somebody came next.  
Thomas Munro is regarded very positively in Indian context because he brought the triatuary system and some people have interpreted his work is in fact there is a very old book which compares Thomas Munro with Krishna Devaraya.  
 **Speaker\_05 - 01:44:53**It is written in some 1910 or around this time.  
So there is even if you go to Marina Beach you will find Thomas Munro's statue somewhere.  
So there is some positive regard for what he had done.  
In fact, his story is also interesting when he came from England he landed here usually they find the money exchangers who will come and do the money exchange and also find them some accommodation to stay and other things.  
So, somebody had come and saying I am going to help you and in the blink of the eye he had taken all his material and vanished.  
So he was left with no clothes and apparently that was his initial experience in India.  
It is after this that you see a different kind of social transformation beginning to happen here.  
 **Speaker\_05 - 01:45:54**So the decoupling of rural to urban, the villages started, power was in the villages, people were in the villages, the British started slowly centralizing everything in Chennai.  
right and after that 1857 war the East India company actually took sorry the British government actually took over the East India company because that is where they realized this company has gone and done all sorts of created more problems then the government actually took over at that point of  
time.  
So it is not British government started this whole thing in 1600 and came and occupied and looted us that is debatable.  
East India company came, they were doing trade to protect their trade interests, they had to take arms and to repay their whatever their funds they were given a land to collect taxes.  
Then they started learning how to then they found this is the new business right exploiting the land.  
So, who gave them?  
 **Speaker\_05 - 01:47:06**He also played some role in that no?  
did it happen only one directional that only they decided and did it.  
He also played some role.  
So it is happens both sides.  
Unless somebody does this, somebody does that, the outcome is emerging out of these interactions.  
So when you look at history, some people will ignore all this and only write the one side of the story.  
So if you pay attention to the nature of interactions which happened, maybe this other story is also possible.  
 **Speaker\_05 - 01:47:40**So, when you read history please understand all those who are writing history is all based on nobody has seen that we are all trying to interpret and when you interpret there is always potential for bias the same artifact could be interpreted in one way the other way.  
So, the only way to resolve this for people to explore understand talk about it without getting angry and saying you this that and all right.  
So, that quality of, we have that ability to keep exploring something without getting angry.  
Why do you get angry?  
You get angry because somewhere you lose my interest is suffering and I am not able to argue anymore.  
Then I start using other instruments, I start gossiping, I start using mobilizing other people to build my argument.  
That is what happens, so that is why when you say politics and all it is and people lose this perspective then it becomes something else.  
 **Speaker\_05 - 01:48:48**It is after 1900 then the different story started emerging the centralization or change in the power relationship between villages and the center that started happening significantly.  
So every power was getting concentrated in Chennai the rural urban power difference started emerging.  
So, this is where led to the birth of what is called Justice Party.  
And this interpretation that it is anti-Brahmin movement started.  
But closely if you observe these are all related to access to resources.  
Somebody was gaining access to resource, so somebody else is losing that resource.  
So, people start interpreting as this community is exploiting the other community.  
 **Speaker\_05 - 01:49:40**that kind of logic start coming and there are a few things at this stage if I tell you it will be too much for you but I can ignore some of that but that is why if you see the next phase was language based difference it became Tamil versus Telugu the same thing.  
whatever justice party was running initially it was dominated by a lot of Telugu people.  
So, if you actually see the historical records of lands in this location you will find lot of Telugu people here.  
 **Speaker\_01 - 01:50:16**See we are ruling everywhere.  
 **Speaker\_02 - 01:50:20**So, it began a Telugu versus Tamil.  
 **Speaker\_05 - 01:50:25**Then you add Poti Sri Ramalu story and all that right.  
So, separation of gates based on language all that happen.  
But at the heart of it if you see it is access to power, access to resources.  
 **Multiple speakers - 01:50:37**The logics used for fighting are different.  
 **Speaker\_01 - 01:50:43**One it is insider versus outsider right and when the outsider leaves then you find another logic between the insiders right.  
This is what does not matter.  
So, some of the peculiarities so one of the key things was The first cooperative bank in India, the concept of a cooperative bank it was set up in Kanchipuram.  
 **Speaker\_05 - 01:51:07**The first legal process, the formal British legal process was set up in Chennai.  
The first model of local governments, the Justice Party running the local government is the first instance of local government being experimented in India happened here.  
These are all the key things.  
that this place has contributed to you really want to tell something about what do you know about Kanchipuram Chennai there is so much more to understand right.  
So some of the references I have given here if possible you can read it whenever you want go to the next okay skip this now we will come back to that skip this go to the I will give you work for three years, three years, three years, three years, three years, three years, three years, three years,  
three years, three years, three years, same six, I will give you 15 minutes as a group, you can form some groups and discuss about these questions and make notes.  
think about what are the answers for these questions you can discuss among yourselves right then we will ask you to do a role play right we will split you into different groups and ask you to do a role play.  
 **Speaker\_05 - 01:52:39**So look at these questions but discuss and then come up with some views on what these questions mean.  
 **Speaker\_01 - 01:52:56**San.  
I  
 **Speaker\_00 - 01:53:14**take pictures  
 **Unknown speaker - 01:53:20**of that.  
 **Speaker\_01 - 01:53:20**What was the problem related?  
 **Multiple speakers - 01:53:32**It's in real life How is it for the proportion of the actor in the actor during the actor during the actor during the actor during the character okay how was it translated  
 **Speaker\_01 - 01:53:58**for that bro it's never made a download they didn't they didn't download the factor but they found so many problems Okay, which elements in the active world are ready to be part of EDS initiative?  
Municipality is very good.  
I guess municipality is very good.  
I think municipality is very good.  
Not much about human.  
No, human has a problem.  
 **Multiple speakers - 01:54:28**Human was a problem.  
 **Speaker\_04 - 01:54:29**But then how will you get, how will you get the longevity?  
How  
 **Speaker\_02 - 01:54:46**to make their lives matter.  
Why is translation threatening or not because they wanted Reynolds.  
They wanted Reynolds.  
 **Speaker\_01 - 01:54:49**Why easiest translation threatening to the leading car maker?  
 **Multiple speakers - 01:54:51**Because, because Renault is petrol-based automobile company and then they are proposing a completely different thing that based on the material which is there Please read and try to answer this question for yourselves.  
 **Speaker\_02 - 01:55:23**It doesn't  
 **Multiple speakers - 01:55:29**have any  
 **Speaker\_02 - 01:55:38**change.  
Social.  
 **Multiple speakers - 01:55:48**I am  
 **Speaker\_03 - 01:56:00**just asking bro.  
Discuss.  
 **Speaker\_02 - 01:56:01**So, one person has to write.  
Discuss and write.  
 **Speaker\_03 - 01:56:06**I  
will write.  
I will write.  
I will write.  
 **Multiple speakers - 01:56:19**Yes, already, already Padrish as somebody.  
 **Speaker\_02 - 01:56:28**Padrish, you have already some experience.  
But this actually is 3 billion.  
 **Speaker\_03 - 01:56:48**Okay, last question.  
 **Speaker\_02 - 01:56:53**What is the network question of the IC engine based model?  
We'll read once the thing.  
Yeah, it won't write, just read the paragraph related to that and answer it.  
 **Speaker\_00 - 01:57:04**Thank  
 **Speaker\_01 - 01:57:24**you  
wonder the answers here What?  
Bro, fuel, fuel cell is a mediator, bro.  
Fuel cell is a mediator.  
Yeah, fuel cell is a mediator.  
It can be as an intermediary also.  
No.  
 **Speaker\_01 - 01:58:01**Yeah.  
It has changed, right?  
As both it can be mediators and intermediary.  
 **Speaker\_03 - 01:58:09**Interaction,  
 **Speaker\_01 - 01:58:27**active, Why is it mediator?  
Because it brings a change right it brings a change from petrol engine to fuel cells.  
 **Speaker\_02 - 01:58:38**It makes sense right.  
It makes sense  
 **Speaker\_01 - 01:58:47**right.  
What is the first answer?  
What is the problem person?  
How was the transitor for consumer is a big question.  
What was the problem with the perceived by EDF?  
What is the first part answer?  
 **Multiple speakers - 01:59:11**What is the problem?  
 **Speaker\_06 - 01:59:22**Thank  
 **Unknown speaker - 01:59:42**you.  
 **Speaker\_01 - 01:59:43**They can add both mediator and intermediary.  
Fewer cell play a role in transform of energy within the network.  
But it will also connections and exchange between different elements of the network.  
Shaping is the network sound.  
Can be acting as a both intermediary and they facilitate a connections between exchanges?  
 **Speaker\_02 - 02:00:01**They can be both.  
 **Multiple speakers - 02:00:04**Why not?  
 **Speaker\_01 - 02:00:05**It can be both.  
But mediatory suits well.  
both suit well what does intermediary do?  
It is like a medium mediator like medium person no right.