

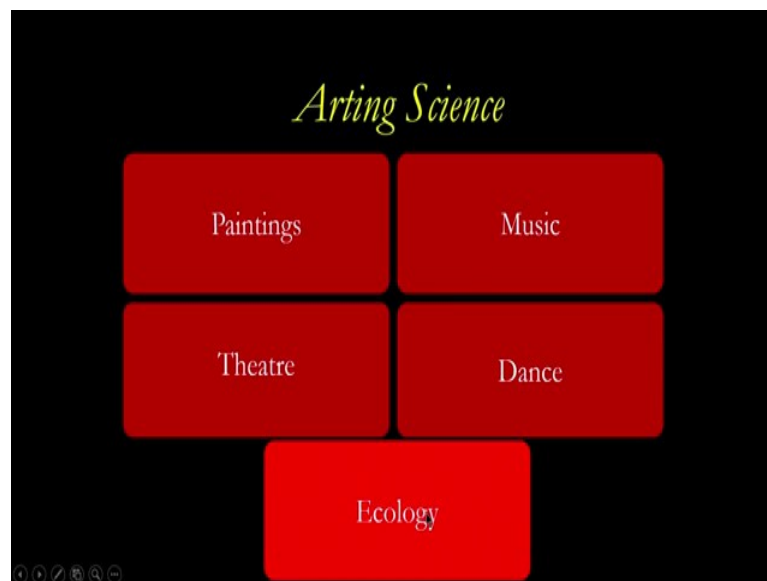
Artistic Exploration in Scientific Research And Technology
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Lecture – 21
Representation of Science and Technology with Indian Folk

Hello friends, in the last class I had given you example from the Indian Institute of Science, where the students of the undergraduate program of Indian Institute of Science have developed as part of their course mapping India with the folk arts. They have developed these artifacts which demonstrates a synergy between the Indian Folk Art with Science and Technology. Today, I want to give you a few more examples from the students of IISc itself other forms of Indian Folk Art. Last time I have given you examples from visual folk art; that is Indian Folk Paintings.

Today, I will give you example from music, from theatre, from dance, and some thematic examples as well. This is to show you that it is possible to have a dialogue, it is possible to establish a dialogue between the Indian Folk Art with Science and Technology and the Indian Folk Art are able to effectively represent science and technology very use it in a very effective manner. So, let us see more examples.

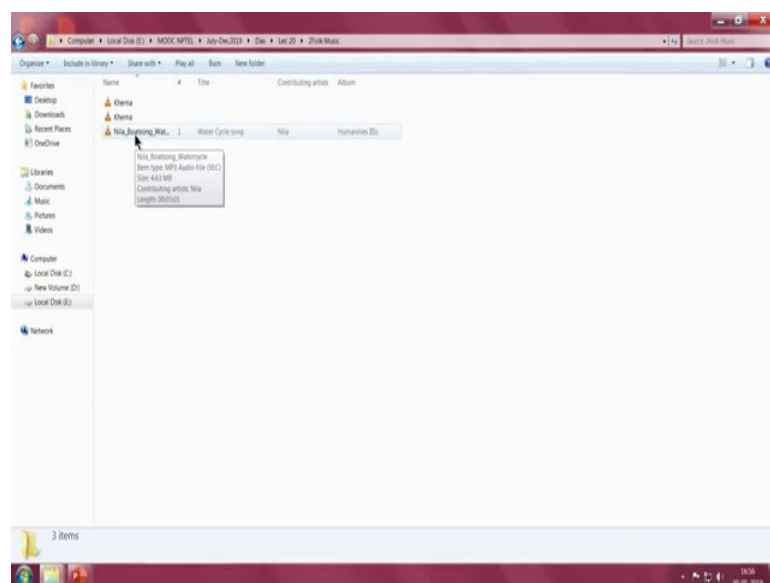
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So, I had given you examples from Indian Folk Paintings last time. Today let us see from music. So, this was the slide I had shown you last time that within the Arting Science domain the kind of things the students are doing.

So, students have created things within the domain of painting, within the domain of music, theater, dance, ecology, etcetera. I have shown you examples from paintings in the last class. Let me give you some examples from music, theater, dance, and ecology in today's class.

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So, today let us hear some songs at first. So, this is one song that I want to play for you. Here the students have very effectively produced Malayalam Boatmen song which talks about the water cycle in the environment using boatman. Boatman's songs that the boatman sings while they go out for voyages. So, here they are talking here they are telling about the water cycle in nature through the boatman song. [FL].

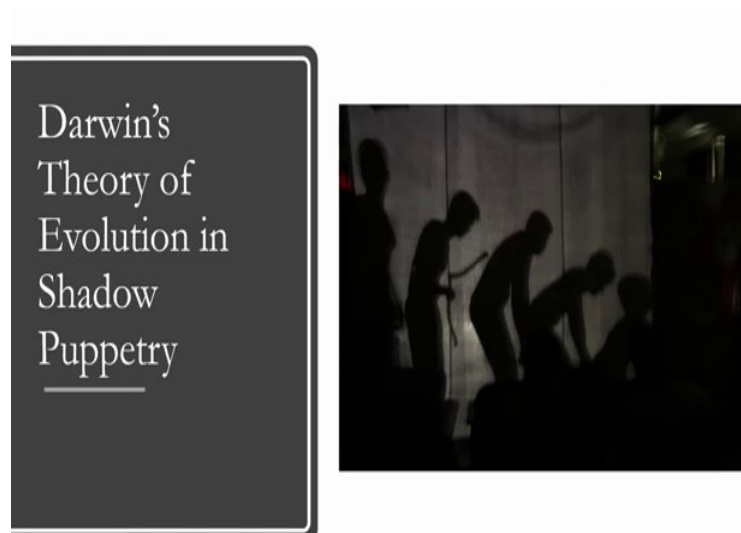
So, let me give you another example, this is an Odia song that is students have created this talks about the life cycle of the whale in the Chilka lake of Odissa. So, I must tell you that the music form was we had discussed this form with the 2013 batch of the undergraduate program of IASC and they were able to create such artifacts, but this were, these are the music, these are the songs that were created by the 2013 batch of Indian Institute of Science Undergraduate Program. [FL].

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So, these were the example from music. Now let me give you some examples from theater. So, this performance this was put up by the students from the 2013 batch and here the students were asked to represent scientist take scientists perspective on social problems and how they have used folk theatre to represent the scientific take or scientists take, all social problems that are plaguing our society.

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So, this is Darwin's Theory of Evolution and it was shown in shadow puppetry. As a shadow puppetry as is common in many parts of India that is common in Andhra

Pradesh, it is common in Assam; it is common in Karnataka as well. So, shadow puppetry is quite common and here there students are showing Darwin's Theory through shadow puppetry.

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This is Anthropocentric Worldview in Naqqal. Naqqal is a theatre form from the North India mostly with the Uttar Pradesh site. So, here the students are showing how it was a skit that they have put up.

They are showing that how they do people who have never seen a cow, were trying to understand it from their own perspective that the cow is like a human being, a cow is more like a human being, it is like how human beings are not able to come out from their own obsession with themselves and they try to represent, they try to understand everything around from a human perspective only from.

So, these students had shown Anthropocentric Worldview in Naqqal.

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So, this was a technological take on mythology in Ram Leela. So, students had showed if, what if there was science and technology during the mythological period, but and the, this was shown in Ram Leela style, Ram Leela theater form style. What if there was technology during the Ramayana period this is what the students in the head represented.

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So, this is was bursting superstition with Svang. Svang is another theater form which is common in Rajasthan, Uttar Pradesh, and Madhya Pradesh area. So, students have

represented, but the students have shown bursting superstition with Svang in an another skit.

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This is gender equality through Yakshagana. Students have fused Yakshagana to show how mythology themselves talks about gender equality, but sometimes we tend to neglect them or overlook them. So, here gender equality is shown through Yakshagana theater form of Karnataka.

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So, countering castes to Raas Leela. So, this is Rasa Leela theatre form style and students have shown how caste was is nonexistent in certain period of time, but it has become more rampant probably in the modern period and as time has progressed, but countering caste through Raas Leela. So, they show you how no caste can be, how one can know overcome the evil of castism and they have shown it through Rasa Leela style.

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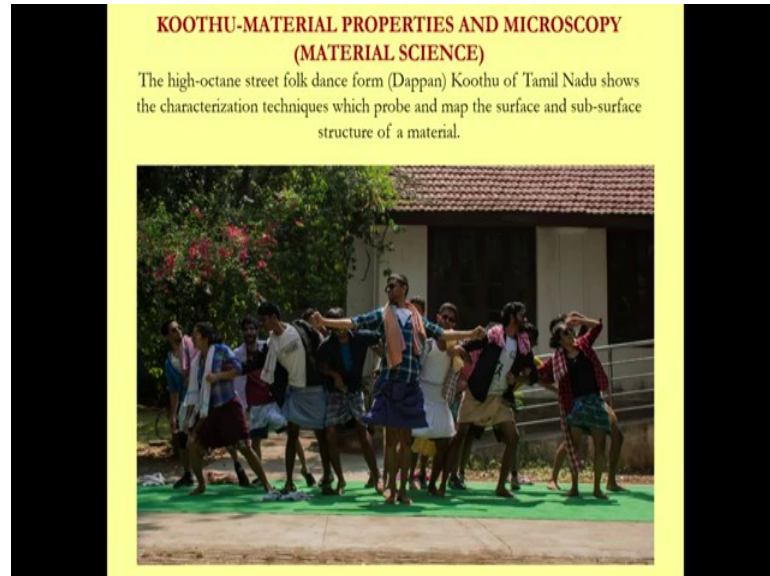


Resisting unaccounted development Chauu, Chauu is a very popular very well loved theater form of with Bengal, Orissa region, Jharkhand region also and here the students have shown how there is unaccounted development at the cost of ecology, at the cost of environment and this is they have shown through the Chauu art form. So, it is way some of the examples from theater.

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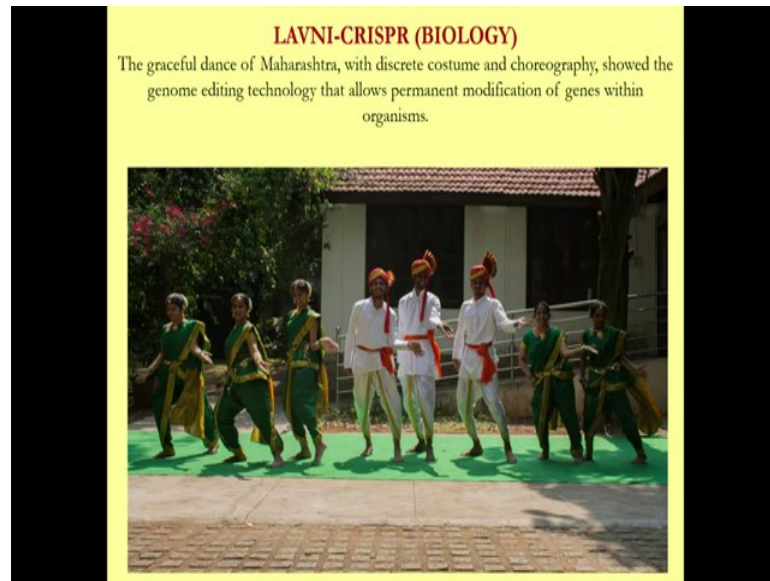
nitrogen from air with hydrogen derived from natural gas. So, this was the Habers process and Habers process was shown by Dolu Kunitha style of Karnataka.

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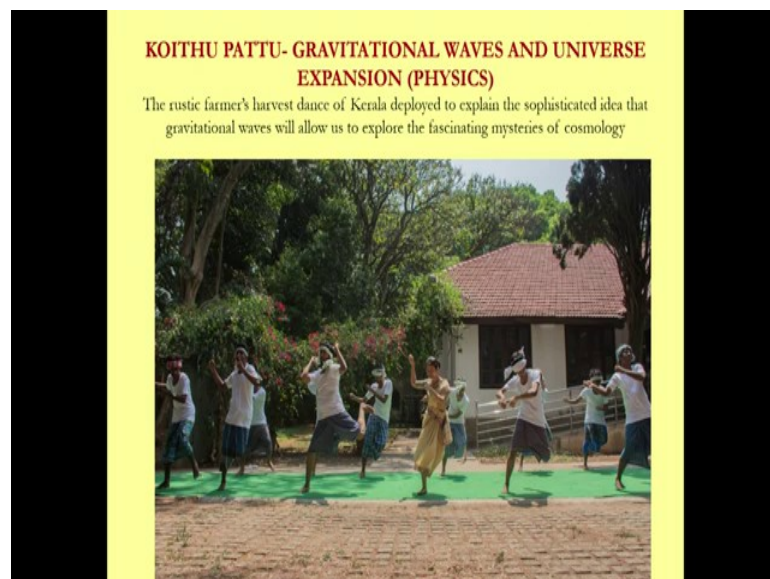
Koothu, Koothu is a dance from Tamil Nadu. So, your discovery in material science the discipline of material science is shown here material properties and microscope is shown through Koothu style. The high octane street dance form from Dappan Koothu of Tamilnadu shows the characterization technique which probe and mapped the surface and subsurface structure of material. So, he had, the material properties and microscope is shown through Koothu dance of Tamilnadu.

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Lavni, through Lavni Crispr is shown. Crispr is an important discovery in the field of biology. Students have shown the discovery of Crispr through Lavni dance style of Maharashtra. The graceful dance of Maharashtra with discrete costume and choreography showed the genome editing technique, technology that allows permanent modification of genes within organisms.

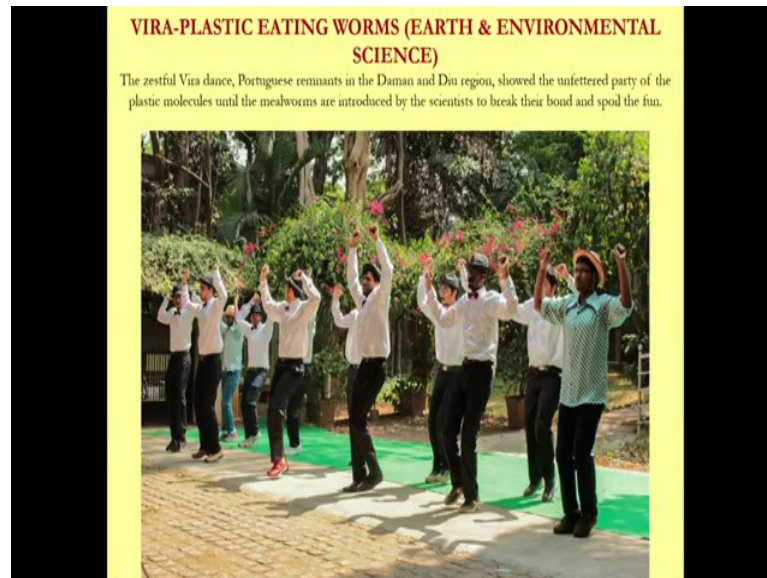
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Koithu Pattu, Koithu Pattu is a dance from Kerala, it is an agricultural dance done by the farmers and a agriculturist. So, here they are showing gravitational waves and universe

expansion that is discovery made in the field of physics through this dance form. The rustic farmers harvest dance of Kerala deployed to explain the sophisticated idea that gravitational waves will allow us to explore the fascinating mysteries of cosmology.

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So, this is a Vira style, vira dance style and they are showing plastic eating worms. This is an important discovery done in the field of earth and environmental science. The gestural vira dance Portuguese remnants in the dominant Diu region showed unfettered party of the plastic molecules, until the mealworms are introduced by the scientists to break their bond and spoil the fun. So, this is this dance form showed how discovery in the field of art and environmental science and how plastic eating worms are introduced by the scientists to stop the rampant harmful effect of plastic.

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Kalbelia-Four Color Theorem mathematics; so, Kalbelia is the dance form from Rajasthan down in the desert. So, here using this dance form of the Four Color Theorem of Mathematics is shown. So, dances adorning four different colored costumes, the sensuous snake charmer dance of Rajasthan adopted to express the complex theorem that not more than four colors are required to color the separate regions of a plane.

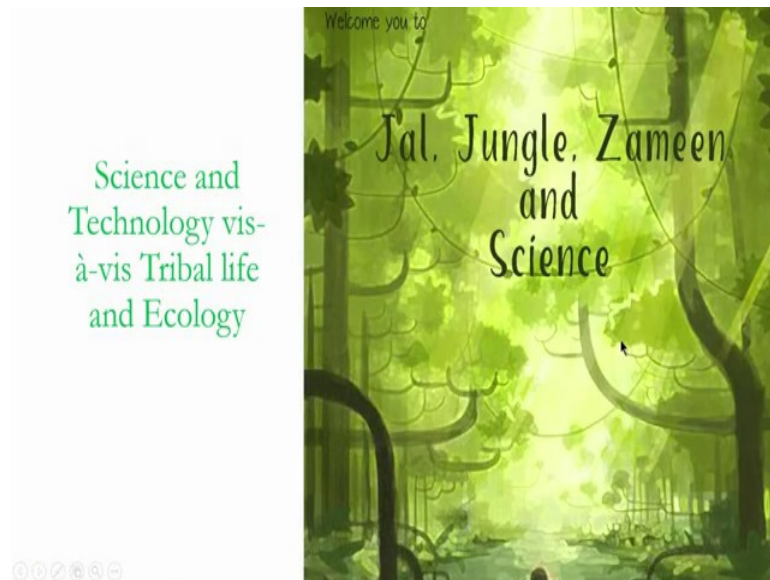
So, that no two adjacent region have the same color. So, this is a theory in mathematics that if there are 4 colors then it is possible, not to have two adjacent region of a plane in the same color. So, this is what the students have shown. I want to show you some examples, some flipping from the dances. So, through this dance they were able to show that only 4 colors are required for a flame to her, not to have two adjacent region with same color.

So, what did it was the dancers vote four color costume and only when 4 color costume dancers were introduced in the dance that no 2, no 2 dancers wearing same color costume were standing together until the 4 color was introduced somehow or the other three , even if it there was three colors dancers wearing similar colors costume were able to stand among together with each other, but only when the fourth color was introduced that this was possible.

So, they were able to show effectively the mathematical theorem that 4 colors are required for a plane to have no two adjacent region to have same color. Now let me give

you some example from ecology. So, in 1 year we decided to discuss themes, we decided that we should discuss climatically. So, we discussed ecology and we saw what are the relationship it has with society what science and technology the relationship science and technology has with society keeping ecology as the theme.

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So, in this year we had we are we asked students to explore what is the relationship science and technology has with tribal life and ecology. As we have seen in this course also and generally also that tribal have the tribal's of India have very close relationship with the environment with nature. So, what are science and technology done to enhance the life of the tribal's or enhance the, condition of ecology or has it done something harmful, has it done something or useful or has it been neutrals? So, the question was to explore these things using folk art form using visual art form.

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So, the students have come out with this kind of folk paintings. The first one this is, these are called coalition. So, some groups of students have said that science and technology has not done anything useful. It is science and technology has not done anything useful for nature or for the tribal life, but they have in fact, destroyed peaceful life. So, these are some of the representation that they have done. The first one is a some manuscript painting style.

So, here they have shown how human beings have been using science and technology. They have been, they have disrupted the peaceful life. They disrupted balance in nature. Here this is another style in first style they have shown, how there was a golden period before, but later on gradually it has become dark, because of the unaccounted unabashed use of science and technology towards the environment.

How human beings have exploited the environment ecology using science and technology. This one is showing in the Chitra style of Karnataka. How the balance of nature has been tilted, how the balance of nature has been disturbed when science and technology has been introduced by human. So, and the last one is and the fourth one is here is a comparison between the imperialistic attitude of the Britishers towards the Indians and then what the Indians are actually doing to nature themselves. So, here there is a comparison to how the Britishers had exploited the Indians and how human beings are also exploiting nature. So, there is a sense of imperialism. So, this is the famous snake eating its own tail style this is done in go instead.

So, here it was showing that here the excessive use of science and technology to exploit or two extra extract from nature has led to destruction and it has because leading to self destruction. It does like we are destruction ourselves in the process. So, here they are showing the snake eating its own tail. So, some group of students felt that the science and technology has not done anything useful, but they have been medium or they have been modes of destruction for ecology and tribal life.

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But another group of students felt that there has been confluent confluence. science and technology has very nicely mingle with the tribal life nicely mingle with in the environment and there is a confluence of both there is a harmony. So, here they are showing a shorter style how life has been gradually become better because of science and technology.

this Shala style this is another shala style painting showing same thing that how science and technology using things like electricity your communication education have actually enhanced life of the common people and also has been able to aid the environment. Here is an understand where buildings and all comfort like comfort of life as shown this is a style of the Kerala region. So, here also they are showing how science and technology has actually brought comfort to people's life and has also been helpful towards the environment.

This is a the again appeal art style. This is showing the elephant corridor. So, using science and technology how they can be a peaceful existence of human beings with nature. you can create a elephant corridor and then nature the animals can also live peacefully along with human.

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And third group of students felt that science and technology has been able to produce something very vibrant something very very useful and there is something very fresh and which has been very helpful towards the life and nature. First one is a we have discussed Ganjifa. So, this is a Ganjifa style where they are showing how science and technology has been able to nurture nature. So, here they are showing tiger tracking devices similarly they showing cloud sitting and then they are showing here they are showing how nutrients are helping the plants to grow better.

So, many such things they are showing and here they are trying to say that science and technology has actually nurtured nature you had ashamed the DNA altering techniques where in doubt affected region the by changing the DNA of the plants they can be made to live better. This is done in first-style. This is again a Chitra style where they are showing entropy and how science and technology has bettered the life of people using techniques of entropy. Here again there is they are showing cloud seeding. Now this is done in this is done in again in Assam manuscript style how technology has aided to

have rainfall in drought areas, how science and technology has helped actually in nurturing the nature in help in making life better. This is coral reef restoration.

The students have shown coral reef restoration in Bhil style how the coral reef that was destructed was resurrected by the help of science and technology. So, they have shown that science and technology had actually aid in creating better life for the nature and better life for the tribal's. So, with this example I wanted to show you that there is possibility of exploring of as this course is called exploring explanation of scientific and technological research to Indian folk art.

So, students have been able to establish it quite effectively that there is possibility that science and technology can have a dialogue with Indian folk art, can how a change can have a sharing of ideas with Indian folk art and both can be at par with each other, both can be equals and they can talk to each other as equals. So, I have given you few examples. I would like you to explore on your own what you think you can do with this kind of ideas. So, see you in the next class.

Thank you.