

Role of Craft and Technology in Interior – Architecture
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Lecture – 22
Craft and Technologies in Interior Architecture: Decoding Systems

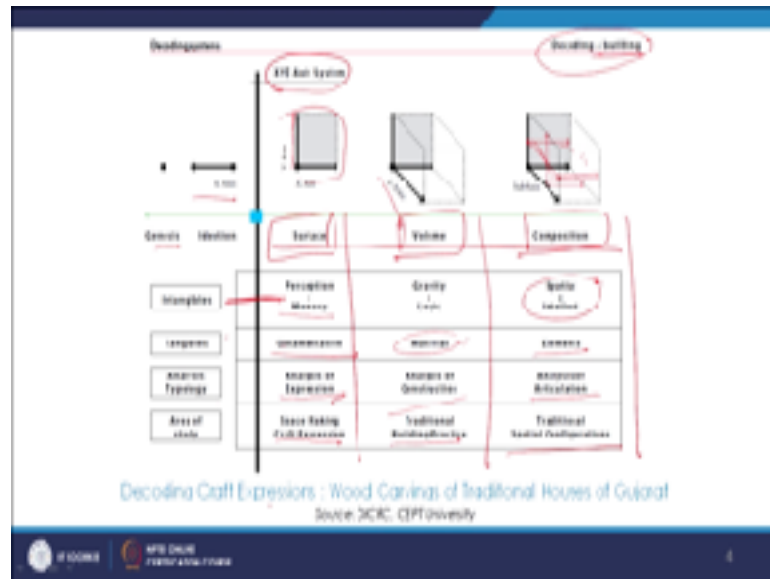
Namaste! Hello everyone. Welcome to my NPTEL course Role of Craft and Technology in Interior-Architecture. We are going to talk about module 22 today and it deals with Craft and Technology in Interior Architecture and Decoding Systems within it, we will be talking about craft and technology in interior architecture.

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Then we will talk about decoding systems within crafts and specifically we would be referring to wood crafts, a few examples from Gujarat and Uttarakhand, largely Gujarat and then we will see some references.

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So, here what you see on the screen is again a system of decoding a building and within that building of course are embedded the crafts and this system again is largely defined and conceptualised by DICRC, CEPT university and with their permission I am going to discuss this. So, if we try to consider a building as a system in terms of X Y Z axis system then if we see X axis we could just consider it as a genesis leading to the ideation and when we add another axis Y axis. So, now, we have a surface when we add the Z axis we have a volume and when we talk about sub axis it generates a composition.

So, largely when we try to understand a building or a craft which is integrated within it and we try to decode the system that it inherits we try to break that building or a craft in terms of axis various axis and then we try to convert those in terms of different tangibles and intangibles. So, if we see here this is a sort of a matrix Y axis and X axis and we see different parameters which have been put.

So, we see some intangibles and we see tangibles there is analysis typology and then there is area of study. So, we are talking about a surface in terms of X and Y axis and then we see on a surface there could be perception and memory which has to do with the intangible and the experiential power. If we see the tangibles it could be ornamentation and when we talk about analysis it could be an analysis of expression within that also there could be lot of classification, then the area of study itself so space making craft

expression and there is also a discussion of material analysis of construction, traditional building practice and then we talk about composition we try to break it in terms of elements how is it articulated, what are the spatial configuration, what is the spatial plus the intellect.

So, this is a sort of a diagram or a sort of a system which helps us understand that if we have to decode a building which has a certain inherited craft structure or a system embedded within it, then we try to break it in terms of different axis and we get largely a surface, a volume and a composition and then further we try to understand this in terms of various other breakups and elements.

So, taking it further lets see what else we have to understand through this system.

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And yes. So, DICRC also came up with this operational craft matrix here what is done is to the X Y Z axis system they have added this dimension of time. Now, once the dimension of time is added a context is identified and the crafts persons, the materials, tools, techniques are studied this into totality generates an operational craft matrix for us and it largely talks about process and application.

So, when it has the component of time, the dimension of time also place because we have a context there is a sort of a cluster where you go and document and understand the

process. So, that way when we add this dimension of time to the existing XYZ axis system it generates understanding the process, the application and again it has varied intangible aspects, tangibles analysis and the area of study which one focuses on.

So, when we talk about process there is a sort of historiography attached to that craft form, the building typology and there are a lot of benchmarks and turning points in the history that has lead to it is evolution, transformation, may be at times also dilution, then there is also analysis of innovation and integration. Here largely we are talking about tradition and continuity and how it is transferred through ages and the lot of innovative aspects have been added to it and yes history of space making crafts; how did craft come to be understood in the milieu of interior architecture and how did this entire building craft and space making craft coming to be.

And when we talk about application, there is traditional knowledge, there is tacit knowledge, there is wisdom, how the application has sustain through a period of time through generations there is a craft design process so there are lot of partnerships and how the designers and craft persons work together and then this analysis of the xyz system and contemporary application of temporary practice. So, there are lot of contemporary applications which have lot of contemporary expressions, there are lot of temporary and permanent output out of it there are lots of experiments which are done.

So, this is again a starting point and there is a sort of a system that helps us understand and analyse the building craft and the interior architecture.

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So, here the major discussion is wood carvings of traditional houses of Gujarat as done by the DICRC and we have taken the part of that matrix which we just discussed. So, if we see this example, this is a traditional wooden house and it has lot of different craft forms and we have seen this slide also earlier in few lectures.

So, if we try to see X axis and Y axis and we try to understand the surface application and the system that works here, we can see lot of surface application, we can see lot of connotations with perception and memory and how the surface has been embellished and the kind of details that go into the making of it.

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Here we see again, but still talking about surface, but in terms of the tangible output we see here ornamentation.

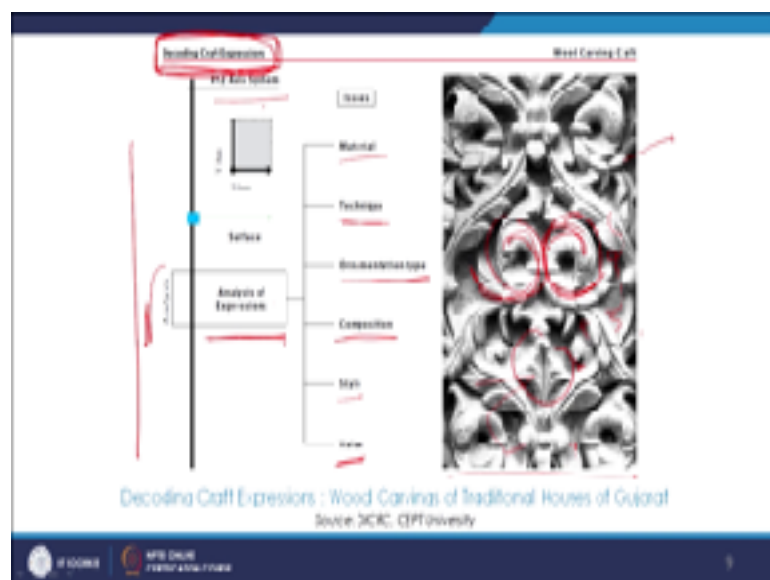
So, the kind of detailing that we see over here. So, these are all the tangible observations and the ornamentation on the surfaces is the study. So, that is what the researcher is trying to understand here in the previous slide what we saw it was again on the surface, but we were trying to understand the intangible. So, how the memory and the perception and the kind of motifs, the kind of meaning, the kind of conversation with the way of life, how all of this get reflects reflected here through the craft forms and the process of making. So, that was the discussion in here.

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And this is one example of a wood carving of traditional houses of Uttarakhand, this is khazanchi mohalla and again just trying to understand it with the help of the XYZ axis system here also we see some tangibles and we see lot of ornamentation, we see lot of motifs over here, we see lot of patterns about which also we are going to discuss.

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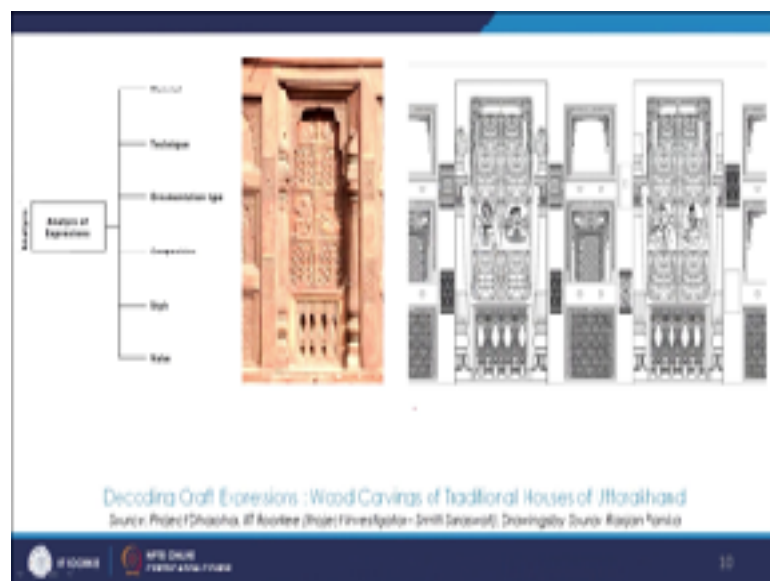


Now, this is on the X Y axis still talking about we are talking about analysis and then analysis of expressions which is further classified they could be studied through material by understanding the technique.

What is the type of the ornamentation that we see, composition, the style and the value and somewhere down the slides we are going to understand these. So, here we see wood carvings in a traditional house of Gujarat and then this one picture itself could give us lot of information and understanding about the material that is used; what kind of technique of wood carving goes in here? What is the overall composition? What is the pattern? What kind of motifs? and what is the composition here? this is like this and then we see a sort of a reflection and a mirror image here and what is the overall value?

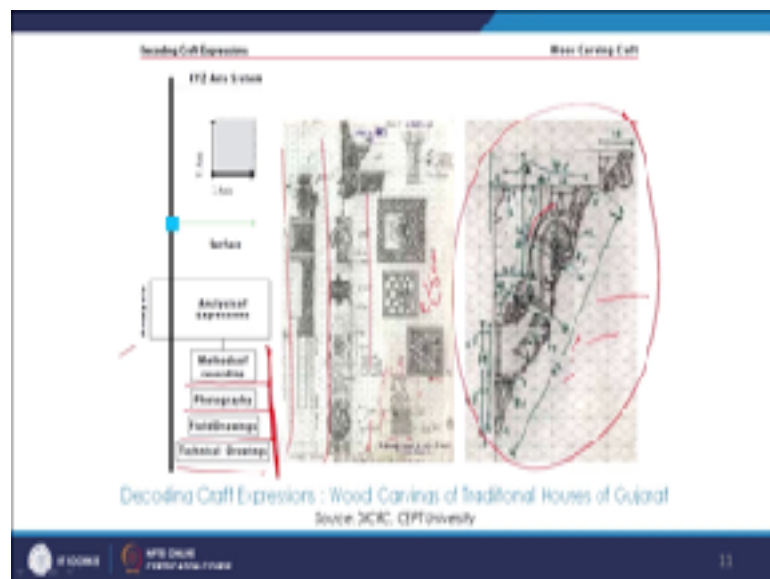
So, when we just try to understand the building craft and interior architecture in terms of all of these we analyse this through this X Y Z axis system, we get a lot of information which is embedded within and its quite elaborate and it depends on an individual how to dig it out. But when we have been guiding principles, when we have the system of decoding, it actually helps us understand the entire making process and also the intangibles associated with it.

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This is another slide this is also from khajanchi maula and we see this wood carving, the elaborate wood carvings on the façade. And, so here also if we analyse in terms of expressions we could study in detail the material the kind of wood that has been used this we discussed in few lectures earlier that the indigenous wood used over here is *Tun* or *Thunair*. And then the kind of technique that goes in what kind of carving is it and what is the ornamentation type, the overall composition that we see over here the sort of framing devices and again, the value, the values associated with it and you know the fact that the houses are still there and they are 300 years old and people are still studying them these have been documented and they are also having lot of awards. So, there is a sort of value system associated with these.

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Now, when we are talking about analysis and analysis of expressions it is very important to understand what tools are adopted for this analysis. So, what are the methods of recording and you know the photography is another tool, then field drawings and the technical drawing. So, here again we see one palette which is done on site and how the onsite recordings are done, the dimensions and the curves and you know the overall documentation happens and we see this grid already made on the graph paper and then the sort of documentation that is done on the field which is so handy that can be translated later to the technical drawings.

So, these kinds of systems they are really important to be understood while working on projects while working on an academic project and you know to come up with the sort of a synthesis of what has been studied.

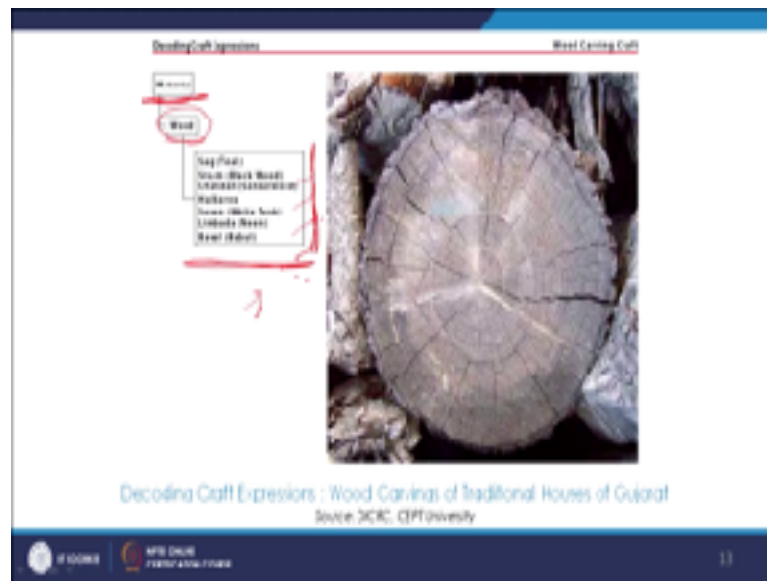
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This is from the work done in Uttarakhand and again seeing the methods of recording, the photography that has been done you know through which angle, what are the details been captured in the camera. And some field drawings, you know the sketches and the field drawings that are sort of cursory and then later they are translated into technical drawings with like you know full details so this is one section it gives all the material details, it gives the dimensions, it gives the activity with space what happens and you know this is the final drawing.

So, culmination of this starting from this is also a process and it is very important that a system is in place you know that could be utilized to get best results.

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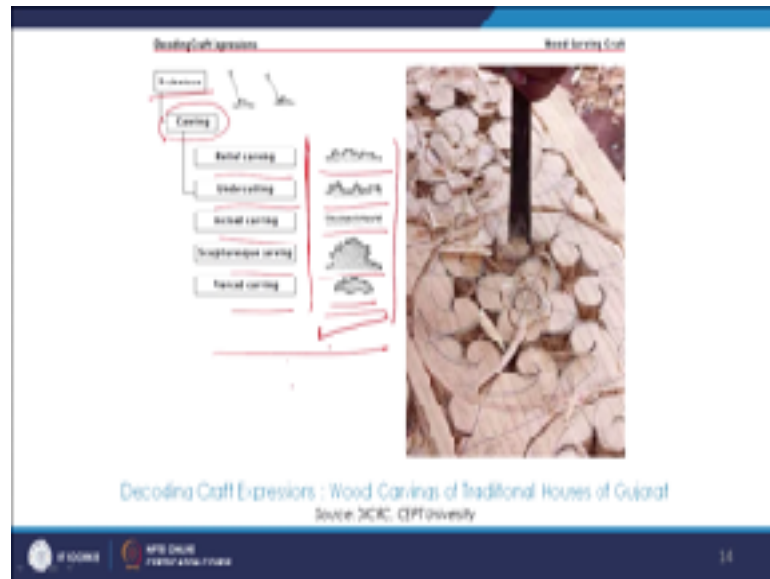


If we try to analyse the material we can further break it down. So, when we talk about material analysis and since we are talking about the traditional houses of Gujarat and wood carvings of course the material being discussed is wood.

Now, within wood also there are different kinds of woods which are available there are different kinds of wood carvings that a particular kind of wood allows and then there are different kinds of regional variations within different regions of Gujarat there would be different kinds of carving that one would see. Again all of this is also a method of decoding you know to understand eventually the interior architecture created and the building crafts integrated to also understand you know where the wood comes from, what are the regional variations, why is a particular kind of wood used in that interior architecture construction and what kind of carving and technique that particular kind of material supports.

So, until and unless these kinds of researches are done and the entire system is put into place to decode the building and expressions and crafts to understand the details and then integrities it would become very difficult. So, systems play a very crucial role in understanding what one is trying to study.

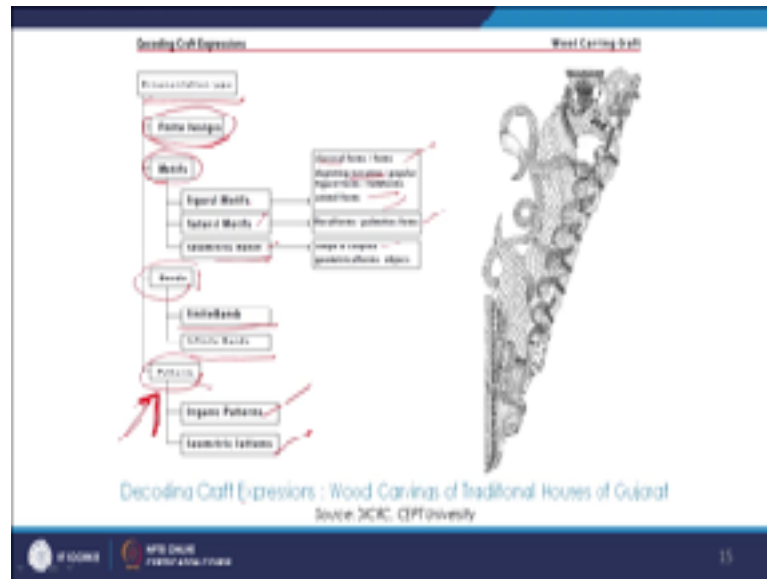
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So, again seeing the technique and the technique being discussed carving and within carving these are the 5 techniques that have been mentioned. So, there is relief carving, there is undercutting, there is incise carving, sculptures carving and pierced carving.

So, because the system allows to decode the making into final details like this and it also generates a huge repository. Its very important to document these kinds of details and understand them and also try to see how the making eventually impacts the creation of interior architecture, whether it is a furniture or a building. So, it is very important to see what are the in between steps which are leading to the final tangible output.

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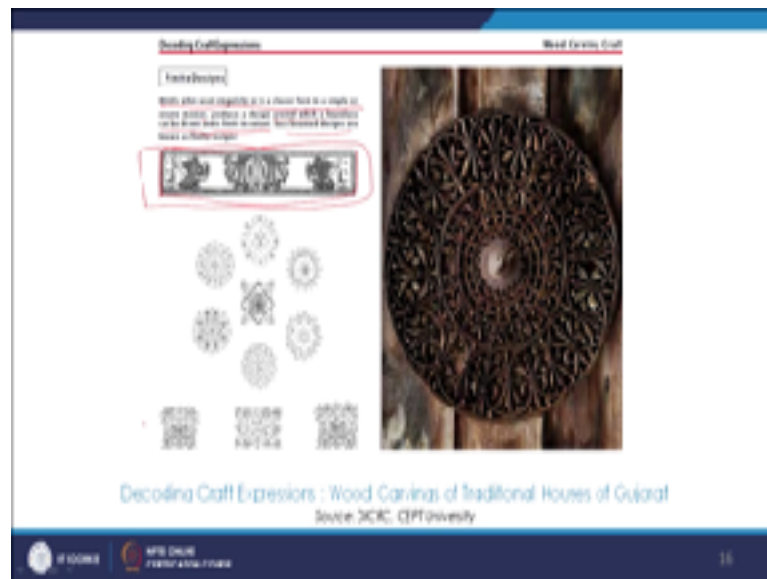


Now, talking about the ornamentation type so, we are still discussing varied kinds of analysis and here we are talking about ornamentation types, within ornamentation there are finite designs which are seen that we will see later and then the different kinds of motives, there are bands, there are patterns within these also there different kinds of classifications. So, like for motifs we could see figural motifs, natural motifs, there are geometric motifs within these also they could be further classification like simple and complex naturally it could be floral and pelmet forms and within figural also they could be like different kinds of sub classifications like; narrative, classical, folk.

So, this itself is again a system a system of classification, a system of organization, a system of collection, a system of studying that gives the overall structure to the research that is being done or the making which is being carried out. So, again if we talk about bands there are finite bands, there are infinite bands and we see different kinds of patterns when we talk about craft and interior architecture of course there are motifs which are repeated or not repeated and by virtue of different movements and different ways of creation, patterns are generated.

So, there could be organic patterns, there could be geometric patterns. So, all of it again is a system that enables us to decode the craft expressions, to decode a building and to draw interrelationships between the two.

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So, we were talking about finite designs in the previous slide and this has been explained here by DICRC and this is also largely the work which is done in the book *Naksh*, Its author is J Thakkar and he saying that motifs when you singularly or in cluster form in simple or ornate manner produce the design around which a boundary can be drawn and is infinite in extent such bounded designs are known as finite designs. So, if we talk in terms of Indian narratology also these could be called as framing devices and then this is a sort of a boundary which is formed outside the motifs and they are contained within it. So, even those kinds of designs could be decoded using this kind of a system and this kind of an identification tools. Talking about motifs, So, figural motifs.

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We see here all the kinds of figurines when we are talking about natural motifs. So, like different kinds of flowers and there are different configurations within it. In fact, it is very interesting that the natural motifs could be out of memory and perception and what one sees next to them in their surroundings and then they are translated to the interior architecture or another craft object.

When we see geometric motifs over here which has certain kind of form and geometry and it can be decoded into different kinds of form understanding and again this is one template that shows different kinds of motifs which have been analysed in these a traditional houses of Gujarat and all kinds, there are bird motifs, there are flower motifs and there are figurines and all of these can be also taken in a more elaborate manner to understand the way of life and to understand the meanings and the reasons why they have been put here on interior architecture or a piece of furniture or an object or maybe just on a surface.

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These are few motifs that we saw in some traditional wood houses of Uttarakhand. So, here again we see lot of floral motifs we say sorry figural motifs we see lot of natural floral motifs over here and you also see some geometrical motifs which have certain form we try to make this section you know the cross section will also give us the details. So, again all these kinds of different motifs they have been seen.

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This is one picture of the façade and here you know we see all these motifs this is like a floral motif and here this is Lord Ganesha, this is Lord Hanuman and then we see lot of Brahma kamala over here this motif over here we see lot of natural floral motifs over here.

So, also few geometric motifs so all of these if we have a system in place a system of classification, organisation system of understanding we could then subdivide this facade into different kinds of motifs and try to understand how they are created and what they portray.

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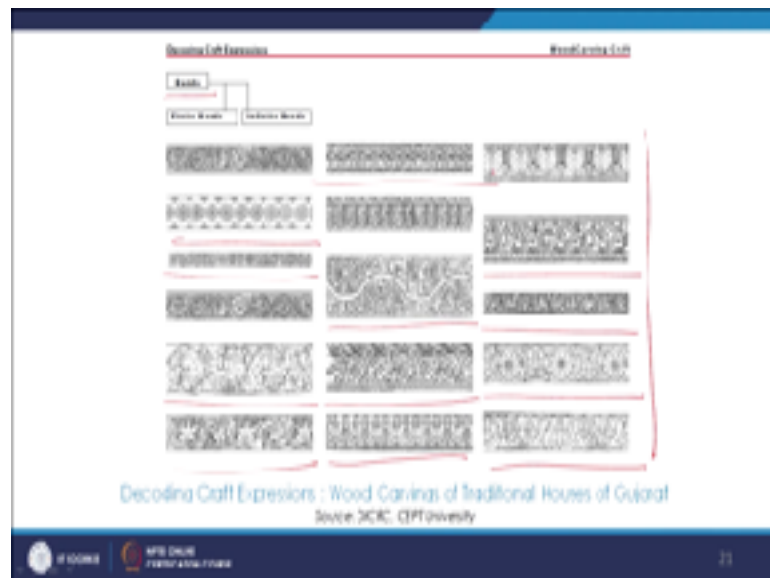


Here at the surface when we see the Aepan paintings inside the house the facade of which we just show we again saw see lot of motifs and within this also there is an organising principle and a system, you know the outer band and then the inner band and then the central *Jeev Maitrika*; the 4 gods and goddesses and then we see this over here, the details.

So, you know again there is also a sort of a system in place why they are put at a certain eye level. So, all these kinds of expressions in knowledge could be decoded if we have that kind of a system in place which allows us to question these things understand the

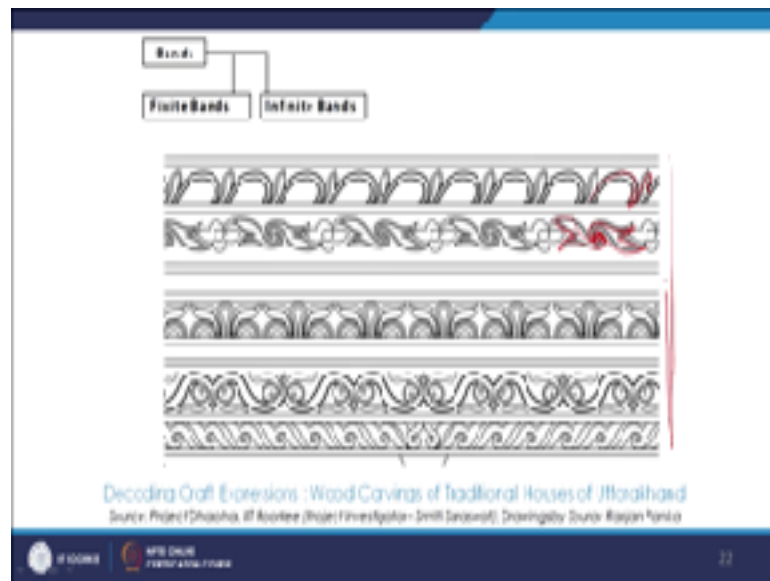
intuitive methods also the way it was done by the community and over a huge span of time passed on from one generation to another.

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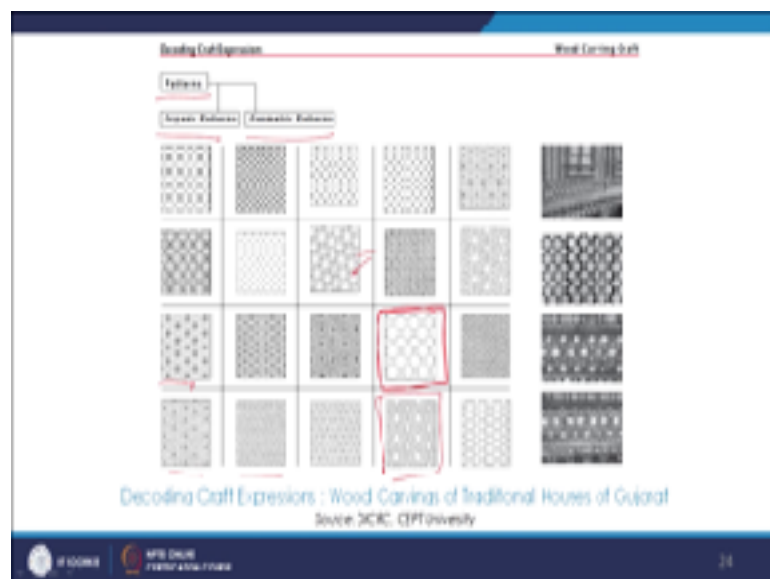
Some more examples when we see bands, so finite bands and infinite bands and when we see lots of bands and the *Bael* motifs and the designs that we see in the carvings, different kinds of curves, the different kinds of thickness is different kinds of leaves all of these different kinds of lines. So, these are varied bands that can be seen and not just in Gujarat lot of other places like we just saw in Uttarakhand also. So, there are some common organising principles and the system are working the material and technique definitely varies, the regional variations are in place, but there are few very common guiding principles and systems that have been put in place.

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Again some bands that we see over here in the kind of motifs which are seen. So, we see these bands again these some bands are also seen on the threshold in the Aepan paintings again they also have meanings the outer line, the inner one and so on. So, there is definitely a system in place which helps us understand decoding these craft expressions within the interior architecture milieu.

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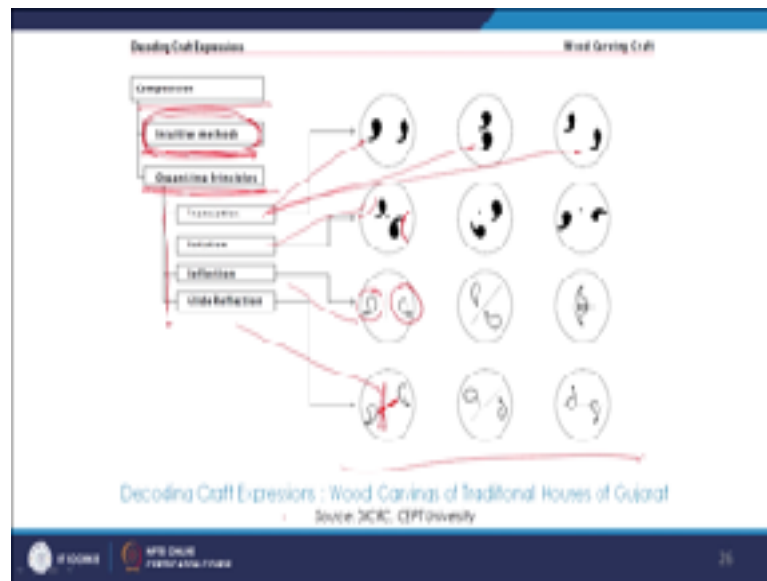
talking about some more patterns; organic patterns and geometric patterns. So, here we see lot of patterns there is a geometry and you know somewhere we see the diagonal lines, somewhere we see the hexagons, somewhere we see the triangles and there is a sort of a pattern which is generated by repetition or by rhythm or the way the composition is done. So, we see lot of geometric motifs over here and there are lot of random motifs very organic and sporadic motifs they are also seen at lot of places in lot of carvings.

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Again some more examples here we see both kinds of patterns which are there is geometry in a pattern, there is organic pattern and all these different kinds of examples that can be seen in all the varied kinds of wooden carving.

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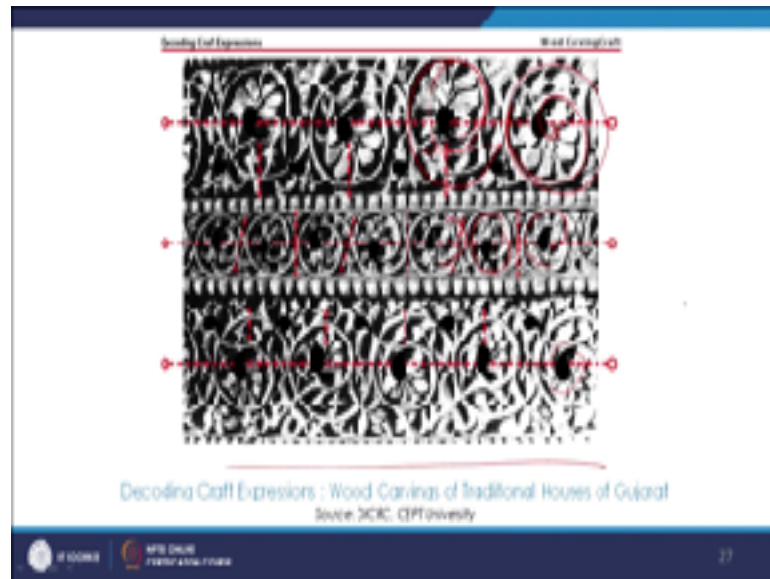


Also coming to the composition this I found very interesting which is been described in the book Naksh and when we talk about composition like I have mentioned in one of the previous slides, the methods could be very intuitive, whether composition is not very orderly, but it something which comes out of very intuition and then overall the composition makes sense, the intuition is so strong and it comes from the practice and empirical knowledge that intuitively also if the things are put in place they generate a pattern or a composition.

Then there may be organising principles where it is not intuition which is working primarily and then the organising principles here they have been described as translation, rotation, reflection and glide reflection. So, here the examples of translation and this is rotation this way and that way, this is reflection in one of the motifs we saw in the previous slides and then there is this glide reflection, where you know there is this gliding distance.

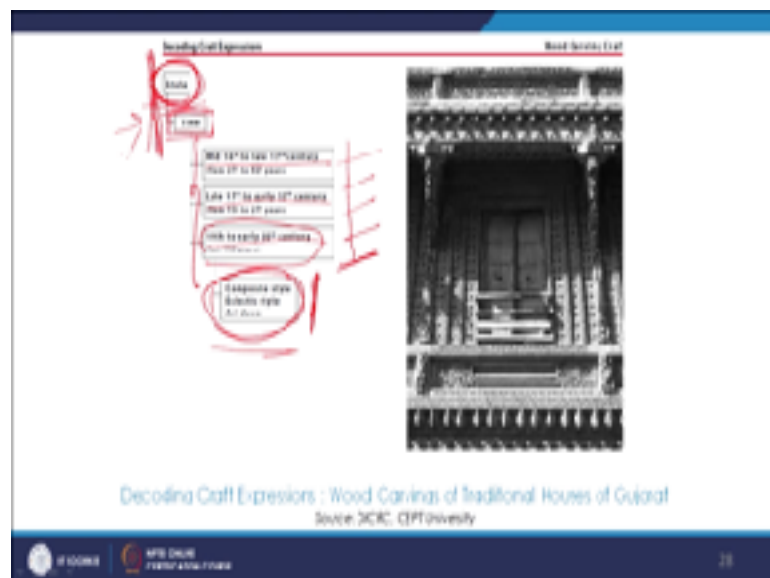
So, these different kinds of organising principles one could see through which the expressions could be decoded and understood. This is again the example from the previous slide,

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what kind of organising principles are seen here. So, these kind of systems in place help us analyse the focus area in a very elaborate in a very rigorous manner and where there is very few chances of ambiguity in anomaly and it also allows us to be getting deep into the subject and trying to understand the different aspects of it.

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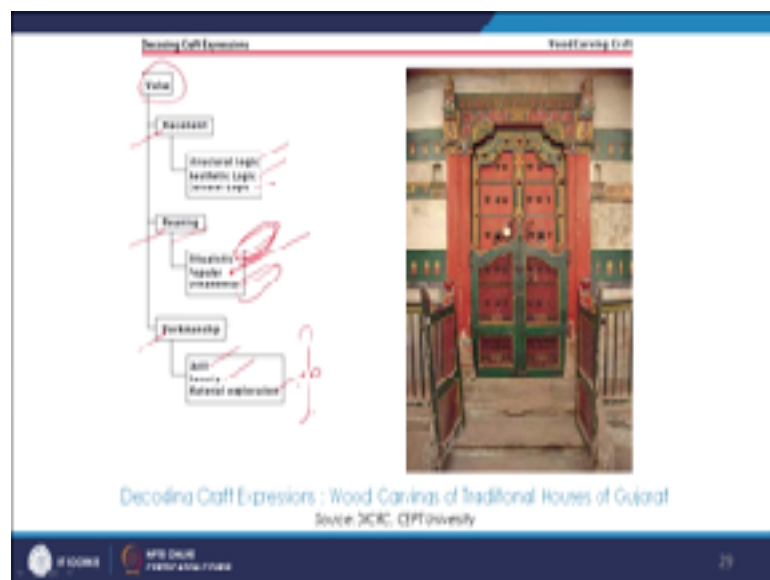


We could also decode a building craft and an interior architecture in terms of style.

And when we talk about style it is very important that we take note of the time or the era in which it was done or made. So, you know there are different timelines and the buildings could be studied because every era would have a different narrative of the society, politics, economics, workmanship and all different kinds of details. So, here like this one there's also a description of style which is associated with it and that is how we try to talk about different styles associated with the different timeline.

So, when is it art deco when is it art nouveau, when do we see an eclectic style, when is it modern, postmodern. So, all the styles according to the different timeline that they follow they have a different style and the time and place has a lot to do with the evolution of styles because every time period every era has different kinds of lifestyles and different kinds of activity is happening which reflect in your dressing, food and architecture and this again itself is a very crucial system of classification where one tries to understand the craft expressions and the interior architecture and when we talk about value; it is discussed in terms of placement, meaning, workmanship.

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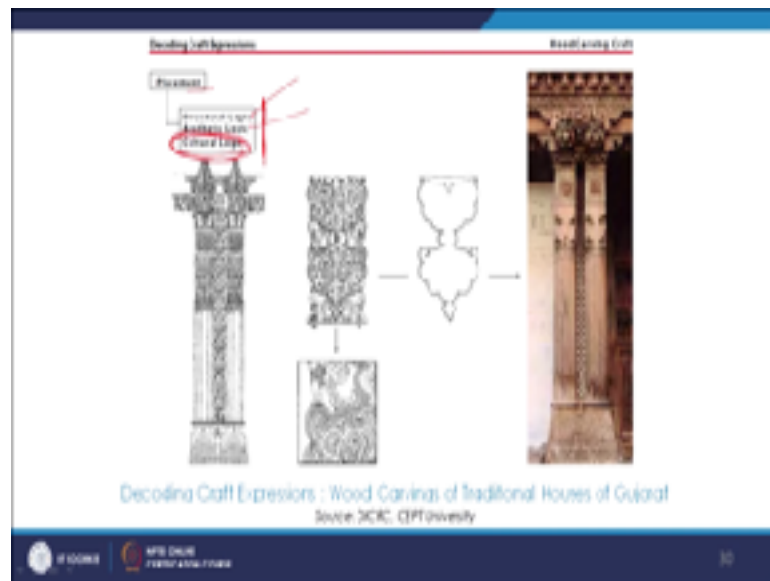


So, when we talk about placement it has a structural logic, aesthetic logic, cultural logic, why that particular craft is placed and meaning whether its ritualistic, its popular or it just ornamental. Somebody is doing it because it is a part of their family tradition ritual or it is just for the decoration or being simply popular and commonly known by the

masses. Then workmanship we talk about; skill, density, material exploration and we try to understand all the details of joinery and technique and everything.

So, that's another way of decoding the craft expressions and trying to understand the wood carving craft. Here again,

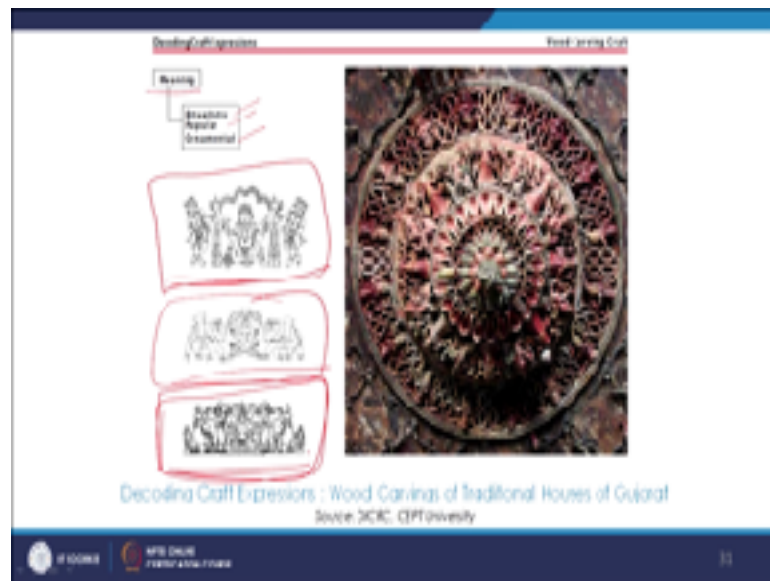
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when we talk about placement and keeping this in mind all of these different carvings and the elements could be studied you know where does the structure where at the structure play the most important role, when is it about aesthetics and when it is only to do with the culture and it is been put up as connotation to your culture and way of life and ethos.

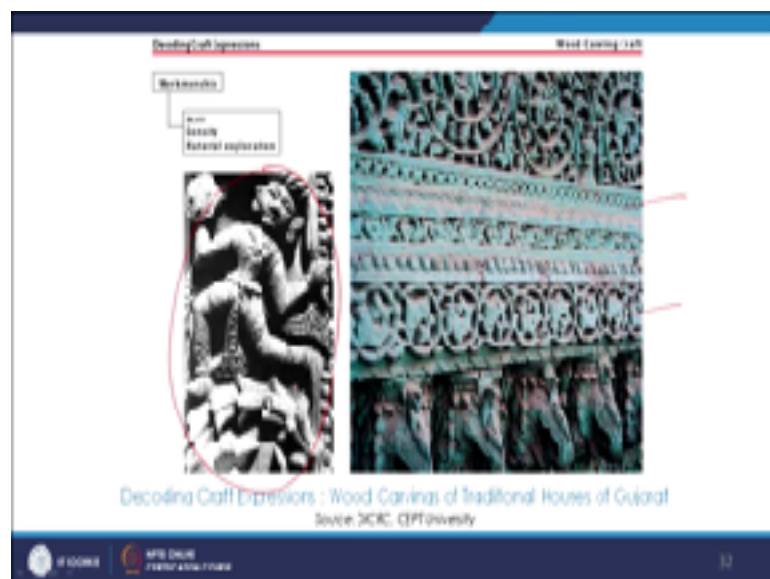
So, all those kinds of different observations one would make one would make based on these systems in place.

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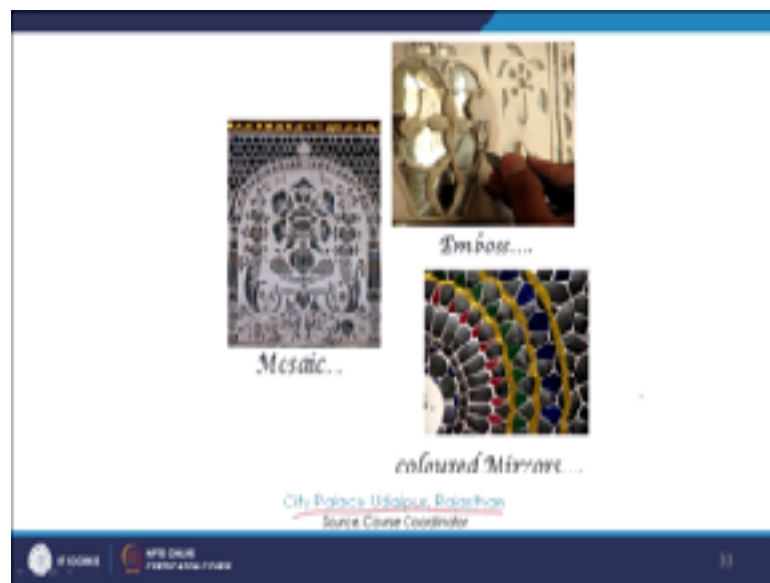
Now talking about the meaning, so again ritualistic, popular, ornamental that we just discussed in the previous slide; So, we see lot of different meanings which are associated with different motifs and the different patterns that we see and these are all stories from day to day life religion, society, politics and they are sort of reflected through the medium of wood craft.

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Workmanship, now a workmanship would instantly make us understand you know that where there is just a relief work where it is so intricate and very deeply done and which is done with dexterity over a long period of time and which is done very quickly and hastily. So, all the difference it makes what kind of workmanship has been done and we see here a very elaborate panel over here we see a very elaborate panel which has been done with lot of love and dexterity.

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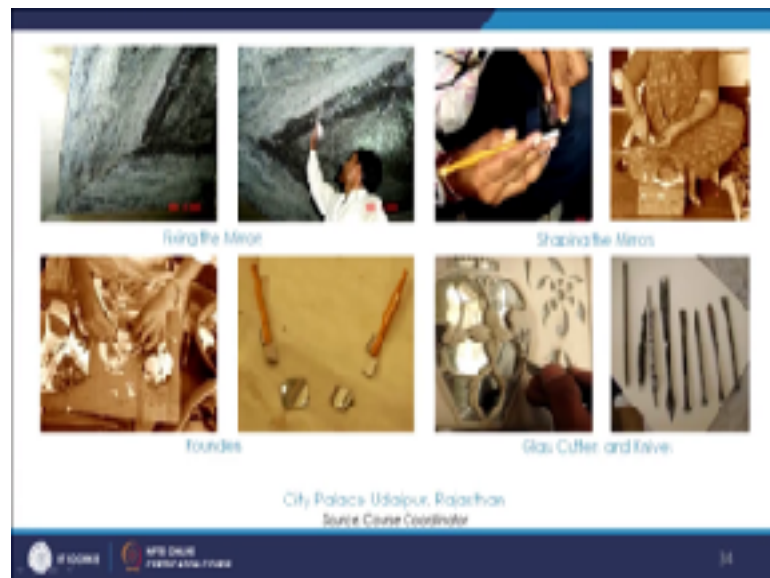


I would like to discuss a bit about city palace Udaipur and then the mirror craft and then we will see sudden systems in place when we talk about this craft form and starting from this slide here again there is a sort of a system of classification of you know the types, what kind of mirror craft it is; so, here we see emboss, this is a mosaic which is very finer and this is like where more extruded and bulbous and here we see a sort of a flat surface which has the coloured mirrors and it creates a pattern. So, these are the different kinds of mirror work that we see in city palace Udaipur and generally also in the mirror craft that we see in Rajasthan and these are 3 primary once there could be more.

So, again when we are talking about systems we just saw over few slides you know we just few minutes ago it talks about majorly a system of understanding, analysis identification, classification. Here we are trying to understand the system of working that also is a sort of an out shoot of the previous system that we were discussing because

when we put that in place we try also try to understand the step by step process, we were talking about the process in that system.

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So, this is a system of working and this is a sort of a process that has been adopted you know from fixing the mirrors, shaping the mirrors, cutting them, using the rounders and then using the technique of you know emboss or mosaic or different things. So, one would shape the mirrors by cutting them appropriately by using different tools than one would fix them and they would be plaster in POP or lime and then there are different kinds of forms and craft that is created.

Ok, So, this is a small discussion on how this lime plaster that we saw you know with which mirror work done is prepared and this is quite important. So, I would like to just explain this.

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So, nominal lime plaster which is called is *Chuna* or *Chunam*, here what happens the first layer it was created over a masonry surface, this takes at least a week to set and a month or more to harden then a cartoon was placed on it and the design was punctuated through needle or pin.

Often dipped in black ink so, this would give as the sort of design that is required, cartoon is a full size dummy of the designer or art work it as line separating each color zone drawn on a stiffened cloth or paper or paper pulp covered cloth similar technique creating and using cartoons was used by all art masters in Europe through ages. So, this was a significant technique and this is how the designs were made and further because we have just done the first layer let us see what happens next.

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The cartoon would then be placed on a flat surface, and pieces of mirror were cut, ground to match the geometry of the drawn shape, and placed on the cartoon. The pieces are often temporarily fixed by washable gum to prevent accidental displacement.

As soon as an area large enough for a day or two of execution is ready, a second coat is applied. So, this is again a system a proper technique a process starting from the first layer then preparing the cartoons then temporarily fixing mirror, after that preparing the second coat.

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So, after one week of reasonable setting of first layer a second thin coat of 3 to 6 mm is applied this coat was called LAIP or VAJRA-LAIP. It contains pure lime source from riverbed *shank* and *kauries* as against the sea shore one.

River shank are freshwater products and they do not contain magnesium which is the chief deterrent in setting to the lime where added many other herbs and chemicals, some of doubtful qualities or mythical values, but chiefly gums which were natural tree and plant exudates the *Bili* tree products, *Sares*, which is a animal skin bone based proteins gum there were also used. Egg whites were also added sugar in the form of refined jaggery which is called as *Gudia Shakkar* or *Khandsari* and jaggery were also added.

Starches were not used in any matter for fear of algae growth. The second coat being very thin would set in a couple of days on evaporation of excess water, it was during this period the green period, the wet plaster and the mirror pieces were fixed by pressing slightly. So, when we talk about these 3 slides, it clearly talks about the entire process how the plaster was made in different coats, what were the materials used, what was the science behind using or not using a particular ingredient in it and you know how much time also was taken for each stage to be successfully done.

So, this system and the kind of metrics that we create for us helps us delve into the details and try to extract more and learn from it and try to apply it.

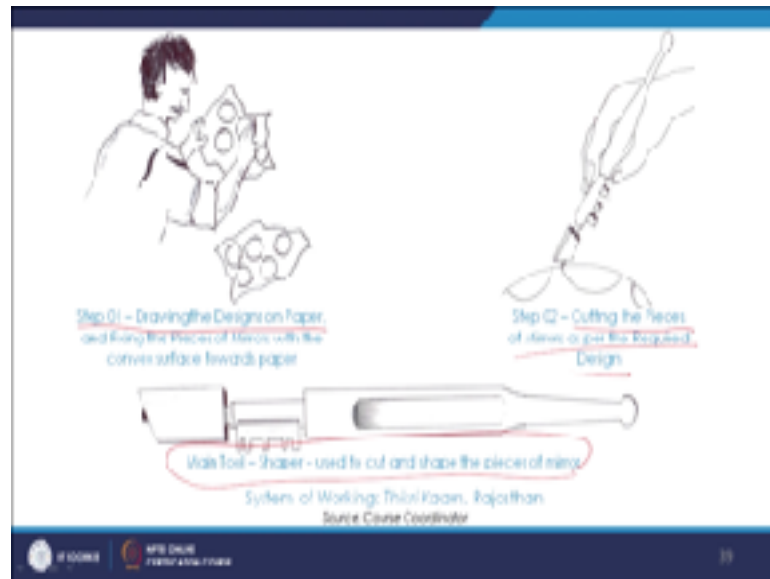
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When I am talking about system of working and the design process there is also a system that we see in the plan you know. This is a workshop in Udaipur and the craft which is done here is a mirror craft. So, where is the storage, where is the wash area, there is zone one which is mostly display and office and then zone 2 is for drawing and cutting the glass, zone 3 circulation extended work area of a drawing on paper and cutting. And this zone 4 is mostly preparing the adhesive, fixing the glass and drawing in the sun and you know how each zone is used by different stakeholders and how the work is done.

So, there is also system of work, there is a system of hierarchy, when we see the different craft persons involved in a particular process and making. So, all these systems are ways of decoding and trying to understand these craft forms and practices and interior architecture.

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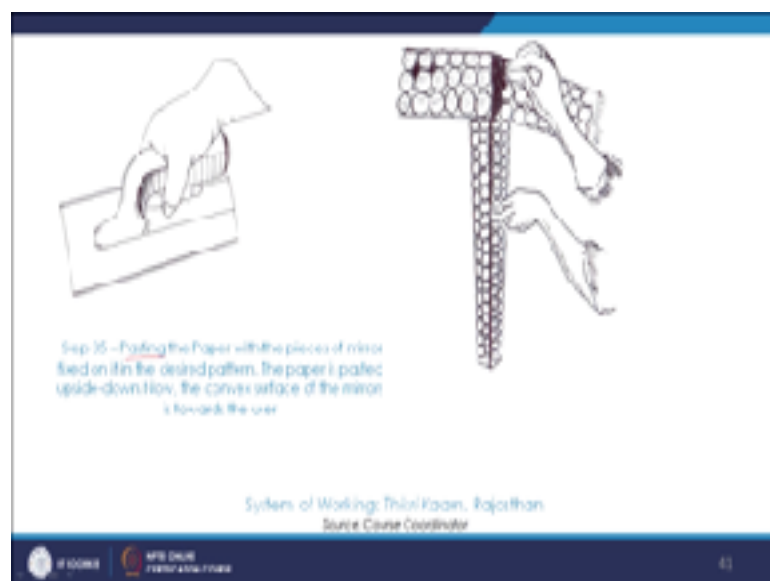
These are some illustrations which are done by Harsh, one of the students at IIT Roorkee and here he is as try to illustrate step by step process of creating one prototype which is a table, which is covered out of which is covered with the convex mirror you know throughout the surface.

So, step 1 the drawing the designs on the papers and cutting the pieces of mirrors as per the required design and this is the main tool shaper which is used for this purpose of cutting and shaping; Then drawing the designs on paper fixing the pieces of mirror with the convex surface towards paper, cutting the pieces as required.

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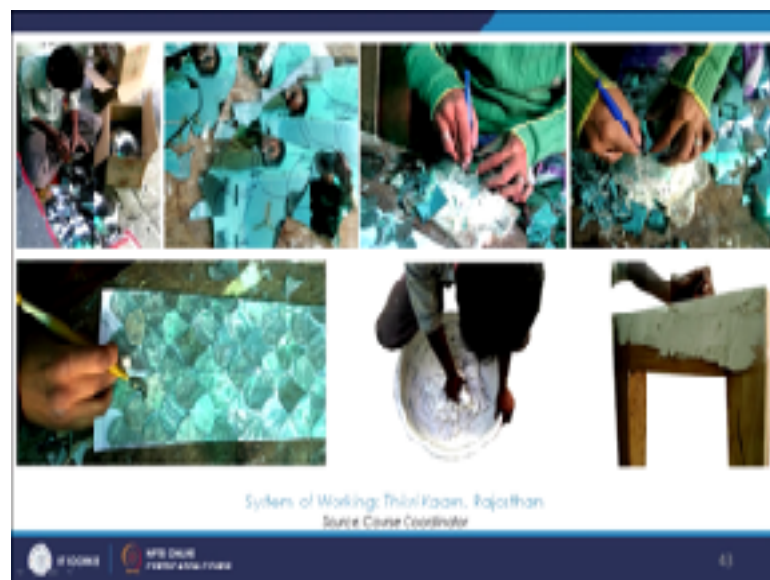
Pasting the paper with pieces of mirror fixed on it in the desired pattern here you know this is a prototype and this is how the mirror pieces have been put in place.

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And removing the paper slowly to get the full faces of the mirror and touching up with adhesive. So, this is the final prototype we can see some images also know.

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Images of the entire process, how it is done till this final one. So again this is also a system in place you know how step by step with the process and with which stakeholder how much time being given to that particular stage and with what tools and methods be accomplished prototype is achieved towards the end.

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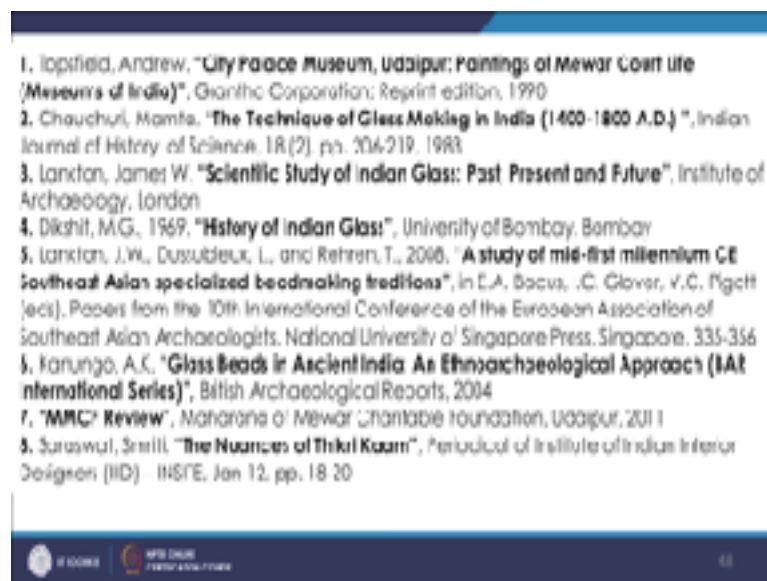


And here we are talking about ordering, order of painting and arch face and here also we see a system in place.

In this technique of wall painting known as ALA GILA or ARAYISH, walls are covered with a centimeter thick layer of mortar from very fine clay and was allowed to dry. It was followed by two consecutive layers with third layer consisting of fine pieces of HESSIAN. First layer consists of lime and gravels or brick dust. Second layer of lime and marble dust. Final layer filtered lime dust mix with butter milk and jaggery and the design was drawn on wet wall using stencil or khaka.

The final polish was given by a coat of coconut oil and that is how you begin from here and tell here you get this painting on the face of the arch. So, this is again a system and a process trying to understand the postures while sitting the tools which are used starting from step one to step last, what are the different stages, what kind of materials, what is the science behind them, how much time, what is the tool being used to do it.

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So, this entire system of decoding helps us understand starting from the scratch to the culmination of the tangible output. We will talk about craft and technology in interior architecture transformation through time. Let us see some of the references through we have been talking about city palace museum Udaipur and glass making, Arayish that we just saw; some more references.

Thank you.