

Interior Design
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Lecture - 20
Interior Design: Summary and Discourse of week 4

Namaste. Hello everyone. Welcome to my NPTEL course on interior design. This entire week, we had very crucial discussions because we focused on different materials. The knowledge and application of materials are very important for a discipline and industry like interior design. So, I'm trying to summarize all the discussions we had so far, concentrating on different kinds of materials.

I'll do it in a very overview manner since we already had elaborate discussions. We talked about timber, then we talked about stone, tiles, and paints. We also talked about a lot of variations within these. We saw some applications, technical specifications, construction details, laying methods, and some case studies. So, all of that I am just trying to give an overview of, along with some references.

So, let's begin the summary focusing on materials, and I'm just starting with timber. First of all, we tried to understand the anatomy of wood. Even before trying to understand commercially timber as a material, its applications, or byproducts, we first tried to understand the anatomy of wood. What is hardwood? What is sapwood?

What does the cross section of a tree trunk look like? And then, what is hardwood? What is softwood? What is the difference when we try to understand their structure and anatomy? Because hardwood and softwood have some differences, of course.

And then, continuing with this, we try to understand what the finish of wood actually depends on. So, what is the type of timber? What is the quality? Which portion? Like we were talking about the heartwood and sapwood, and which portion of the tree does it come from?

The type of cuts we employ as part of our design and execution, different kinds of sections of those cuts. And if there are some anatomical peculiarities like knots and veins and other aspects, you know, when we look through this lens and zoom in to examine the timber. It's a very fascinating way of understanding material, you know,

rather than just trying to see its mechanical, physical, or chemical properties—just looking at it anatomically, like we see the human body in terms of its anatomy: what are the varied components, what are the sections, how all the parts come together, how the body functions. So, Interior architecture does offer these fascinating opportunities, trying to have these transdisciplinary inquiries and then understanding what the direct implications are on interior design or interior spaces.

So we have to understand, of course, the properties also, which will help us decide what kind of timber to choose and where its performance gets impacted because of certain property-related important aspects. So whether there is a presence of certain chemicals, just like the aliphatic compounds or resinous substances, and that would And what are the environmental conditions where these woods grow? Where are we procuring them? Are they seasoned well?

Is there moisture content within it? Have we dried it well? And then, you know, what is the texture like? What kind of feel, tactility, or texture is required for our project? And hence, we go with that selection.

Also, the kind of grain and pattern that would give a certain appearance, look, or aesthetic aspect, you know, to the project or the product where they are utilized. And also, what is the economics behind procuring and applying that timber, including the maintenance and operational aspects? And then, what is the time available for processing? What are the stages of processing that have been incorporated? And what are the tools and technology that are available while working on these different kinds of woods?

And what are we specifically employing for the projects that we are working on as designers? What is the age of the wood that we are using for the project? Too old, too young? And then how does it impact on the appearance and the performance of timber? Moisture content, I was talking about seasoning.

And then what is the intended use for which we are using it? And hence, how do I decide whether I use a softwood or a hardwood? Even within that, which softwood or which hardwood of what kind am I using for, you know? interior portion or exterior portion for structure or for furniture and so on. So these are some images that show the

different kinds of grains and patterns that one comes across looking at this plethora of types of woods which are available.

And, you know, we could use them also as part of design vocabulary. And it's also important to understand the technical aspects, which we tried to do when we focused on the lecture, you know, where we extensively talked about the woods and There are different types of colors in which we could find woods. And there is this natural color palette that a designer could achieve merely by selecting the kinds of woods because they come in this variety and it's so diverse. So we see over here of course there is a because of the screen and because of the digital translation there may be slight deviation from the original color pigment and of course within these also since it's a natural timber there may be variations within each patch also.

But largely representative of what these timbers, you know, showcase in terms of color. This is what we see. So there is birch, and there is maple. And then within these also, sometimes there is, you know, variety. There is yellow birch, and there may be white birch.

And then, you know, cherries—this reddish tint. We have ebony, cocoa, and mahogany. So, Some lighter shades to some darker shades, and some shades like this one can just pick and choose. We tried to understand types of wood also.

So there are softwoods, such as cedar, fir, and pine. There are also hardwoods like ash, birch, cherry, mahogany, and then also teak and walnut. Walnut being one of the hardest woods. We also saw byproducts of the timber industry. And, you know, we talked about plywood, veneer, laminate, lumber, and, you know, MDF.

We talked about all of these and why they are used these days, and what the advantages and disadvantages of each kind of timber are, and all of that. So this was like an overview and overview. Of course, it will come only after a lot of experience and working on site, touching the material, using it, and trying to learn through the method of cutting—whether you want to cut along the grain or across the grain. So cutting along the grain is always more advisable to maintain strength. So all of these, theoretically speaking, give us some awareness, but there has to be a practical understanding that will help us understand these materials much better.

And then we can utilize them to their full potential and execute them in the best way possible. We also tried to understand the price range in which these timbers come, including some local timbers available in India and some imported timbers, and what the different kinds of prices are per meter cube. We tried to have a little understanding of that. Then we had a lot of discussion on stone, which is a very widely used material in most projects. And we saw some case studies.

So there was this stone house in Rajasthan that we discussed extensively. What we discussed included the origin of stone, the types of stone, certain properties, and certain historical ways in which stone has been used. We expanded on that later, and some of those dimensions of utilizing stone as a construction material within the interior architecture industry—we could definitely have a deeper understanding of that through the case studies we had seen. So this was a studio exercise, and we discussed this house. So this was a studio exercise and we discussed this house.

We started with the layout and you know all the details from procuring stone and then you know the kind of opening details, chimney details, flooring etc. And you know we saw some sections also. So there was this comprehensive inventory that was created on that project which was discussed in detail. We also saw this very interesting project Krushi Bhavan Orissa and you will see it repeated a few times during my discussions. I like it very much focusing on different aspects of interior design.

This is done by Studio Lotus and we tried to understand the usage of stone and The local stones available in Orissa, kondalite, you know, and what are the specific unique details of this project? How did they create an ecosystem by incorporating and involving different stakeholders, including the artisans, makers and craftspersons, customized finishes, textures? And very interesting facade, which is inspired from the famous Ikkat weave that we see in the region. So, you know, respecting the culture and the identity of that part of the country and then reflecting it through the built form.

We saw some very experimental explorations focusing on stone as a material. These were findings from a workshop that was conducted at CEPT. I was a part of organizing team as well as a participant when this was done. And this was very interesting. So, you know, getting inspired from the human spinal cord and then trying to understand how the interlocking and joinery happens between these different parts.

And then if we sort of use stone, you know, the leftover pieces of stone from the industry and capitalizing on the attribute of modularity, if we use this human anatomy and interlocking system and then try to translate it to these modular pieces of stone and try to design some kind of a system where through permutation and combination of these modules and different arrangements, we could achieve space making elements or different functions within an interior architecture project. It could be a sculptural element, it could be a shelving or storage system, maybe a partitioning system, even a parapet. So also we focused on the kind of joinery that was required. And while working on ground with industry, when this prototype was produced on human scale, what were some iterations and revisions we had to do, keeping in mind the weight of the stone and also the concerns regarding production.

You know, it's longevity and that the joinery doesn't fall apart and so on. So this was very, very interesting. This is another exploration that we saw in stone from the same workshop. And here we were trying to create a nonlinear surface. Very interesting, quite aesthetic, very fluid and curved surface.

And, you know, also utilizing techniques like inlay and this natural contrast achieved through different kinds of stones and then achieving that color contrast and putting the pieces together to also get an impression of, you know, this tree over here that we see, the tree of life. And then what was the joinery like? The first course, how it was placed and on that the second course, what is this interlocking joinery that we see? So it's like an entire portfolio with all the working drawings and the idea and the initial impression along with the joinery details and again trying to utilize the idea of circularity and recycling, reuse along with attributes of modularity, portability, foldability etc. These were some of the kinds of keywords which were put together for this workshop and a very, very enriching training session.

So that was an interesting prototype. This one was also produced, and we saw the details of this prototype as well. So in production, of course, we saw one arrangement, but there is a possibility of permutation and combination, rearranging these modules, and then reassigning a function altogether. So, continuing in the same spirit and the same brief that we saw in the last two slides, this is something that was done—very, very interesting.

Here also, some details like inlay were introduced, and this was done with the craftspersons, again celebrating this ecosystem of bringing diverse stakeholders together who know the material like the back of their hand and then try to do something very interesting and experimental out of it. This is again from that workshop, and this was also interesting. So there was one module—module 2, 3, 4, and 5—and then the different assembly, trying to create interesting uses, one of which was, you know, the partition screens and different configurations of that. This was another interesting case study where stone was extensively explored and utilized, keeping in mind the idea of modularity.

This is from the Indo-German project done by IIT Roorkee and RWTH Aachen University in Germany. And this one particular essay was developed by Prashant, who is a PhD scholar with us. We also developed the human-scale prototype out of it. So, it was properly fabricated. So there were these pieces of stones again, and, you know, these are the metal sections, and how the joinery was designed to put together these sections, and then, you know, a permutation and combination of these modules was used to create enclosures and different kinds of prototypes on a human scale.

Then we talked about tiles. Tiles are very important materials used extensively in the interior design industry and all kinds of projects to achieve various scales and spaces. So we started to understand the different kinds of tiles available in the market, the treatments we give to those tiles, and how we use them for covering roofs, floors, walls, showers, tabletops, etc. Then we also discussed some considerations for flooring tiles. What is abrasion resistance?

How do we achieve balanced cuts? What is a spacer? What is grout? How do we lay the tiles? And we had a lot of discussion on this.

How do we make a drawing to install tiles? And how do we account for faucet openings or any existing details that require tile cutting, as well as tools like a squeegee and others. Then we also explored the most common tile installation designs, such as parallel installation, the diagonal pattern, the beautiful herringbone pattern, and other methods using inset tiles. We also reviewed these very interesting technical specifications. This is a tile company, and this is for flooring tiles.

And, you know, the inventories and charts and catalogs like these help us understand how there are certain, you know, details that are industry preferred and how we can be industry ready, you know, while we are working with these materials on with these kinds of details. So the entire system in place, starting with the name of the tile, the size and inches, number of tiles which are required, its usage, additional remarks, also with the material cost, you know, per square feet. So this is sort of a matrix that helps us. It's a complete catalog in that sense. Then we moved on to understand paints, which is also a very, very important material in the entire interior design industry gamut.

We tried to understand the paint industry scenario, like the overall picture in India. We started with some popular brands, you know, the ones are listed over here. And then we took like one case study specifically and through Asian paints we tried to understand the details about paints and finishes and textures. So what are exterior textures and how can they help an architect and how they can benefit a client? And there is this possibility of achieving a very unique premium look in our interior spaces through these textures and finishes and how we can use them, you know, for our advantage to enhance spaces and create a very nice design vocabulary.

All that we tried to understand and we had elaborate discussion on that and how do the clients get benefited from these textures and, you know, not just providing unique appearance or hiding surface undulations. They also provide added protection from weathering and then, you know, add life to your finishes. And then in terms of understanding the market and through this case study of Asian paints, we understood also what are the different kinds of texture ranges possible, how they are applied, what is the technique and skill which is required or employed to apply. And there are like different kinds of techniques. patterns which are available and of course they keep doing a lot of research and there may be more ranges and more designs and patterns added to what you are seeing on the screen.

But to understand the overview, And then continuing with the same case study again, what is the process of application? Why is a top coat used? How does it help us in protecting from fungi and algae? And all of that we try to understand in detail.

Very, very interesting and, you know, useful sets of information like this. So, which kind of texture is applied through which tool and what is the film thickness starting with thin to, you know, high film to a very thin. thin film what are the different kinds of

finishes that you could achieve in that process of applying it through different tools and in different customized ways also of course they come in a very very defined pattern but they could be customized. And the entire industry again, starting with the interior paints to exterior and then how these finishes are also available in, you know, wood and enamel, not just for our wall surfaces. What is polyurethane?

What is melamine? Also, I added UV to that. So all of these finishes, paints and textures, we try to have a range of these. Some of the products which are available in the market are And how can we use them for our advantage?

Some of the products may not be best recommended for responsible designers if the client is not too particular about budget and has some money to spare. We talked a bit about how to make these finishes healthy and reduce volatile organic compounds, and why they are so important for visual aesthetics as well as the well-being of the user. So we had a discussion on that and also some discussion on tools for visualization, software simulations available as aids to us. How can we help our clients perceive and understand our concepts and designs through these renders and software simulations? In fact, there are also live store rooms where one could go and see the mixing of colors, how the entire paint process is done, and the science behind it.

So there are visualization tools available. What are these different tools that come in handy for an interior designer? They could also be explored extensively. So we are going to focus now on green interiors, which is a very interesting and crucial subject. And we will focus a bit on rating systems.

We'll see some examples. And within this entire set of protocols or methods in which the rating is done and the interiors are designated as green, there is a very important role of materials and finishes, which we just saw throughout the week, and we tried to understand the peculiar specifications, technical details, and properties associated with these materials. Some of the references that I have tried to put together. Thank you.

I'll see you next time.