Understanding Design
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Module – 07
Start of Section 5
Lecture – 41
From a concern to a palki

This story is about the challenges of designing a palanquin or palki as it is popularly called for ferrying pilgrims to hillside shrine of Vaishno Devi in Jammu.

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Many pilgrims especially the old and disabled need help to negotiate the steep uphill climb up to this shrine.

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This Vaishno Devi yatra starts from a place call Katra and on this four and a half hours long journey the porters dexterity in manoeuvering the palki through narrow alleys and slippery roads is truly amazing.

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But the palki itself the one that has been in use for so many years is anything, but sophisticated. A heavy structure made of galvanised iron pipes, usually used for water lines are welded together to form a structure. This is tied to a wooden pole which rests on the porters' shoulders, this unwieldy chair continued to be offered as a service only due

to the porters' ability to carry heavy loads, improvised solutions in emergencies and keep the passengers safe. We were approached by the government to redesign the palki.

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Our basic brief was that we had to reduce the drudgery of the porters.

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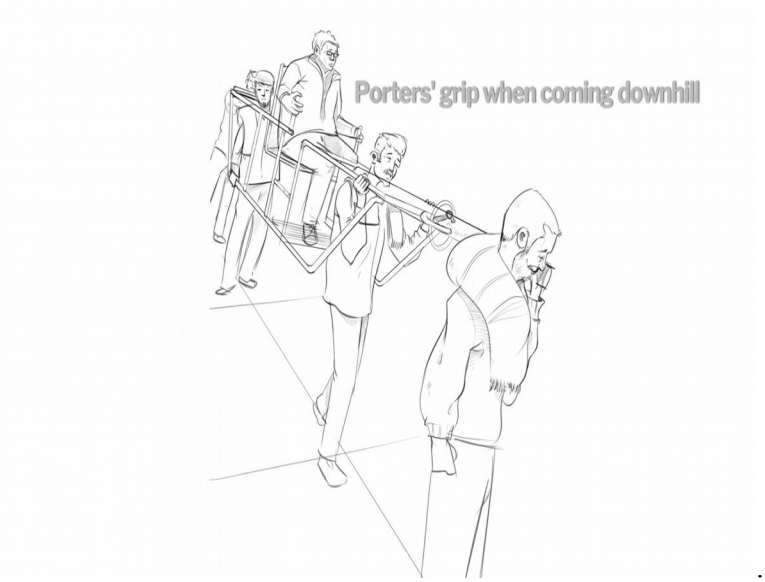

Make the palki lighter, but sturdier and more durable.

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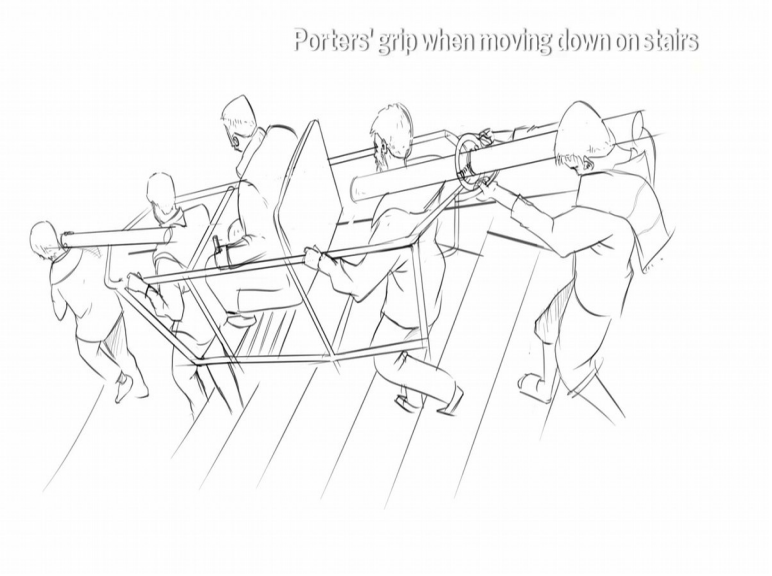

I took the resolve that I will reduce the drudgery of the porters. So, this was the championing the cause aspect we were talking about earlier. The context refers to understanding the users socio-economic and cultural and environmental conditions. Made a trip to katra for getting a firsthand experience of the journey to Vaishno Devi on a palki of course.

The trip gave us an in depth understanding of the porters need and also made us very very close and empathize with the porters. We learnt to appreciate the special requirements of the terrain by translating our ideas into actual prototypes.

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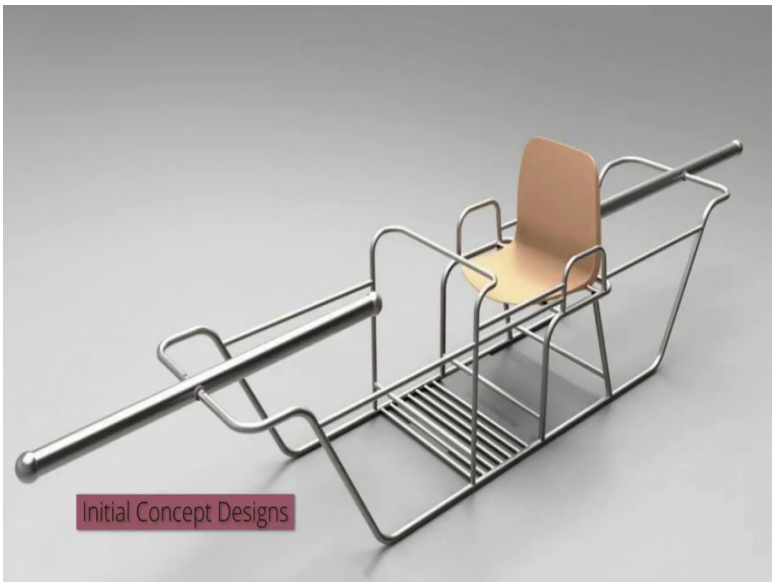

We had already crossed the first pitfall of the design death. It is not that this challenge was entirely new to us we had already designed a palki for the tourist in the Ajanta caves, but the stark dissimilarity of the two terrains told us that the Ajanta design would never work in Vaishno Devi. Now, remember we are looking at the context very closely.

Yes.

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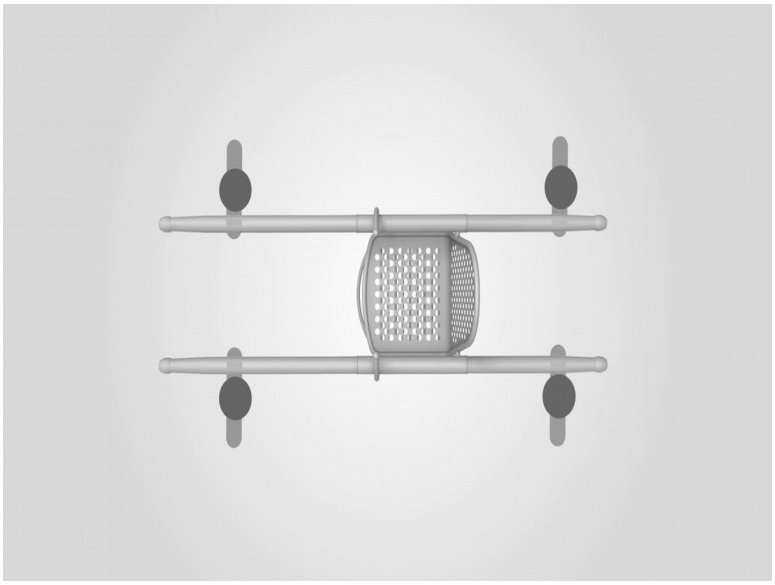

The traditional design also reflected that for Ajanta the four porters stand front and back on both sides like a square formation.

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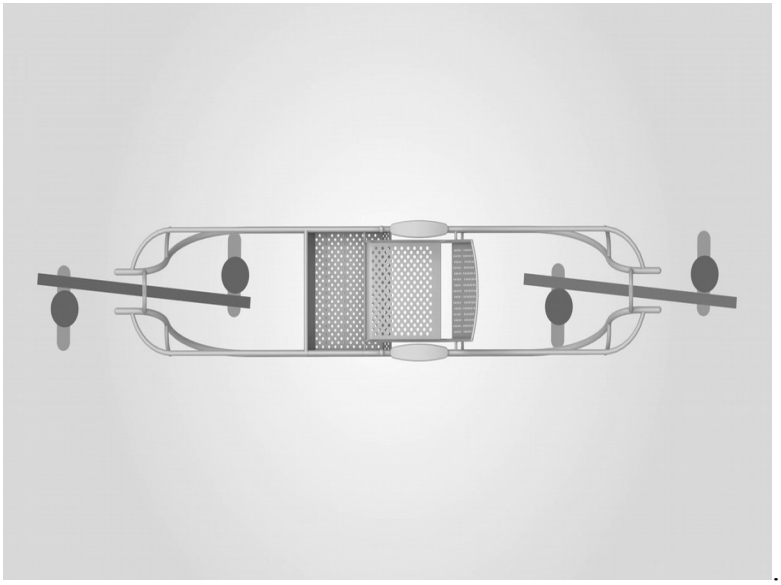

But for Vaishno Devi all for men are in single file.

Why the single file?

Just because they are very narrow alleys and very very crowded pathways with ponies and pilgrims; and hence if they are not in a single file they just cannot manoeuvre and actually take the palki forward. In fact, I must tell you this that when we tested out Ajanta palki just for checking out at Vaishno Devi.

You created the traffic jam.

Yes and then the palki did not move. So, the, but the porters are very happy to use it. So, there were using early in the morning when they was less rush and they could still, they liked the lightweight design so they were using into only for the lightweight purpose. Making such observations was critical in making us more sensitive to the social and geographical context in which our design was to make an intervention.

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But they never considered building a road?

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There was a motorable road, path of the way, but the government agreed to keep commercial vehicles off the road so that porters will not lose their livelihoods. So, the very idea behind redesigning the palki was to safeguard their means of subsistence while reducing the load on their shoulders. Interaction with users led us to the third concern which is the comprehension, which is the stage of arriving at design insights. The existing palki was heavy and easily damaged. The crude structure actually did not have

the capacity to with stand the load of the palki for a long duration of time they were good for some months, most of the time it would be engaged by an aged or physically challenged pilgrim, who boarded the palki along with a luggage.

Whenever it broke, it was welded locally, but the material itself was not suitable for welding. We visited the location several times during the design process. During each visit we refined our understanding of the porters' need. In fact, we were becoming very very emphatic to the porters' needs. We studied how the porters coordinated at bends and climbs. The manner in which they shifted the weight from one shoulder to another shoulder because of the very heavy loads was also studied in detail.

We realized that we has to stay close to some time-tested features of the old design; the grips at the right places for the porters and others in-built safety features that help them carry the passengers safely.

So, now do we come to the 4th 'C',the check?

The check refers to creating a list of key requirements or we commonly say product brief. The major points in our product brief for the palki were to reduce the drudgery of the porters to make a change in the basic material for better durability, design a more comfortable seating arrangement for the pilgrims and create a long lasting product. The check captures all the insights thus it gives a clear direction for idea generation.

The 5th 'C' for conception refers to generating many ideas and combining them to create multiple concepts. We incorporated the different requirements of various teams of porters whom we interviewed and thoroughly accessed the contexts to come up with as many as 5 different prototypes.

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Each of them was tested which let improvements in the next model. The choice of stainless steel solved the problem of durability and lightness, but we had to modify the diameter of the pipes so that we could ensure strength and durability. The design process had taught us that we could not radically alter the existing design without seriously affecting the porters functionality because, they were using this palkis for ages hence we made some dimensional changes only after user testing in the field with the porters.

Did you conduct any structural analysis?

You caught us at the right place. In fact, we were late in getting back to our engineering professors to do a structural analysis. We took the help of a colleague from IIT, Bombay itself, Professor Yogesh Desai an expert in structures. He told us that our structure was unsafe for long use. He helped us redesign the chair for structural stability over a long period of time with a large factor of safety. The structural analysis helped us make our product more useable and to our surprise, it also improved the looks.

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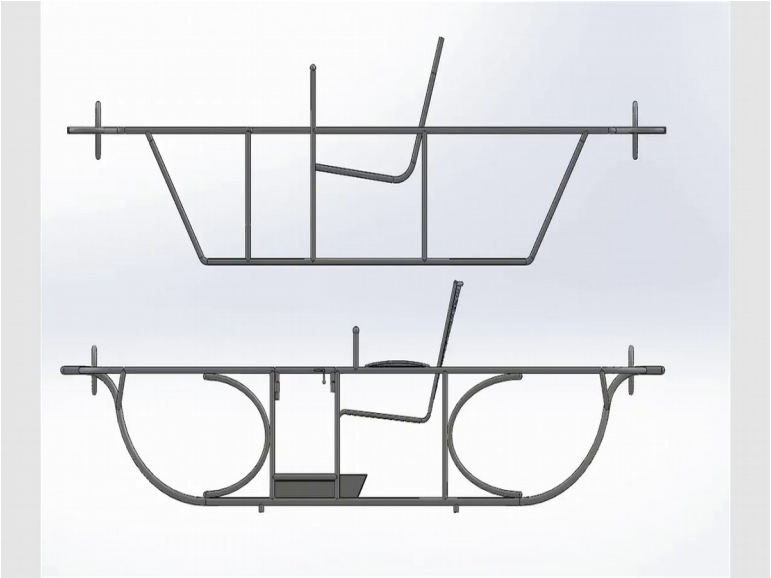

The work of translating a prototype into a product, a designer thus needs to collaborate with structural engineers and manufacturing experts.

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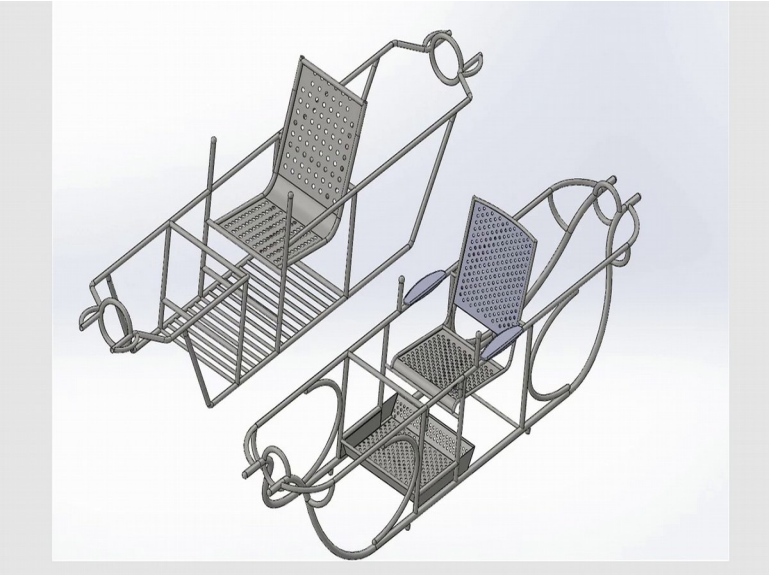

That brings us to the 6th ‘C’, the crafting. Refers to converting the selected concept into functional prototypes and finally, to mass producible products.

Why do you need to mass produce the palki?

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Because there are around 600 porters and they also ferry pilgrims during the Amarnath Yatra. After taking in all the ergonomic and structural inputs, we finalized the design of the palki in bent and welded lightweight stainless steel pipes. To reduce the weight, the seats were made from perforated stainless steel sheets. The wooden pole from the original design was retained for better comfort at the points where it came in contact with the porter's shoulders.

Are we now at the final 'C'?

Yes, connection is a 7th and final 'C'. It refers to the solution that leads to user satisfaction and delight thus completing the innovation cycle. Nina can you please handover that model to me?

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In case of the palki, we took the final prototype to Katra for user trials. We were thrilled when both the porters and the pilgrims were very satisfied with the experience.

This story illustrates why the designer can never hope to work magic in isolation; as every design project brings together skills from a number of interconnected fields.