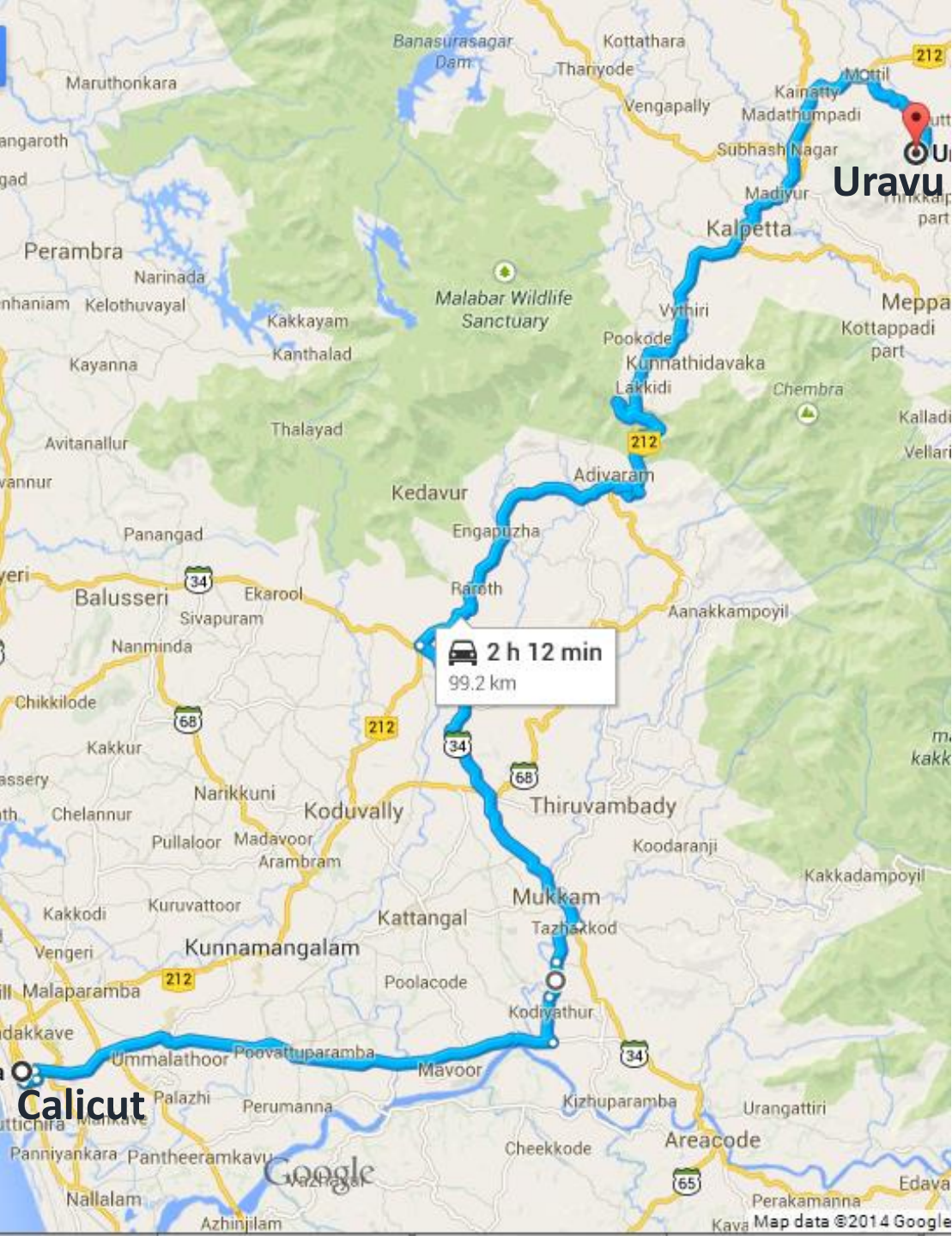




Summer Internship at Uravu

May- June 2014W

Isaac Junior 136130003 | Manu Revi 136130009 | Anulal VS 136130012 | Gautham Varma 136130005



Uravu

- Spring, source of water, life, creativity
- Non-governmental, non profit organisation
- Skill training in Bamboo processing, handicraft and cultivation
- Promotion of eco-tourism & micro-enterprises

Visits

- Uravu Ecolinks
- Various Units under Uravu
 - Bhavm
 - Niravu
 - Unarvu
 - Sowbhagya
- Bamboo Nursery



Bamboo Treatments at Uravu

- Gas Press Impregnation
 - A vacuum chamber
 - Filled with treatment chemical (Borax and Boric acid)
 - Pressure applied- 16kg/cm^2
 - For 100L water- 3kg of Boric acid and 2.5kg of Borax used
- Hot Dipping
 - Branchless columns with punctured nodes
 - Boiled in a container containing chemical solution for 4 hrs



Book of Spices

- Unique product- has won much appreciations

June 5- World Environment Day

- Not just for a day
- To remind and remember the responsibility as humans
- Rallies
- Planting bamboo shoots
- Various cultural performances



Source: www.ecowatch.com

A Solar Workstation

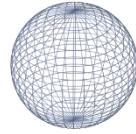
- A different approach to cottage industries
- Bring down the scale to table top level
- Workstation provides the space and equipment
- Powered by solar
- Shift from 'Under the roof' to 'Table top'

Design Brief

- Has to be made with Bamboo
- Easy to pack and transport
- Should fit in a box of size 4.5'x2'x1'
- Enough space for two people to work
- Space for inverter and battery
- Economical and low in budget
- Exclusive space for each instrument



Understanding
the Area at a
System Level



Understanding
the Environment
and Users



Design Brief



Parallel Product
Study and Inferences



Prototype



Concept Detailing



Ideation, Idea Clusters
and Concept Generation

Showing the design methodology followed for this particular project.

Concept 1

- Folding Table
- Inspired from traditional folding easy chair

Issues:

- Additional labour for manufacturing as well as functioning
- Rack is a hindrance for folding
- Major load on hinges

Concept 2

- Combination of materials: Bamboo and metal
- Metallic folding mechanism and wooden support

Issues:

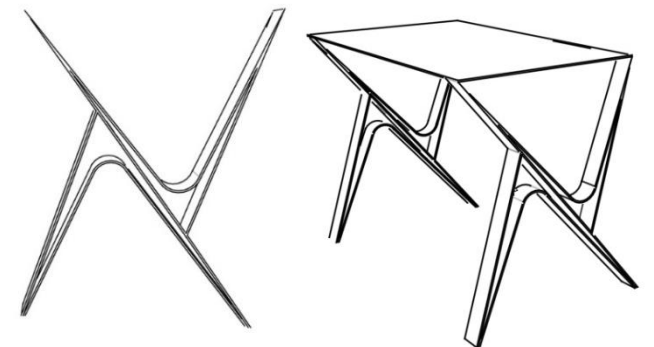
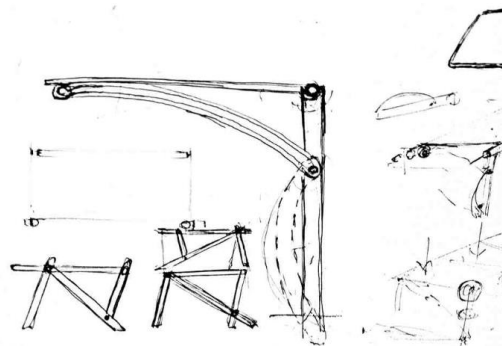
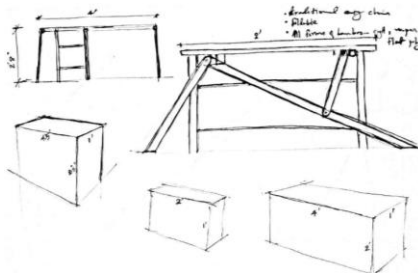
- Scope of work currently out of the realms of the organization
- Lack of expertise
- Dependency on other organisations

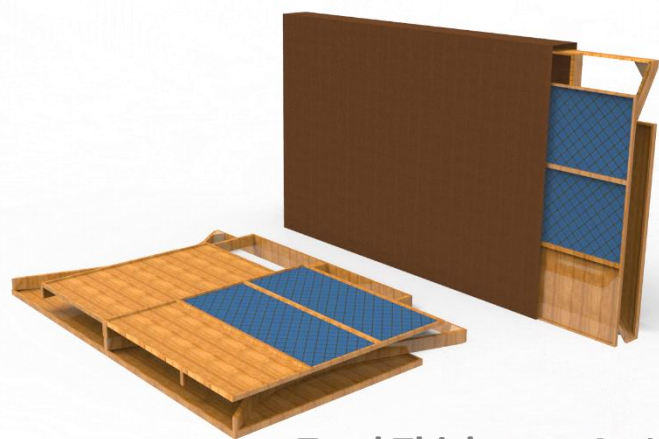
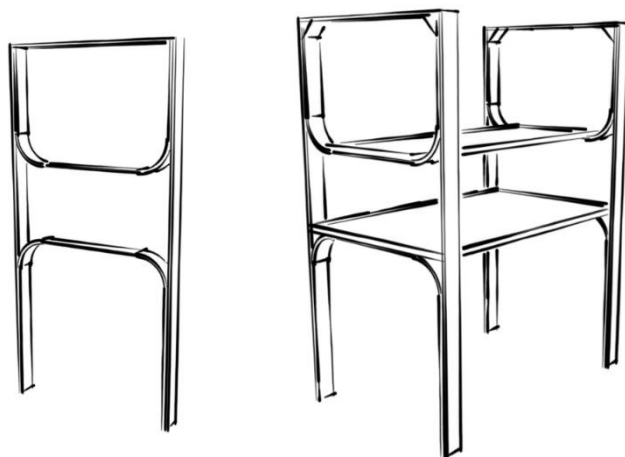
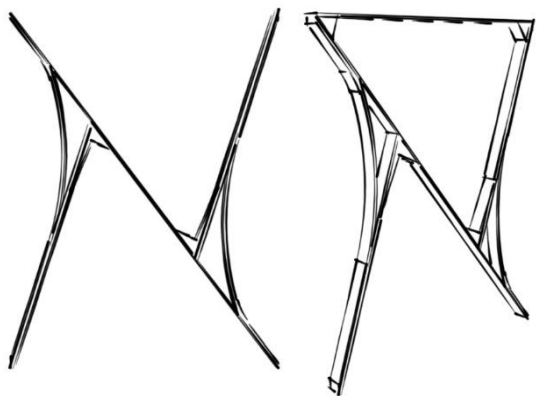
Concept 3

- Extension of Concept 1
- No folding; Use of bending
- Resources saved
- Modern feel

Issues:

- Regarding stability



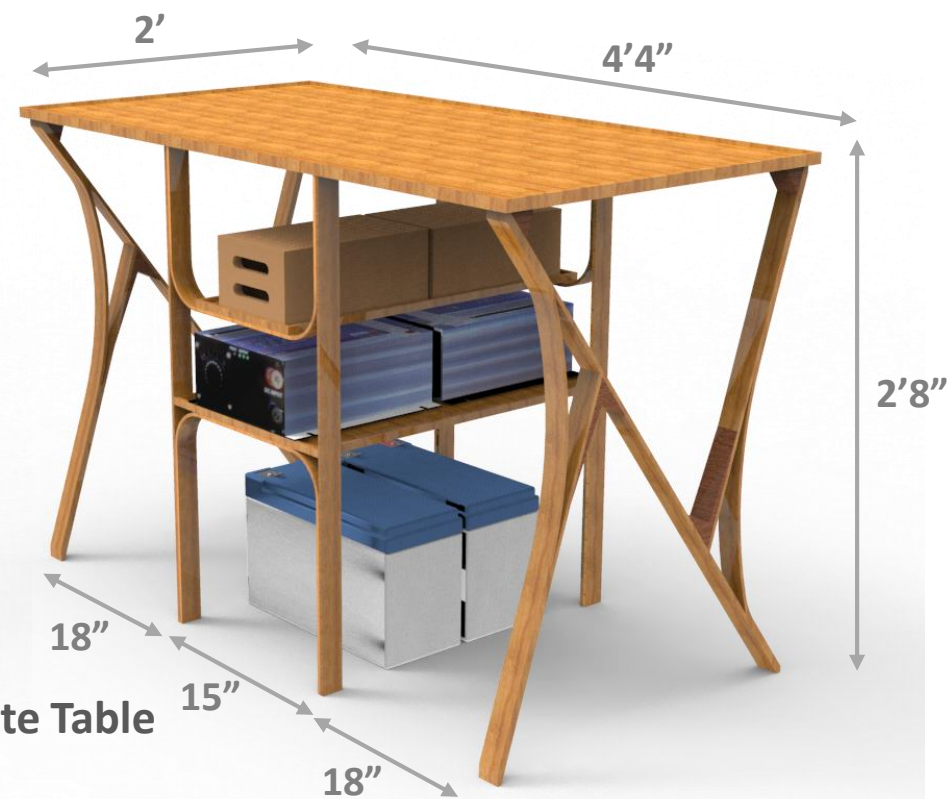


Total Thickness- 4 1/4"

Unpack



Assemble and Fix



Complete Table



Other Work

Water Tap from Bamboo

- Bamboo symbolizes traditional values
- Harmony between nature and humans
- Water tap- To represent the virtues of bamboo
- Hollowness- The way our minds should be
- Water- Symbolizes the life bridging the gap between nature and humans
- A whole set of bathroom accessories



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Concept 3

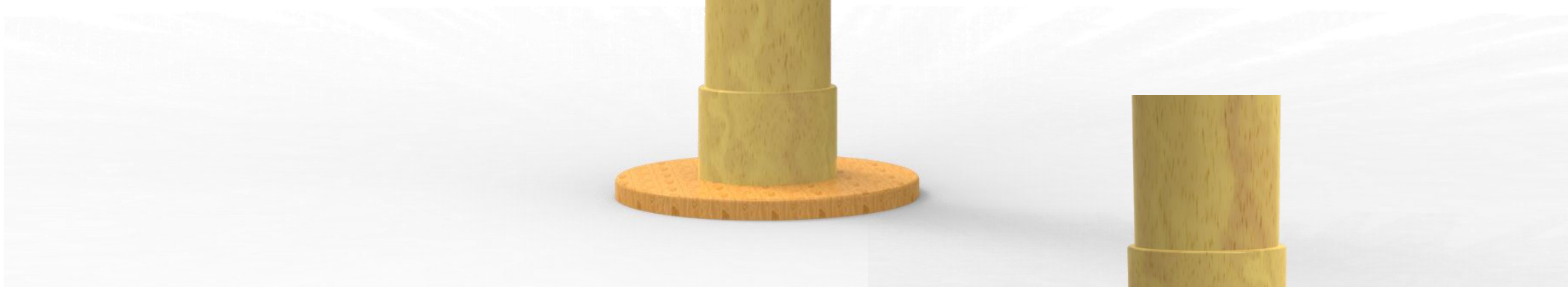
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Bamboo Bottle

For trek enthusiasts

Wayanad- A tourist/trekkers' paradise

Forest land- victim of plastic abuse

Water- carried and refilled from springs and other water bodies

Water bottle is an indispensable object but 'sustainability' is missing

New options?

Concept for the Bottle

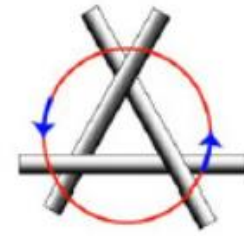
- Body- cylindrical
- Cap- How to attach it on a loop?
- Shapes to make the accessibility to water easy
- Locking mechanism- Challenging
- Will common locking mechanisms work?
- Prevent leakage

Challenges faced:

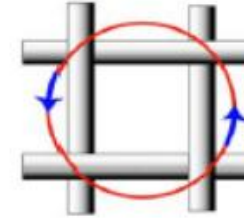
- Leak Proofing cap-body system
- Shearing of bamboo vertically
- Cover for the cap
- Fungus attack
- Shrinkage and expansions at extreme conditions

Tensegrity

- “Islands of compression in an ocean of tension”- Buckminster Fuller
- Close relationship between tensegrity and weaving
- Scale down models
- For the furniture- Lathi (no hollow) was chosen



3-WAY PRISM;
COMPLETE TRIANGULATION



SQUARE PRISM; SQUARES
ARE NON-TRIANGULATED



PENTAGONAL PRISM; PENTAGONS
ARE NON-TRIANGULATED

3-Way Prism Stool

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Educational Toy

- Bamboo Building Blocks
- Spatial thinking improves STEM understanding
- Pre-schoolers depend on toys and games
- Spatial assembly performance (child's play)
 - Free play
 - Structured block play
- Existing common toy – Lego blocks
- Limited play with curved surfaces / contours
- Eco-friendly bamboo toy
- Curved contours
- Stable structures by iteration



Bamboo Pen

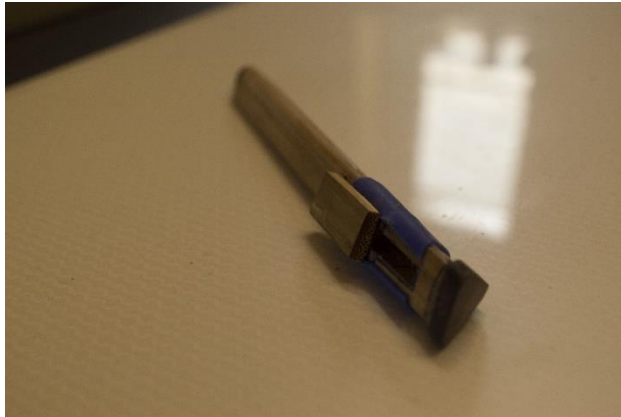
- Flagship product
 - Requires skilled labour
 - No design intervention from inception
 - Requires right bamboo
 - Max 4-5 pens / craftsman / day
 - Production cant meet demand
- Only two dedicated workers
- Difficult working environment



Bamboo Pen

A pen that

- Simplifies manufacturing
 - Removes right type bamboo dependency
 - Facilitates increased production
 - Eliminates requirement of skilled labour
-
- Three attempts
 - Coiled body
 - Jotter
 - Use and throw



Learnings from the Internship

- Foundation course during 1 year at IDC has been of great help
- A new material to have a hands-on experience
- How to use a material in its various forms to have a better design
- Practical difficulties and challenges while working with bamboo
- Inside view of craft sector and the problems they faced
- How to mechanize just enough so that the production can be increased without hampering the current work environment
- Uravu- a good place to learn about bamboo and a good environment to discover yourself