Visualization

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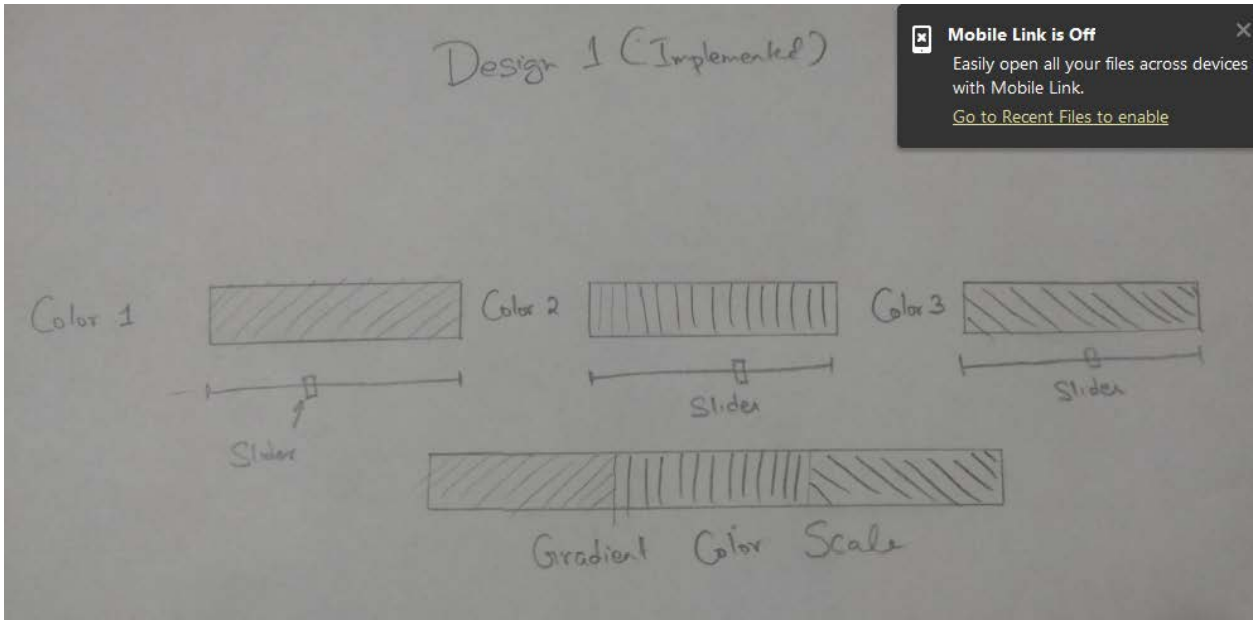
Transfer Function for Volume Rendering

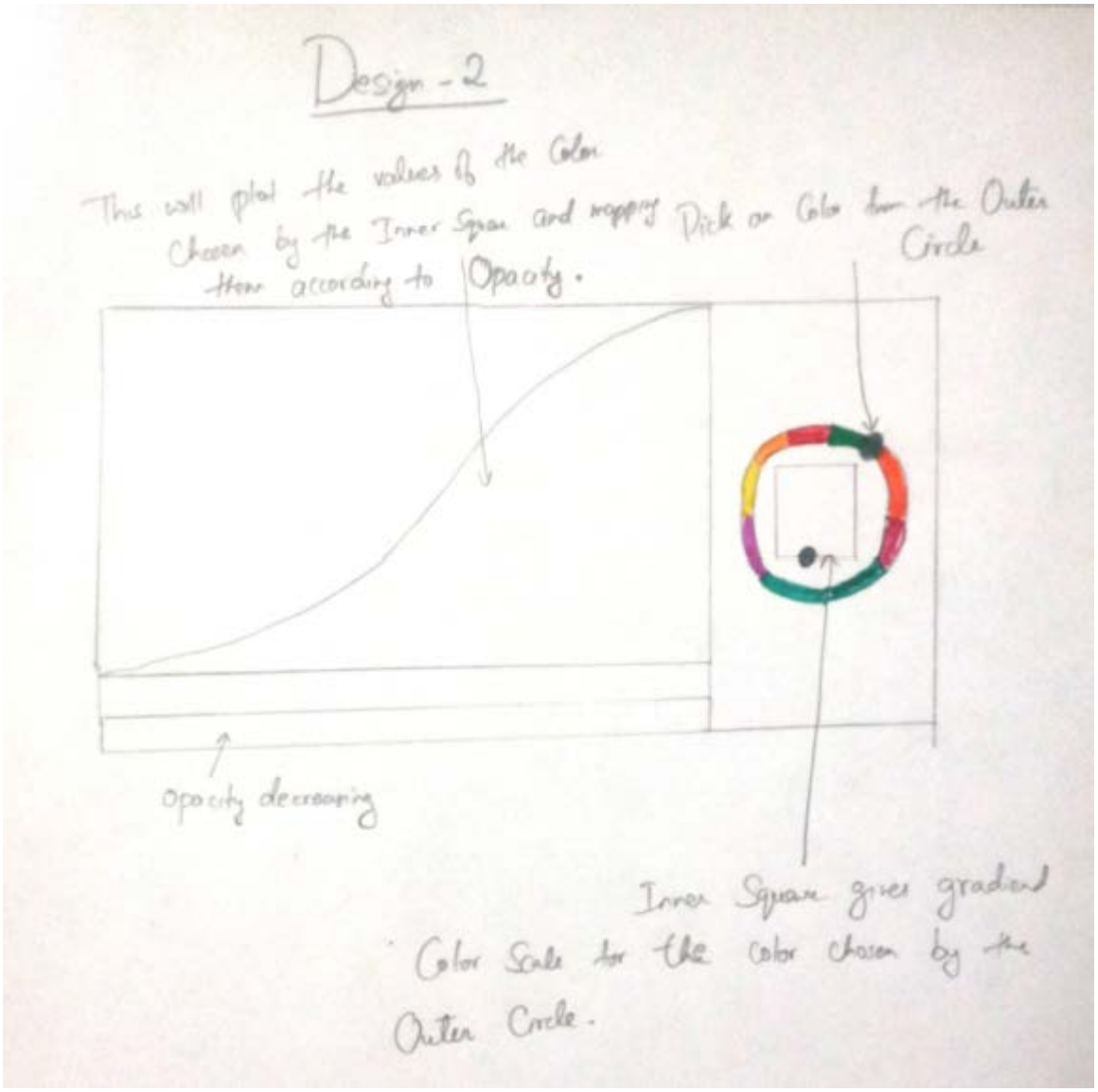
1) Design 1(Implemented):



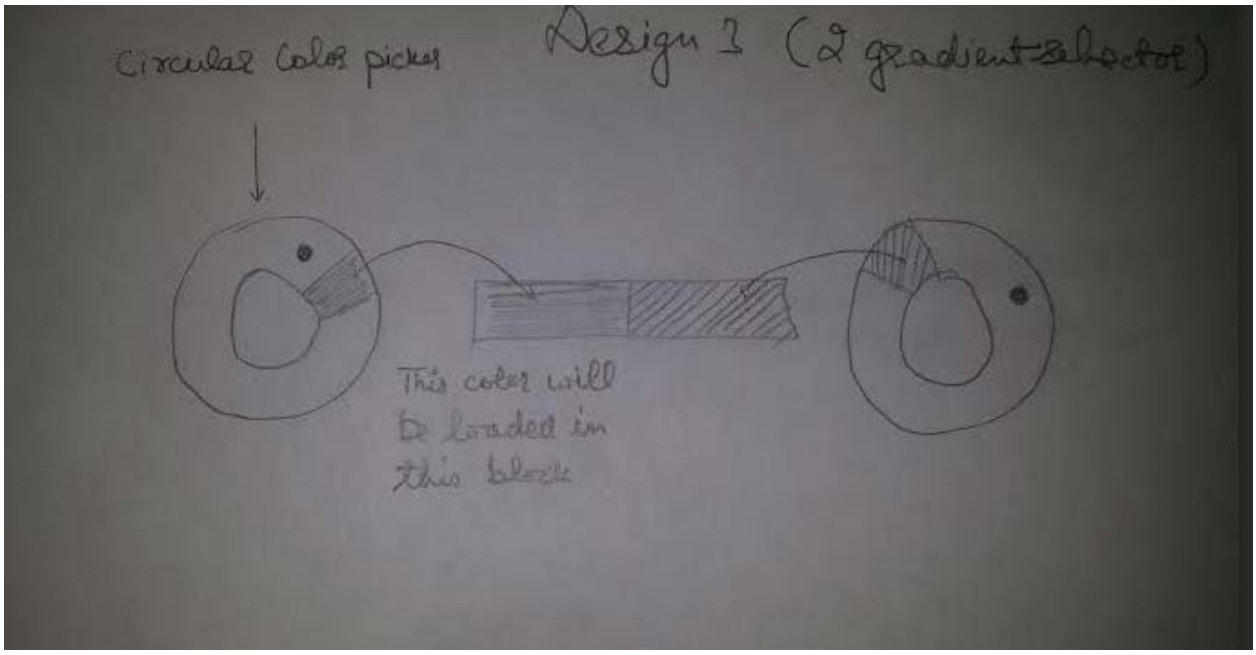
Design 1 is based on Trial and Error Method. User has the capability to choose three colors from the color picker. Based on the color chosen by the users, a gradient color scale is create and these colors are applied on the object to give a clear rendering.

Initially object will be rendered with default colors and it can be refined by using different colors for different region. User can also chose which colors dominates the most of the region of the Gradient Scale. Each color is applied to a different region in theobject and we can reduce the a color's region in the gradient color scale.EachIt can be increased/decreased by the slider provided in the Page. It further enhances the object and give a clear picture. Below is the image we got for Bonsai after playing with the color picker and the slider.

Design 2:


Design - 2
This will plot the values of the Color
Chosen by the Inner Square and mapping Pick or Color from the Outer
Circle
Here according to Opacity.
Opacity decreasing
Inner Square gives gradient
Color Scale for the color chosen by the
Outer Circle.

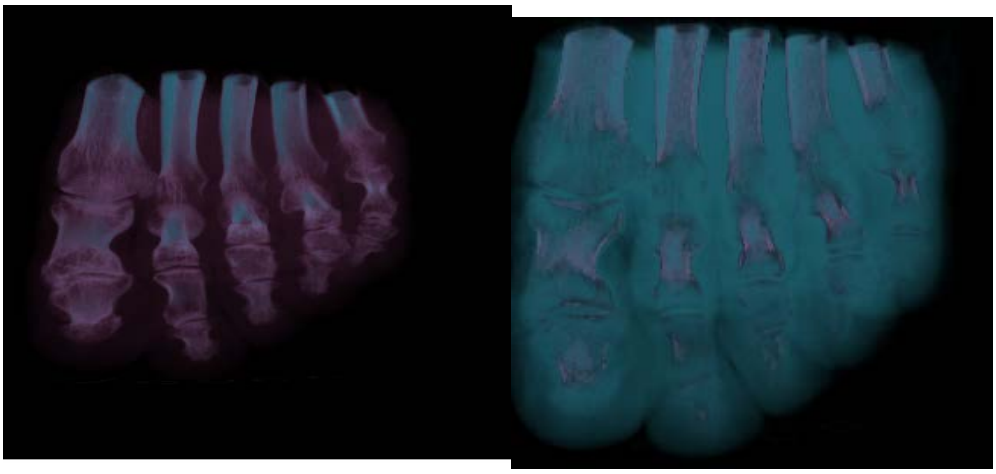
Design 3:



Analysis:

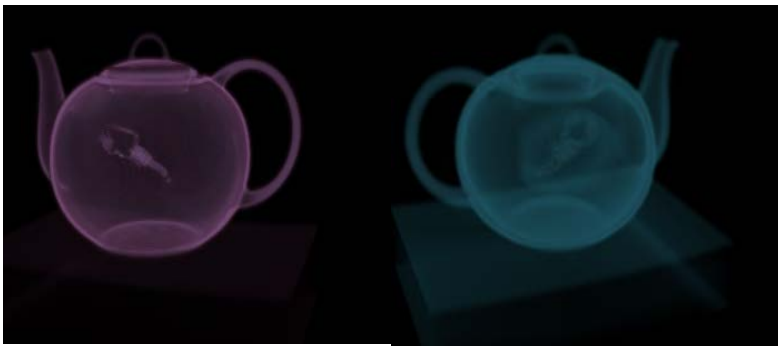
Foot:

I got the following image of the foot by keeping the slider of the Color1 region minimum.Color1 is getting the minimum region in the gradient color scale due to which the region which were supposed to be colored by color1 is no more visible. It is allowing us to look inside the foot more clearly and giving a x-ray kind of image and whereas keeping the color1 region maximum is giving me outside part of the foot.



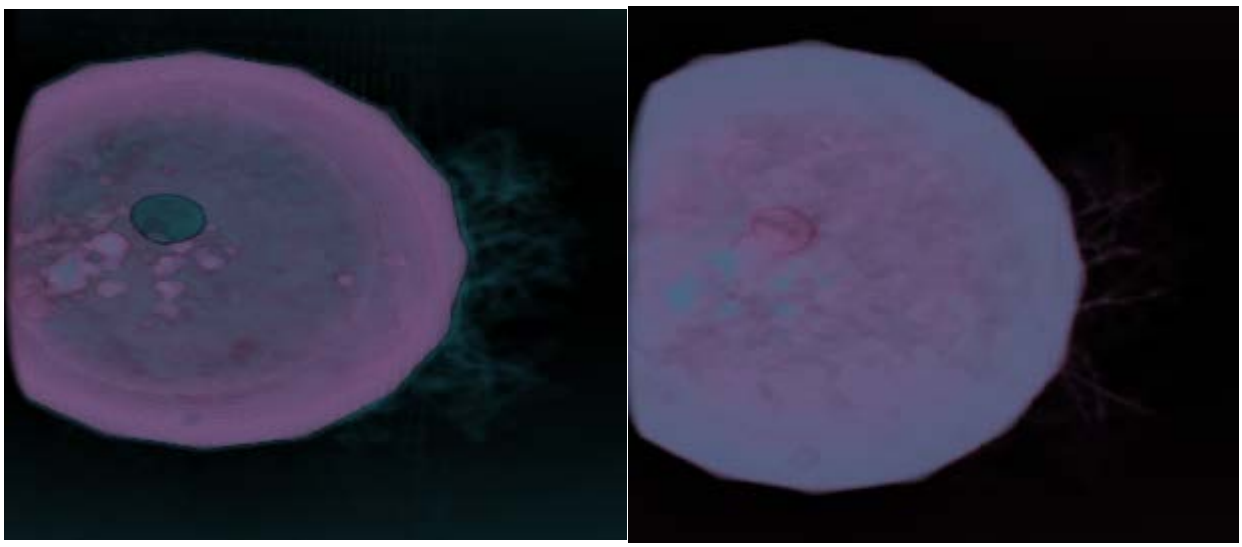
Tea Pot Analysis:

Same pattern I found in the Tea Pot. With keeping the color1 region minimum I was able to look inside the tea-pot and found that scorpion is inside the tea-pot whereas by keeping it maximum I was not able



Bonsai:

Same pattern found in Bonsai, In the first pic I can clearly that that there is some hole at the bottom of the bonsai vase whereas in the second pic it was not visible.



Advantages of the design:

1) Users get lots of choices with color and can play with them to get the perfect image.
2) We are able to see inside the object by the use of gradient color scale due to which our transfer function can be used for x-ray techniques.

Disadvantages:

1) We are not getting a clear outer shape of the object, it can be implemented by using shade renderer.