

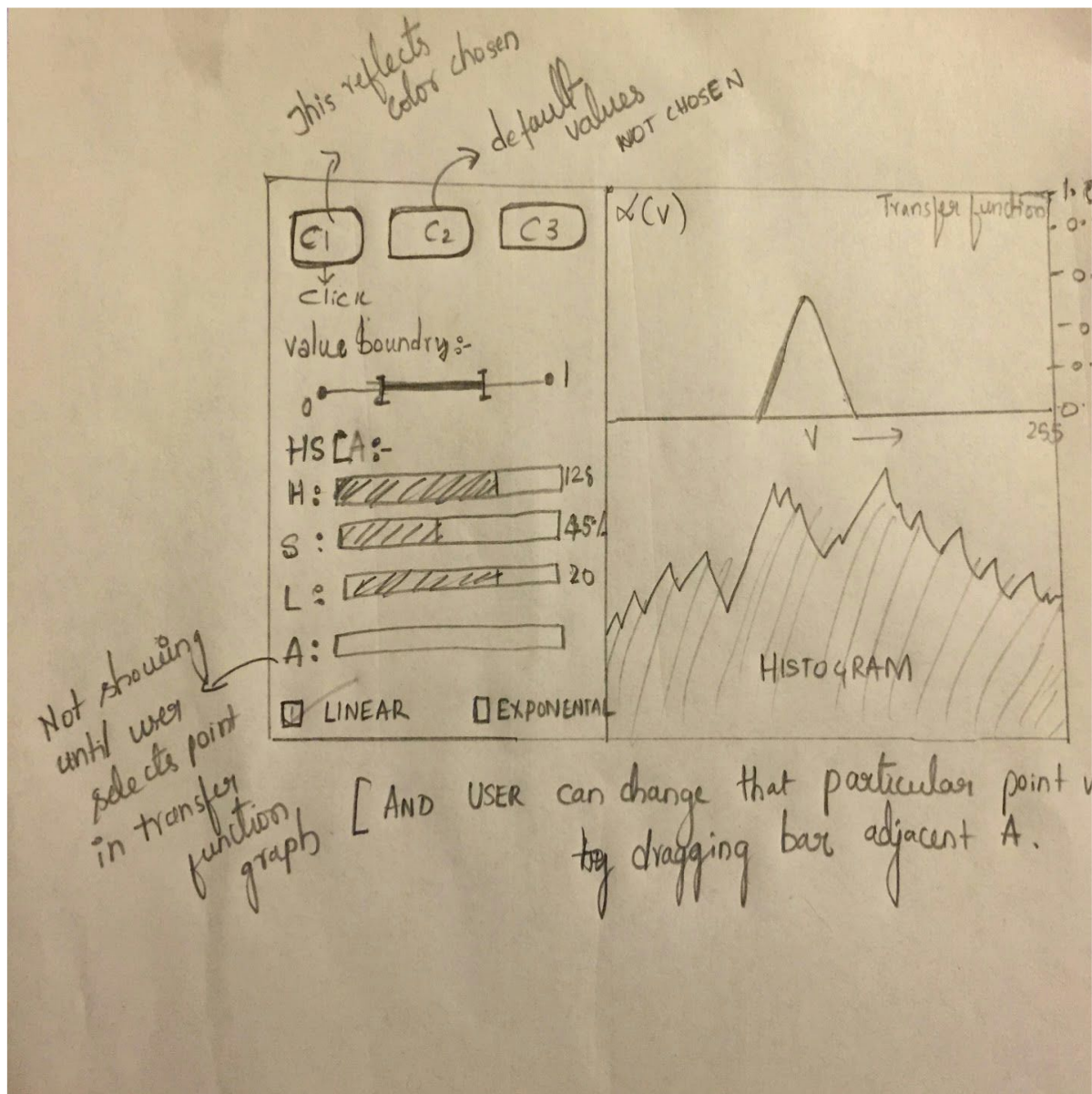
Transfer function :-

$$\alpha = \exp(v) * (0.8) / \exp(1)$$

In the above exponential transfer function, there are three ranges for values i have chosen. First one is at range1 - 0.25, range2 - 0.75, range3 - 1.0. The following image is rendered to show only skeleton without any flesh. The value to get this rendering is to choose black to render the first range, second range with (255,253,251) and third range with (255, 246, 254).

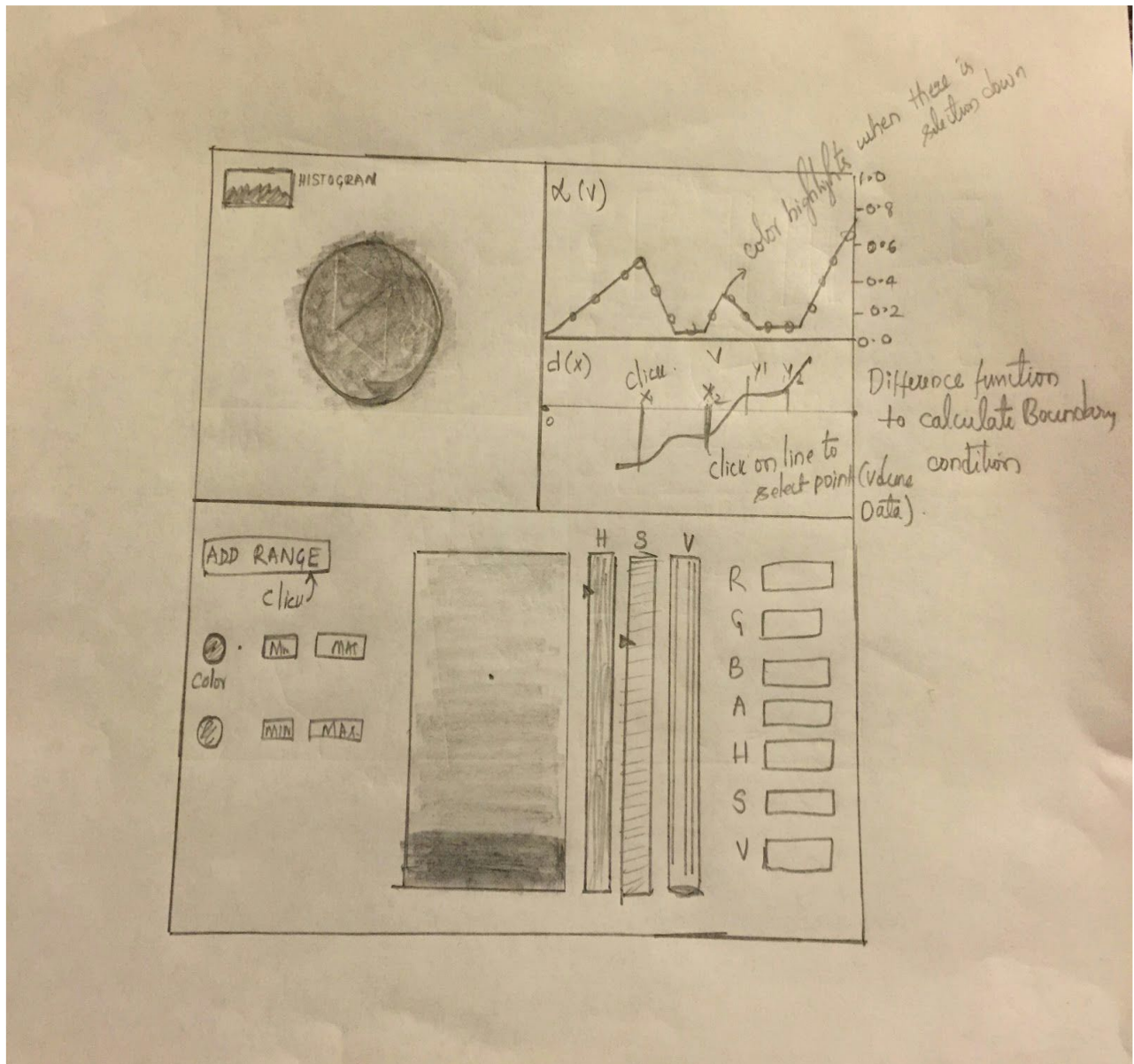


Design 1:-



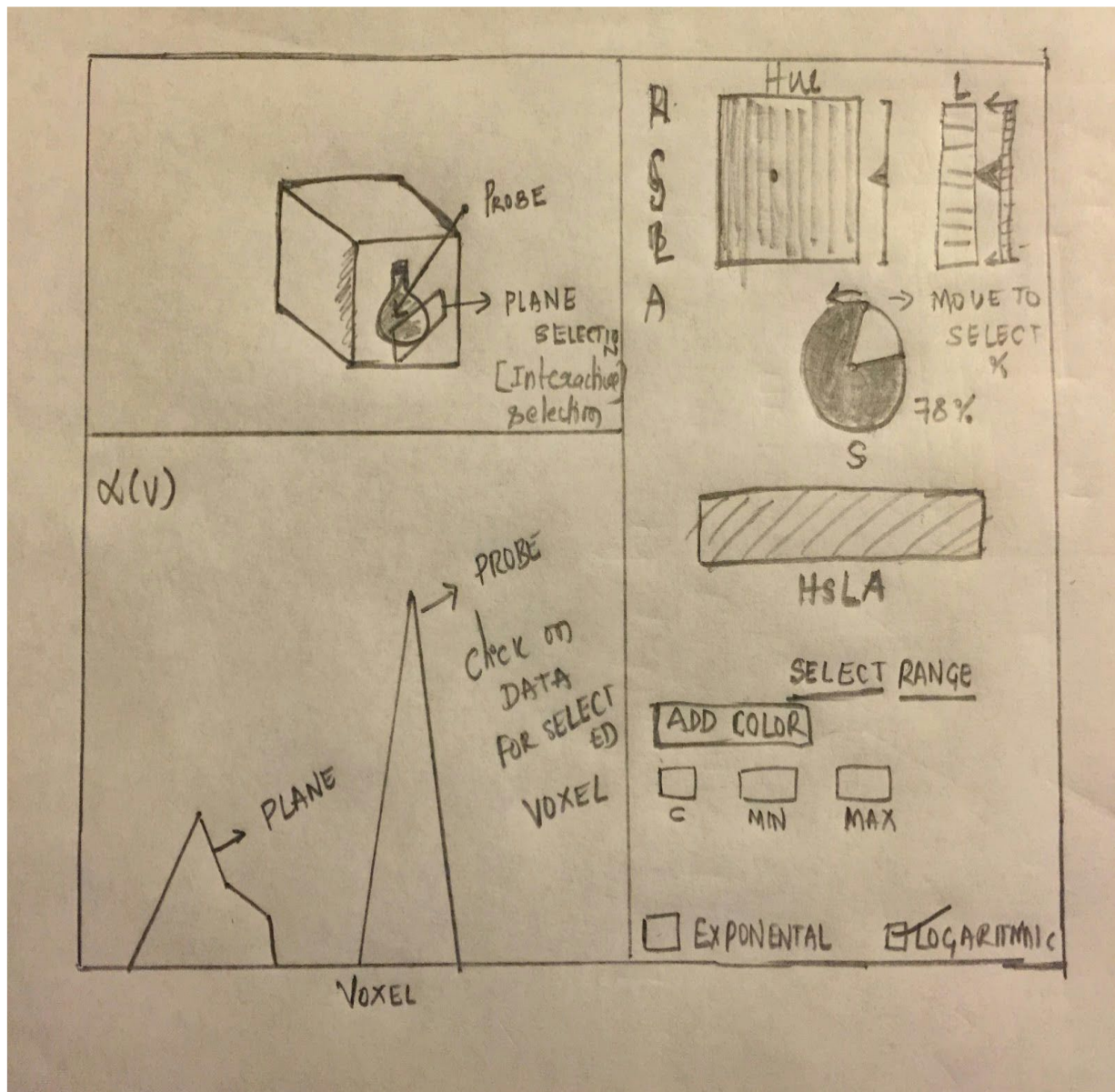
In the above design, the transfer function widget consists of three parts, one giving a command palette to choose different colors for different values of voxels. Flexibly fix the boundaries, choose different colors using HSLA format. There is an option to toggle between linear and exponential transfer function. The right side provides the transfer function plot and voxel values histogram plot. User can select any point on transfer function plot and change dynamically its values and observe the image.

Design 2 :-



In the above design, the transfer function widget is a part of whole page with image towards the top left part. The adjacent block to this provides the transfer function, and difference based on voxel data to calculate the boundary conditions. User can interactively choose the boundary voxel data and select the color using the HSV slider color palette. User also has an add range functionality to add different colors for different range of values. This approach is simple to see the effect of choosing the right boundary values on the image rendered.

Design 3:-



In the above design, the user is allowed to select the probe pointing to a particular point and use data plane to select the cross section values. For each of the selected region, the values will be generated and the transfer function is applied and printed the graph. Once this is generated, user can select the corresponding opacity and color combination and try and experiment with the rendered object. This design is complex with respect to selection of cross section of image and allows the user with different opacity transfer function based on exponential and logarithmic scales.