

Marking the Artery Walls

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1 Overview

We will work on the artery project. Currently the focus is on blood flow, but we think that the walls are at least as important. Since the artery project motivation is to determine what causes lesions in the walls, we believe wall pressure and dwell time data should not be eclipsed by fluid flow information.

We also propose a method for sharing experiences between users via annotation of the artery. At this time there is no such annotation method, causing potential interesting observations of the users to be lost between one exploration session and the following one.

2 Methods

2.1 Annotation

At this time, there is no trace of the user's exploration, for her own records so as not to repeat observations and to be able to expand on a previous line of inquiry, or to share with other users.

We propose to use audio annotation; a visual screen would have to be quite large and bright to be seen in the dark environment of the cave, and would thus compete with the actual visualization. We think audio recordings would be more intuitive and efficient.

The user would use the wand to point to an interesting area; clicking on a wand button would cause a small red flag icon to appear on that particular spot. After the flag appears, she would click again to record her voice and leave a note, with her name at the beginning (the time would be recorded automatically, as in voice mail). Flags would map every previous note recorded on the artery, but would only become visible after clicking the "annotation mode" button .

2.2 Wall salience

i) We will work on making the artery walls clearer and less submissive to the flow, possibly with an opaque texture, and with a topographical map to indicate

pressure, a semi-opaque layer with colors from light yellow to dark orange to indicate dwell time.

ii) For the actual flow, we will switch from the current hue encoding of the speed to saturation/value encoding. A celebrated perception expert (Steve Hosslyn) argues that humans associate different hues with different entities, not with quantitative changes (as in this case). Our intuition (and some of the Tufte readings from class) tells us this thesis is correct. The hue variations right now are overwhelming and influence the eye to look for similarities rather than differences among the particles. Moreover, they draw attention exclusively to the flow and thus induce the user to neglect the equally important wall data.

3 Tentative timeline

Changing the flow speed encoding should be a fairly easy task. In contrast, we expect audio annotation to be quite difficult to accomplish. We may not be able to hook audio to the cave within the following weeks. We think though that even partial completion of this part of the project would make a world of a difference to the artery project. We hope to be able to create at least a functional/proof of concept framework for annotation.

Re-designing the walls could be nearly as difficult.

We consider the following tentative timeline:

November 7th: Done switching to saturation/value encoding.

November 10th: Stick one annotation flag on the artery.

November 12th: Show/hide annotation flags.

November 15th: Icons for walls created.

November 19th: Wall icons mapped.

November 28th: One audio message recorded when in annotation mode.

November 30th: One audio message played back when in annotation mode.

December 5th: Annotation working.

December 10th: Final presentation.