1 Interactive Artistic Rendering

This paper discusses a method of applying differently shaped brush strokes called “Geograftals” to 3D rendered surfaces to produce a variety of artistic effects. Geograftals are polygons which are randomly placed on the surface of an object. Various equations control the density, size, orientation, and color of the graftals in order to produce a pleasing look. The paper discusses ways of precomputing the positions of the geograftal strokes in order to achieve real-time rendering. Finally, examples of rendered images using geograftals are presented and compared to the results of other researchers in painterly rendering.

What I liked most about this paper was that the authors clearly had a thorough knowledge of painting technique and used real examples from human painting as inspiration and comparison with their technique. They seemed to take the organic or pragmatic approach whenever a problem cropped up. This seems to agree with the point of view that there is no “wrong” way to do non-photorealistic rendering, but it was interesting that taking cues from actual painting method also produced the most “pleasing” results.

Even though modern photorealistic rendering tends to approach the actual equations of energy transfer to achieve good results, this paper almost seemed to approach the problem from the point of view of painters learning to paint for the first time. They impose the informal condition that their rendering system should make the same choices (and mistakes) as humans do, and choose the best-looking of the resulting configurations. Ironically, it takes a fast and mature rendering subsystem like OpenGL in order to do this at real-time speeds.

My favorite of the attempts are the “sketches” in black and white of the Venus de Milo. The other examples, like the bunny or flowers, still seem too fake and jarring; it was too obvious that the “fur” has the same uniform shape. Perhaps if the geograftals were randomized by jittering their control points, or by including a collection of shapes in a group, it would look more natural. The sketches, however, are truly amazing. Small changes to the way the strokes are drawn, like using the curvature of the surface, make huge aesthetic changes. It must take quite a while to tune the parameters to achieve a result like that.

As opposed to the next paper, this technique falls in the category of “rendering a painted world.” This was the first example that I’d have rated as equal in visual appeal to the other method of “painting the real world.”
2 Painterly Rendering for Video and Interaction

This paper presents an adaptation of a painterly rendering method seen previously to real-time (or real-time speed) video footage. The basic idea is simple: don’t discard the previous frame’s painting. In this way, the idea of only painting brush strokes when the underlying color isn’t right for that detail carries over into the temporal domain. Although not perfect (most of the paper deals with correcting problems caused by this approach), I think this was a brilliant adaptation of the still-frame method.

One thing I wasn’t really clear about is why difference masking was necessary in static areas. I would have thought that since the colors are the same, the paint algorithm would leave these areas alone, making the extra error check unnecessary. Probably I am misunderstanding the problem.

Using optical flow is a terrific idea. If you had a static scene with a panning camera, then a painterly rendering of the scene should merely shift over, not repaint every frame (except for small errors due to parallax, and depending on lens distortion, something that wasn’t addressed in this paper). Optical flow approximates this solution. The brief mention of using a flow field was especially interesting, and I’d like to see a video of it. It seems like this method would produce something like a “moving painting,” instead of an adaptive painting of a moving scene. If the researchers had moved pixels instead of strokes, it would be less like shifting the painting and more like swirling the paint, which not only isn’t the same effect but I think doesn’t capture the same physical analogue.
3 Telemurals: Linking Remote Spaces with Social Catalysts

The paper presents the Telemurals installation which we’ve been introduced to before. Additionally, the comments of Whyte in his study of public spaces are linked to the purpose of the media space, which is to use triangulation to spark and maintain conversation. I tried to visualize a media space like Telemurals in an environment like the video from Whyte which we viewed, but couldn’t. Probably the dissonance is mainly with including such a high-tech solution with the low-tech solutions of seating, light, trees, etc. Although compared to some other media spaces, Telemurals is fairly low-tech. I think this is a good thing for a design that’s intended for high-traffic public spaces; having expensive equipment around creates a different atmosphere, and keeps the conversation piece from being an integrated part of the surrounding space. I think this is part of why the Hole-in-space installation worked so well; it was just there and didn’t need much explanation.

I like the clever ideas that are used in Telemurals to strike a balance between synchronizing the two spaces on the one hand, and preserving privacy and creating a catalyst on the other. The sequence of different renderings and additional graphical elements that were tried is a very useful record for anyone else trying to create any kind of teleimmersive space. While I understand the reasons for preferring the colored sillhouettes, my favorite method was the moving comic. The rendering style is really convincingly comic-like, and to me has the most aesthetic appeal. Perhaps to overcome the privacy issue, face-detection could be used and fixed or animated masks applied over the face. This would give an additional layer of communication while preserving identity and privacy. It would be fun if users could select a mask or partial avatar for themselves. Masks have the drawback of not showing important facial expressions, but you get the same drawback with sillhouettes. I really like the idea of gradually filling in the outline as a conversation progresses. It seems like it would be a terrific incentive to continue a conversation and to actually get people to know each other. Whyte’s comment that “What attracts people most is other people” is interesting, because in the virtual world we are all present to some degree all the time. To me, media spaces are most important as a way of making the net reality more immediately and fully visible, and eroding somewhat nonsensical barriers like colocality.