In the NPAR 2000 proceedings, Jonathan M. Cohen, John F. Hughes and Robert C. Zeleznik presented the paper “Harold: A World Made of Drawings.” Harold is a drawing program referring to a children’s story *Harold and the Purple Crayon* by Crockett Johnson. In the book, Harold creates and explores his world by drawing it with his purple crayon. Likewise, the program Harold allows users to draw scenes, which can be interactively reconstructed from various viewpoints. In other words, Harold simulates a 3-D environment via a drawing interface.

Operationally, Harold is like a precursor to Photoshop. Photoshop allows the placement of selected images on the drawing, which can be skewed or transformed to create a trompe l’oeil effect. Harold uses the *billboard* to convey a 3-D environment. Analogous to a Photoshop selection, the *billboard* is a plane with a drawing of an object or a scene. This approach has a simple appeal to it, and avoids the complications of representing a 2-D image as a 3-D object. However, the authors recognize the limitations of this method. The scenes on the *billboard* need to be diagrammatic versus photo-realistic. A realistic scene would look unnaturally skewed in Harold. Furthermore, the linking of various *billboards* to create a coherent 3-D scheme is also a computing challenge. Cohen et al. resolve this problem through a *bridge billboard*, which is a collection of planar strokes anchoring two *billboards*. A drawn hammock serves as the *bridge billboard* between two trees, each one on their own *billboard*.

I am curious, whom they expected to use the program. By bypassing the difficulty of trying to represent 3-D objects with 2-D shapes, they shifted the hardship of representation on the user. Each billboard is an *object world*, which in turn must be coordinated in the user’s mind to create the user’s *world* on the screen. Designers who can visualize multi-dimensional objects in their mind may enjoy the novelty of this approach. Inexperienced users might struggle with the overlapping topologies. The *billboard* is a 2-D representation of a 3-D scene (Object World). The combination of *billboard* planes tile into a coherent 3-D scene (User’s World). This is easily achieved with the assumption that each billboard references a similar vanishing point and focal length. Yet, this assumption precludes a solid understanding of perspective.

I also wonder if a clear understanding of perspective is enough to navigate through the drawing interface. I am confused about the nuances between the Billboard, Terrain, and Ground modes. The introduction of three modes complicates my understanding of Harold in terms of Object and User’s World. The novelty of designing a 3-D environment as a paint program has a simple, playful appeal to it. However, the reality of making this easy to use and convincing is no child’s play.

Related Reference:

---