Artist/Designer Sketches

Illusions/delusions

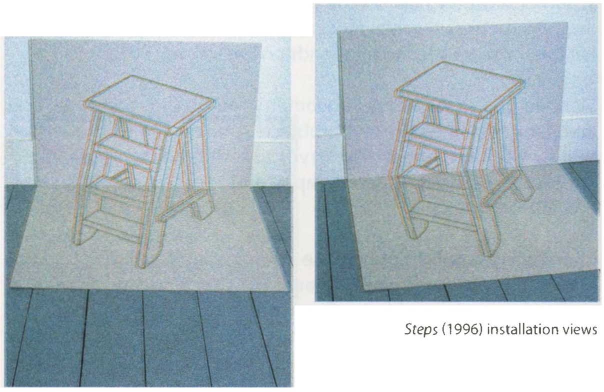
This presentation describes the author's use of stereoscopic computer imaging procedures to construct artworks that explore the viewer's relationship to virtual/pictorial space.

An interest in the uses and function of linear perspective initially led me into the realm of 3D computer modelling in 1991. Simple virtual objects were constructed using commercially available software, and the viewpoint was manipulated interactively in order to produce images that subsequently formed the basis for paintings and prints. The experience of real-time engagement with virtual objects (which consist essentially of digital coordinates/descriptions and whose visual form can only be apprehended via representation) led me to consider how such objects related to the mental concepts or pictures upon which they in turn were modelled, specifically in terms of picturing (the ways we create, perceive and interpret pictures). This interest has formed the basis of a research project that aims to question the relationship between observer and observed image: How do we (visually) represent the world? How do these visual images relate to the language we use to describe them? And to what extent do pictures resemble or relate to the world they depict?

Two eyes provide us with a means (though not the only means) of establishing our position in the world. We can say with some confidence that we are here, and the world is there. Stereoscopy is a visual device that exploits this aspect of our physiognomy. It provides a means of bypassing the conventional way in which we look at pictures by dissolving our awareness of the picture surface. An analogy can be found in Fra Andrea Pozzo's painting "The Glory of Saint Ignatius" (1691-4) on the hemispherical ceiling of the church of St. Ignazio in Rome.[1] When viewed from a specific point marked by a yellow disc on the floor of the church, the painted architecture and space appears as a continuation of the actual architecture. Unable to determine precisely where the picture surface actually is (as a result of its distance and irregular shape), the viewer mistakes the painting for what it represents. Stereoscopy, likewise, is a two-dimensional form with aspirations to the third dimension. In order for such a picture to be effective as a representational illusion, it must to some degree be consistent with what we would see of an object/world from a given point of view. Just as perspective pictures describe not how we see but what we see from that given point, stereoscopic pictures manipulate what we think we are seeing by isolating each of the images given to our separate eyes. By severing this physical link, or rather by accentuating the natural division between left and right, they direct information as much towards the brain as towards the eyes.[2]

Discovery of a stereoscopic drawing aid in which the virtual, three-dimensional image appeared to stand vertically up from the page as if mimicking an actual object led me to consider combining the use of stereoscopy with another eccentric visual device, anamorphosis.[3] George Whale, a programmer colleague at Chelsea School of Art, and I have subsequently developed an anaglyph extension to a CAD application in which stereoscopic left- and right-eye images of a 3D computer model are projected onto a user-defined picture plane or planes in a manner reminiscent of the way an object's shadow is cast on a surface by a point light source. Objects constructed in a variety of 3D modelling applications are imported as DXF files, and the desired perspectival viewpoint is located through either visual manipulation or numerical input. The user is presented with options regarding the intended plane(s) of projection, angular separation between left and right eye viewpoints, and wireframe or hidden-line rendering. As the first of these options may suggest, multiple-projection planes may be employed with the stereoscopic images, for example, being projected across the juncture between floor and wall or across the surfaces of a cube.

Steps (1996) was initially intended as a life-size stereoscopic image to be displayed on the floor and wall of a gallery space, and it was therefore necessary to work to scale from the outset. A model with the desired dimensions was constructed in a 3D modelling program together with surface planes representing the floor/wall and guidelines indicating the required viewing position. This information was imported into the CAD package and the desired viewpoint – detailing viewer distance and height – was input numerically. Small-scale proofs were output on a desktop plotter fitted with appropriately coloured red/green pens and viewed with corresponding glasses. Some experimentation was necessary to determine the appropriate angle of separation relative to viewpoint, as when the images were enlarged, so the viewing distance and height increased. Actual size proofs were printed using an A0 inkjet printer fitted with specially mixed inks, which proved invaluable in establishing the most successful combinations of distance, height, and angular separation. Black and white film positives were subsequently made from the resulting EPS files, and the final image was printed by hand using screen-printing processes.



Steps (1996) installation views

This work (together with other similar pieces) aims to draw attention to the artifice inherent in representation and the propositional nature of illusion, and to promote the viewer's active involvement in the construction, perception, and interpretation of visual events.

References

For a discussion of this painting with regard to picture perception, see M.H. Pirenne's Optics, Painting, Photography. London: Cambridge University Press, 1970.

Julesz has shown that the brain does not rely on or necessarily require information about object shape/contour in order to perceive depth, but on point-to-point disparity between similar images. See B. Julesz. Foundations of Cyclopean Perception. Chicago/London: University of Chicago Press, 1971.

See R. Nicyper. Phantogram Perspective Charts. Westport, Connecticut: Graphicraft, 1979.

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