- Monday, November 11, 1996
  Integrating Real and Virtual Displays

  1.0 Description of meeting by Lori Bernstein Nov 11th "Integrating real and virtual displays: some perceptual issues".

  1.1 Dr Bernstein works for NASA and, together with Mary Kaiser, is involved in dealing with some of the problems that might arise from the controversial design of the High Speed Civil Transport (HSCT) which is being developed. In particular she is concerned with problems arising from the intended Star-Trek-like design feature of replacing the forward-facing window with a video screen. Using a screen instead of a window presents a particular challenge when its images are used to assist and guide ground manoeuvring of the plane.

  1.2 The HSCT will be a massive plane some 300 feet long. The pilot will sit in an unusual position in the HSCT some 30 feet behind the tip of the nose and > 50 feet in front of the front wheel. This presents a challenge when steering the thing around an airport. Can these problems be helped by careful choice of images presented on the screen?

  1.3 This project involves interesting retrospection on the properties and geometry of normal windows. Two points that emerge from such a consideration are (i) no two view points are associated with the same view out of a window and (ii) non-visual cues, such as the vestibular cues accompanying self motion, might contribute to the interpretation of the view.

  1.4 Some ADVANTAGES of using a synthetic window are that you can mess with it (eg. change the weather); some DISADVANTAGES are that it can mess with you (eg. by introducing time lags and distorted geometry).

  1.5 How to choose where to present the viewpoint from? Where to put the (real or virtual) camera? At the level of the pilot? At the pivot point of the steering wheels? Should the camera be slaved to the head movements of a helmet-wearing pilot? These were some of the questions considered.

  Lori Bernstein