

SIGGRAPH 1991
18th International Conference
On Computer Graphics and
Interactive Techniques

Las Vegas Convention Center
28 July - 2 August

COURSE NOTES

C10

VISUALIZING

MULTIDIMENSIONAL DATA

Chair

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Visualizing Multidimensional Data

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Abstract

Science and technology would be far simpler if data, like the characters of Edwin A. Abbott's *Flatland* always stayed in two dimensions. Unfortunately, data can live in three, four, five, or any number of dimensions. Consider, for example, measurements of temperature, humidity, barometric pressure, percentage cloud cover, solar radiation intensity, and wind speed at a particular location at noon on 100 different days. The data on these six nonspatial variables consist of 100 points in a six-dimensional space.

Because isolated points in space typically do not form a smooth surface, the techniques prevalent in scientific visualization often cannot be applied to scattered multivariate data. This course will introduce techniques that will allow us to peer into such a six-dimensional space, see the configuration of points, and visualize them to understand their complex relationships.

Speaker Biographies

The presenters are members of technical staff in the statistics and data analysis research department at AT&T Bell Laboratories, Murray Hill, New Jersey. Their interests include statistical computing, graphics, data analysis, and statistical methodology. Richard A. Becker and Allan R. Wilks, together with John M. Chambers, created the S language for data analysis — work that is described in *The New S Language*. William S. Cleveland is author of the book *The Elements of Graphing Data* and co-author of *Graphical Methods For Data Analysis*. Becker and Cleveland's paper, "Brushing Scatterplots" won the Youdon Prize as the best expository paper in *Technometrics* in 1987. William S. Shyu was awarded a patent in 1987 for early work on HDTV and has developed animation and dynamic graphics systems.

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