Ordinary maps are graphical representations of the salient features of a manifold, typically a two-dimensional surface. Unlike modern maps, stick charts used by ancient Marshall island peoples achieved a synthetic, compact representation of an ocean area with essential information about the main islands and sea swells. Similarly, data analysis in high-dimensional spaces must aim at obtaining a synthetic description of a data set, revealing its main structure and its salient features. Only this can make the information content of a data set with, say, 100 coordinates, human readable and useful.
In this lecture I will review some recent results on the problem of charting high-dimensional data spaces, focusing on a method for estimating the probability density and for finding automatically the "islands", namely the peaks in this probability.