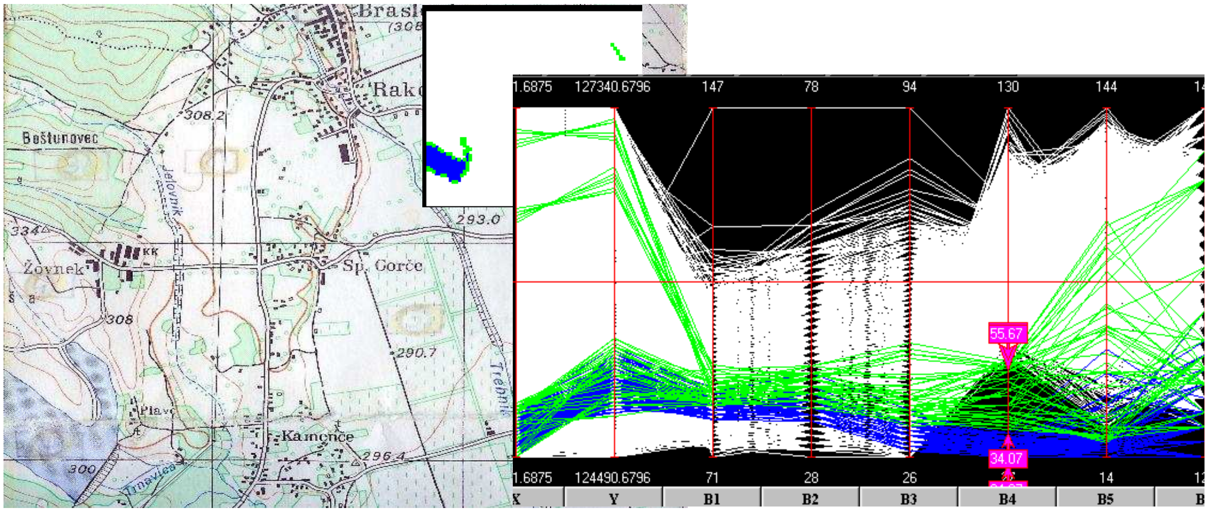

Figure 1: Ground emissions measured by satellite on a region of Slovenia (left) are displayed on the right. The water and lake's edge (middle) are discovered with two queries.

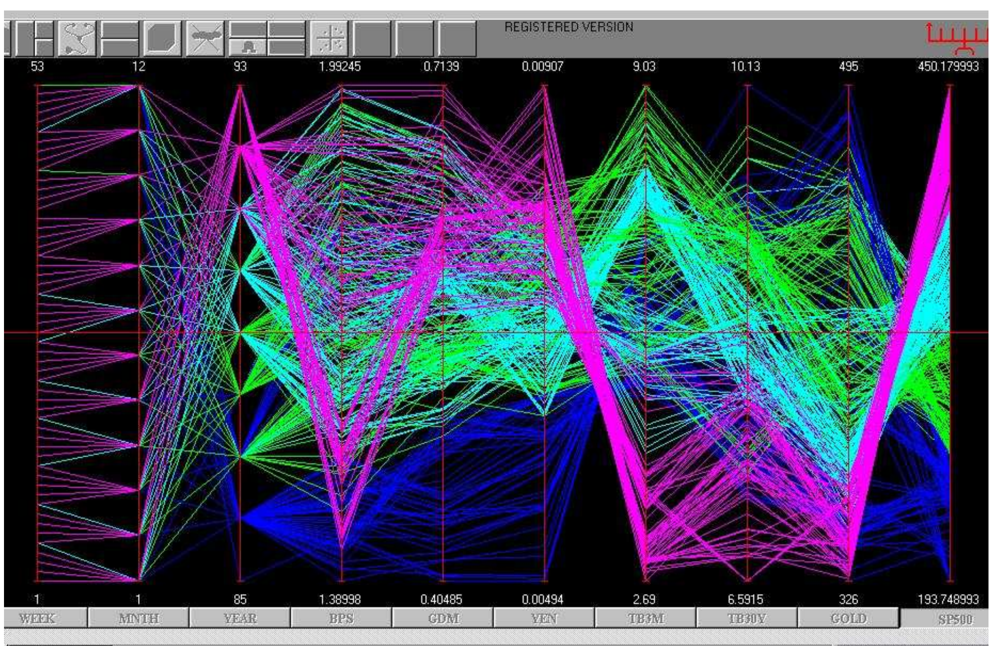

Figure 2: Multidimensional contouring query applied to a financial dataset. Quickly reveals interelationships between the variable intervals. Note those for the highest **SP**500 (last axis) range and the other variables.

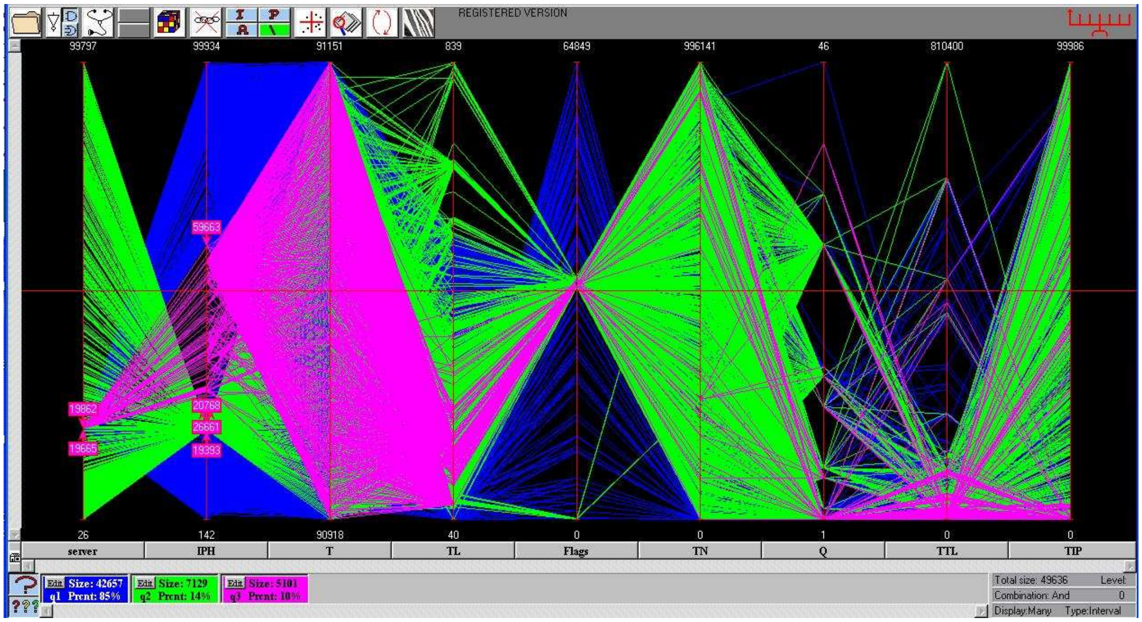

Figure 3: Detecting Network Intrusion from Internet Traffic Flow Data. Note the many-to-one relations. A server (marked on the leftmost axis) is "bombarding" many servers (shown in the 2nd axis) and there others examples – how many can you spot?

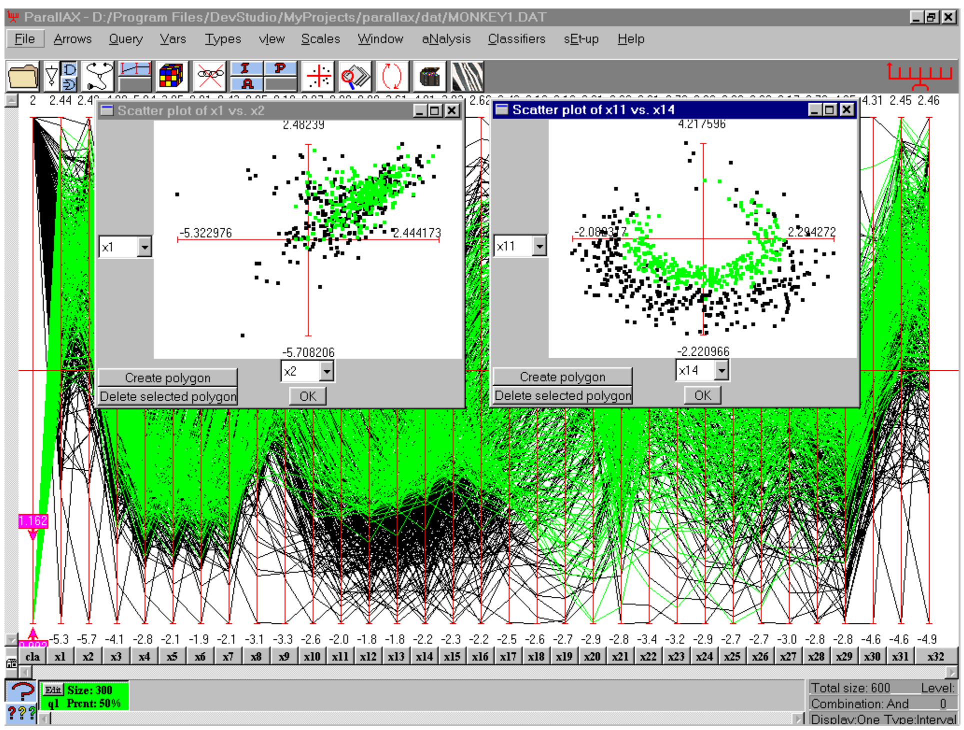

Figure 4: In the background is a dataset with 32 variables and 2 categories. Classifier finds the *nine* variables *features* needed to describe the classification rule with 4% error, and orders these variables according to their predictive value. On left is plot of first two variables and on the right the best two variables after classification.

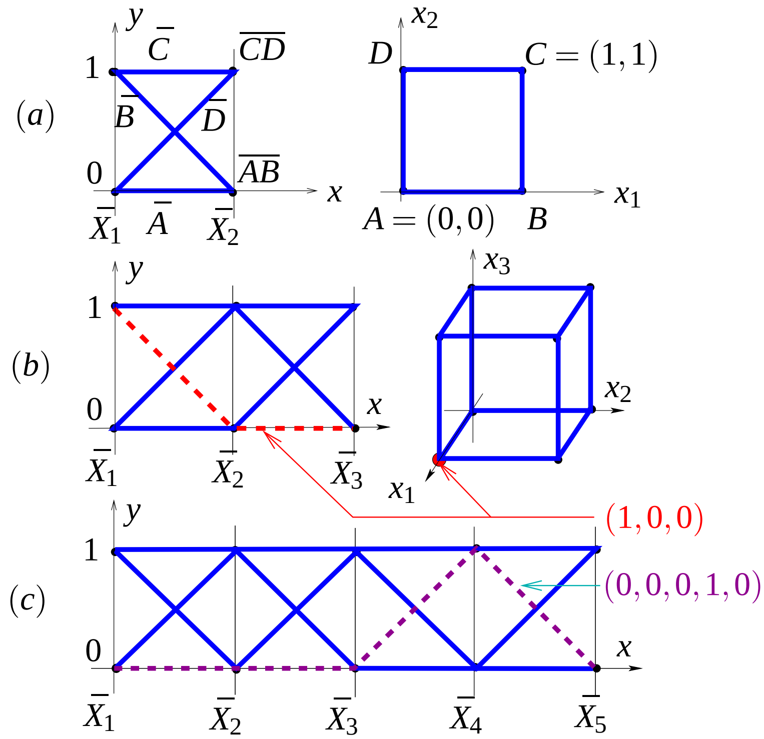

Figure 5: Square, cube and hypercube in 5-D

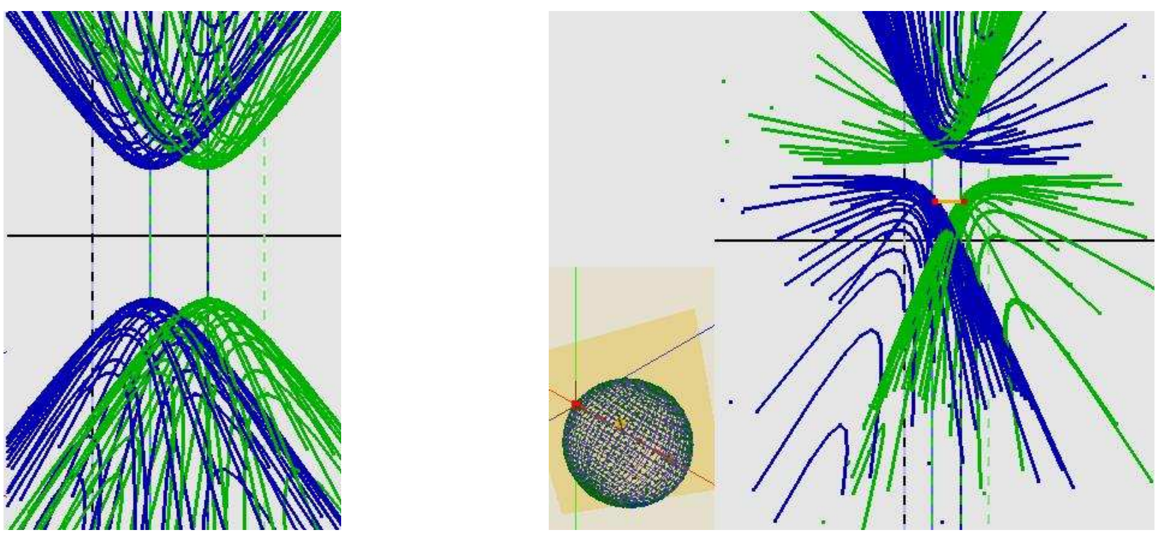

Figure 6: Representation of a sphere centered at the origin (left) and after a translation along the x_1 axis (right) causing the two hyperbolas to rotate in opposite directions. Note the *rotation* $\leftrightarrow$ *translation* duality. In N-D a sphere is represented by $N-1$ such hyperbolic regions — pattern repeats as for hypercube above.

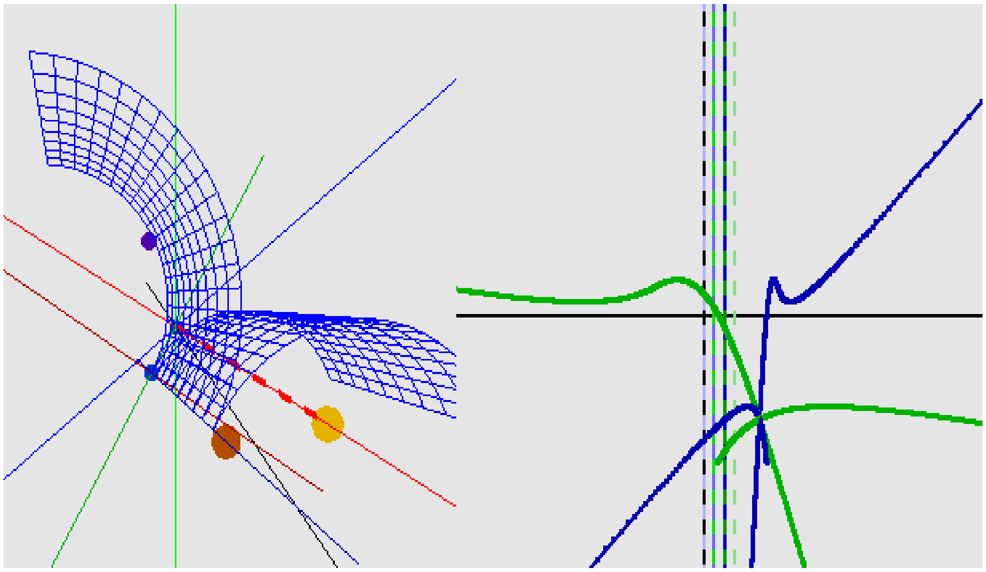

Figure 7: Note the two dualities *cusp* ↔ *inflection point* and *bitangent plane* ↔ *crossing point*. Three such curves represent the corresponding hypersurface in 4-D and so on.

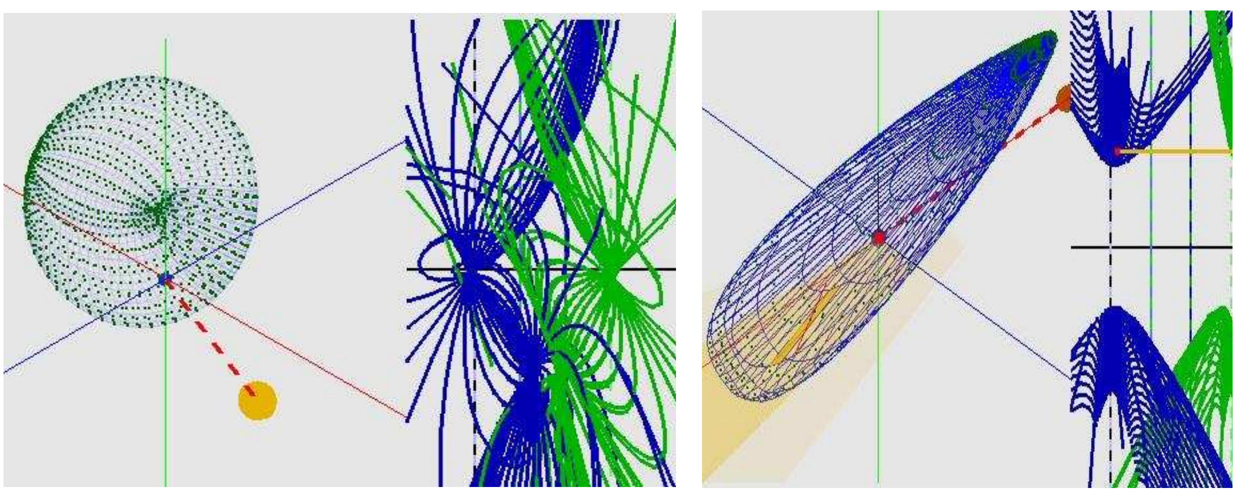

Figure 8: Representation of a surface with 2 “dimples” (depressions with cusp) which are mapped into pairs of “swirls” and are **all** visible. By contrast, in the perspective (left) one dimple is hidden. On the right is a convex surface represented by hyperbola-like (curves with two assymptotes) representation.

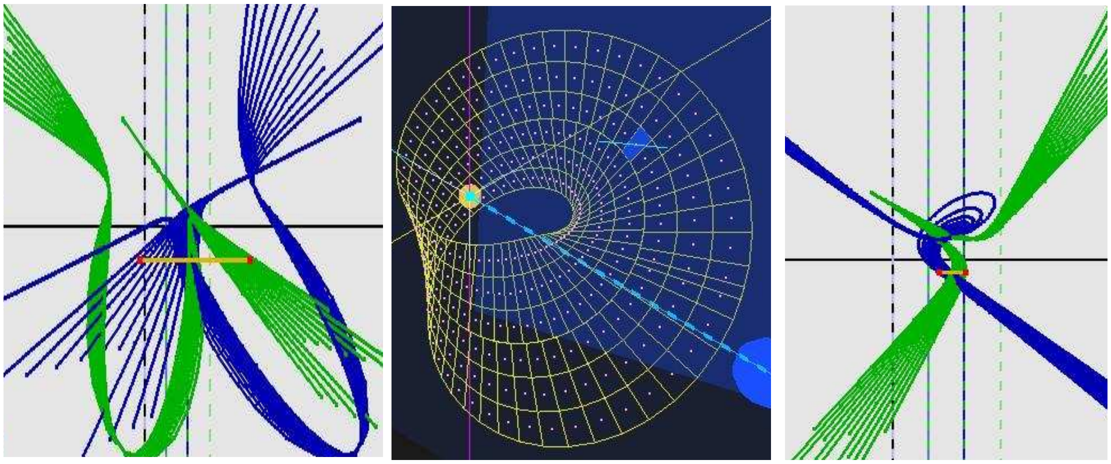

Figure 9: Möbius strip representation (left) has two cusps showing that the surface has an inflection point in 3-D (see Fig. 7 for *cusp* ↔ *inflection points* duality). This together with the upward/downward curves going to infinity in the same direction shows that the surface is closed and non-orientable. The curves and cusps may merge (right).

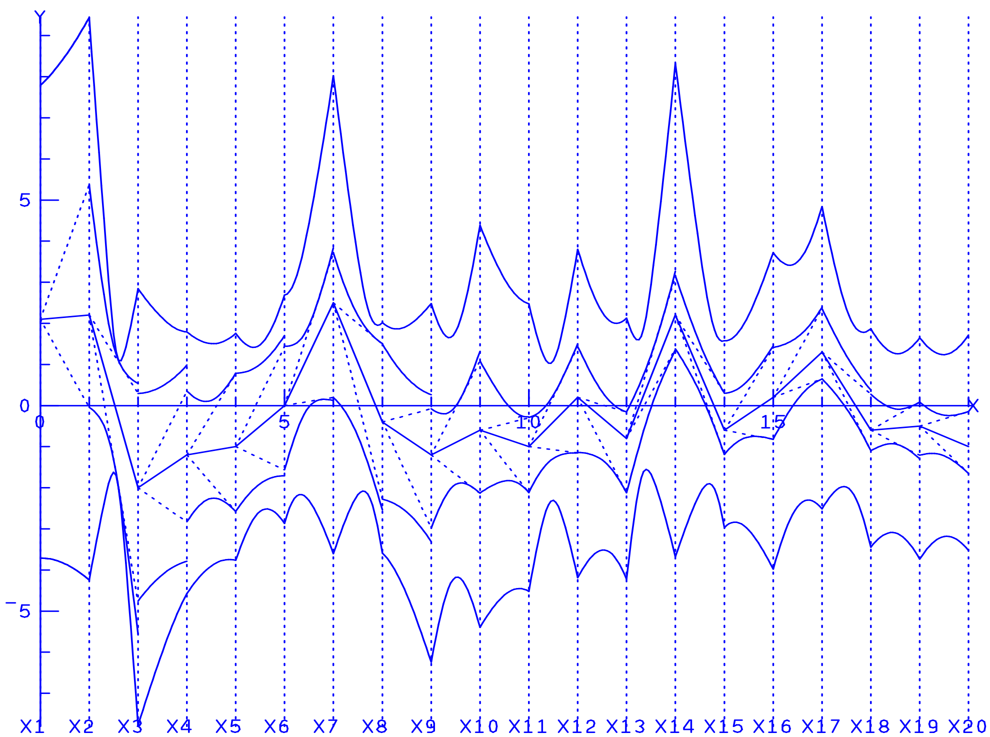

Figure 10: Interior point (polygonal line) construction algorithm shown for a convex hypersurface in 20 - D. A polygonal line touching any of the intermediate curves represents a point on the surface, and if it intersects one of the curves it represents an exterior point.