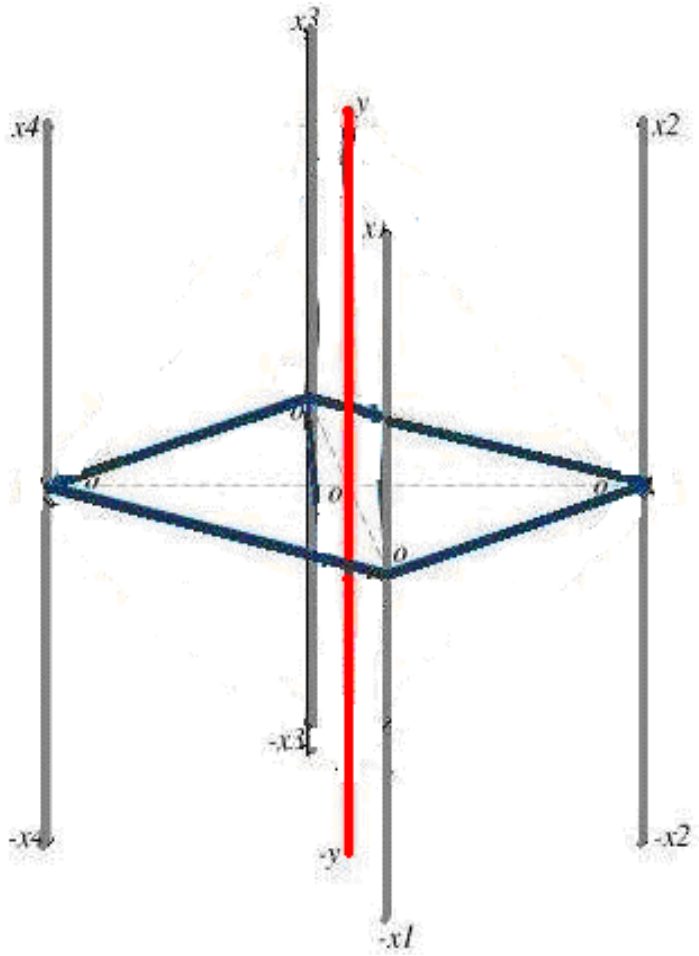
INTRODUCTION TO THE MULTI-DIMENSIONAL (MD) CARTESIAN SPACE

By
Mario Arturo Ruiz Estrada
Econographication Virtual Laboratory (EVL)

THE MULTI-DIMENSIONAL (MD) CARTESIAN SPACE

- In MD Cartesian Space, this Cartesian Space consists of five axes ***([X1,X2,X3,X4], Y)***, representing four independent variables ***"X1", "X2", "X3" and "X4"*** and one dependent variable *"y"* respectively. Each ***"X"*** variable ***(X1, X2, X3, X4)*** and ***"Y"*** variable has its individual axis that is a vertical line with both positive and negative values. The positive and negative values are represented by ***([(X1,-X1), (X2,-X2), (X3,-X3), (X4,-X4)], (Y,-Y)]*** on the MD Cartesian Space.

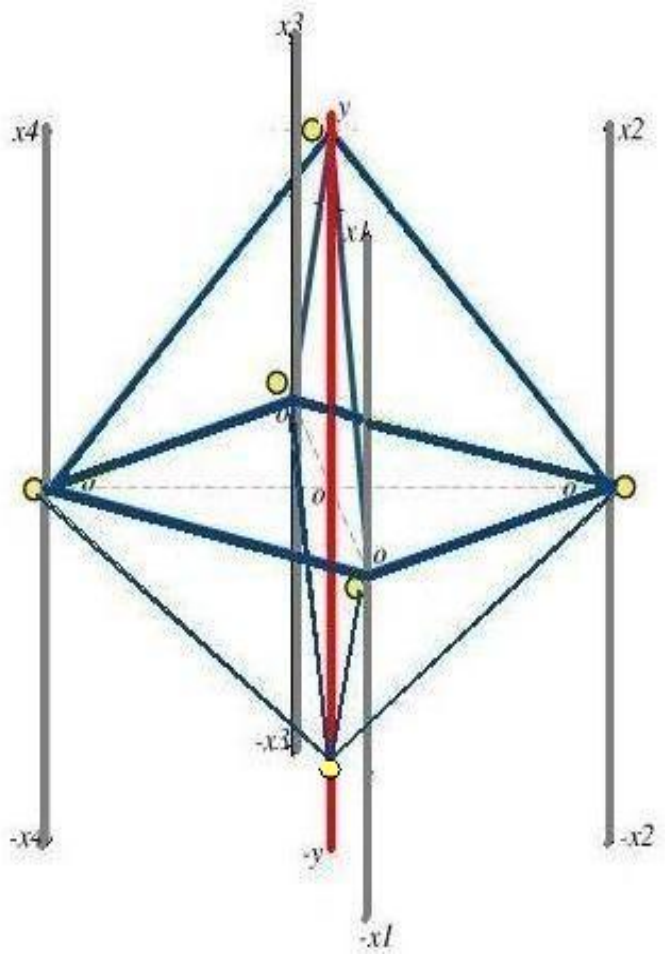
- In the case of 2-D and 3-D Graphs and Cartesian Spaces, the individual variables can be anywhere along the vertical and horizontal axes; but in the case of MD Cartesian Space all variables ***(Xi)*** and the ***"Y"*** variable are either on the positive side of respective axes together on the negative side of their respective axes together. In other words, the values ***"Y"*** can only move in its axis. Therefore, any change in some or all ***"Xi"*** will affect ***"Y"*** directly.



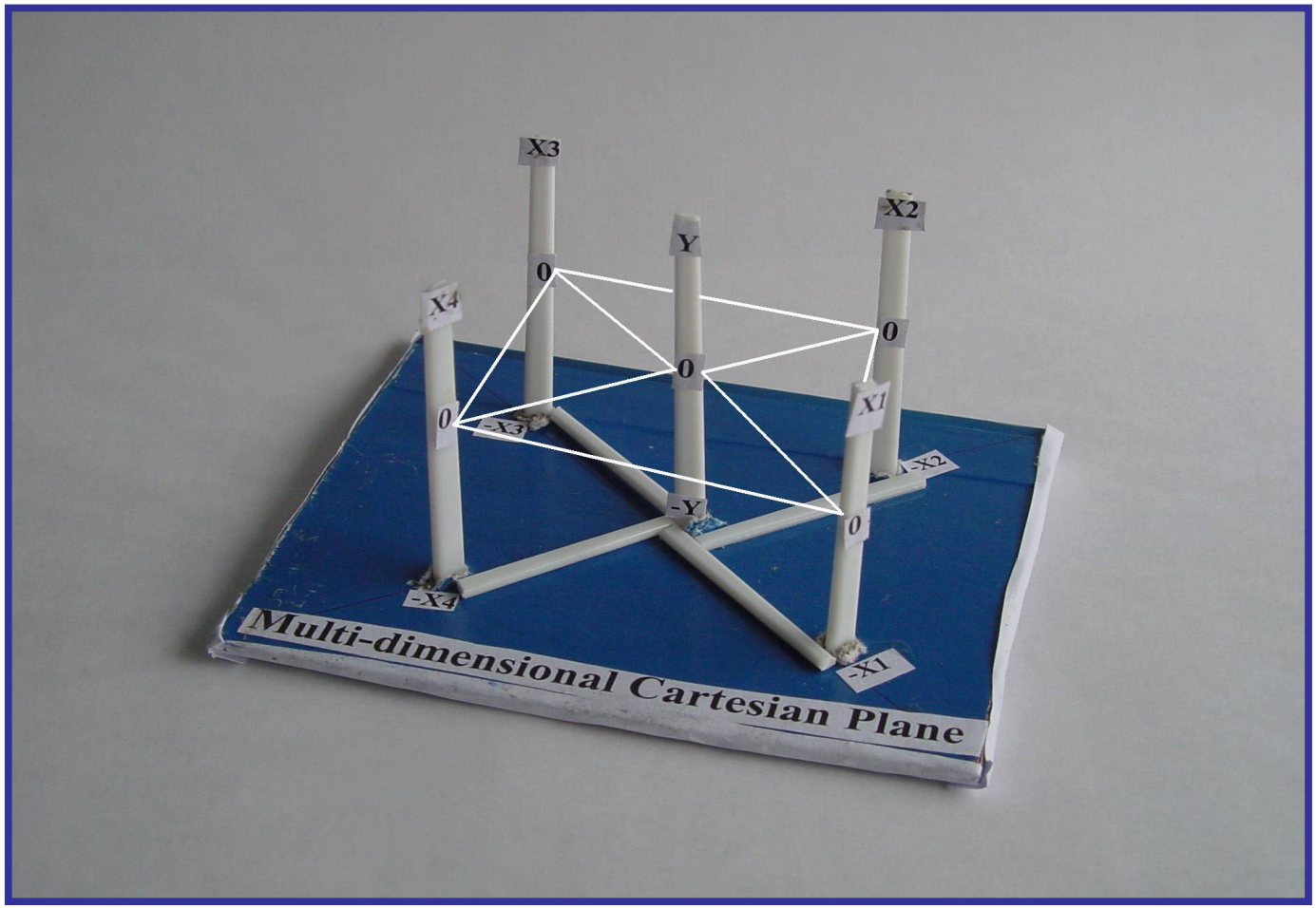
THE MULTI-DIMENSIONAL (MD) CARTESIAN SPACE

- Representing the dependent variable, the fifth axis, **"Y"** is positioned in the center of the graph (among the other four axes). **"Y"** has a positive value and negative value. It is the convergent point of all the other four axes **X1, X2, X3 and X4**. In other words, all **"Xi"** axes converge at the **"Y"** axis. The result is a figure represented by a pyramid that can be reshaped into two cubes or one cube. The function to be used by the Multi-Dimensional Cartesian Space is equal to

Y = f ([X1,-X1],[X2.-X2],[X3,-X3],[X4,-X4])



THE MULTI-DIMENSIONAL (MD) CARTESIAN SPACE PROTOTYPE



END