

THE VARIETIES OF SPACE

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In reference to the nature of SPACE: The mathematical theory of measurement provides a concise summary of the generic types of spaces. Here they are, with slight elaboration. This list is a hierarchy, each following type is an elaboration of the preceding ones. Note that each can be conceptualized as one-dimensional, additional dimensions (2D, 3D, etc) are merely orthogonal products of more than one space. For grounding, it is commonly assumed that our everyday living space is composed of three REAL spaces at right angles. In fact, this idea was made up in the middle of the sixteenth century by Descartes. Cyberspace illustrates the notion that space is quite arbitrary, it provides an opportunity to retrain ourselves to perceive all the other types of space. TIME is just another space, one that we have forgotten how to travel freely in. So is SCALE. The technical challenge of cyberspace is how we will be able to *mix* types of space in the same perceptual environment.

Varieties of Space

INDICATIVE: the elementary domain of perception. Where our mind is. This one is not taught in school. See Spencer-Brown, Laws of Form.

NOMINAL: a set, unordered collections of things. Eg: the space of cyberspace novels, of fish in a pond, of items on a menu.

ORDINAL: ordered, ranked things. Eg: your list of most to least favorite novels, pecking orders of fish, steps in an instruction.

INTERVAL: order in which the distance between items is equal. Integers. Eg: pages in a novel, age in days of fish, cells on graph paper.

RATIONAL: intervals which support ratios. Numerical fractions. Eg: percentages of each letter in a novel, portions of a meal each fish eats, comparison of monetary wealth.

REAL: continuous space. Real numbers. Eg: our model of the space underlying words on a page, the weight and length of fish, physical space.

IMAGINARY: contradictory spaces. $\sqrt{-1}$. Both True and False. Eg: our construction of mental images from words, wave propagation, inside a black hole.

Note how going down this hierarchy successively adds more mathematics and less physical reality. Note how cognitive spaces bound both the top and the bottom.