The Relativity of Entropy WARNER MILLER, Florida Atlantic University — This research begins to forward John A. Wheeler's "It from Bit" research paradigm. We ask, "can the concepts of dimensionality and causal (spacetime) geometry emerge from information theory in some semi-classical limit?" We describe the beginnings of an information-theoretic structure for sweeping out spacetime based on an network and an information metric. Following Leibnizian point of view that we live in a world of relationships, not of machinery, and recognizing that every physical quantity (every "it") derives its ultimate significance from bits, binary yes-no indications, we forward this information-based information pregeometry. We have shown one thing:given three random variables a, b and c, with each of them having a very large number of possible values, it is possible to make b half way between a and b in the sense of information distance. That is we can satisfy the triangle inequality. This is possible only if the variables take a large number of values, a fact which suggests that a spacetime point should be thought of as a variable having many possible values. One model is this: a spacetime event is a conglomeration of many binary variables.

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