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"Gauge Theory, Inflation and Geometric Marginalism: Are our Inflation, Productivity and Trade Indicators All Off Because The Marginal Revolution Was Based on the Wrong Version of The differential Calculus?"

ABSTRACT: It has been claimed in the literature in multiple places that it is mathematically impossible to define an Economic Inflation Index for a consumer with dynamic tastes. This is in fact, simply false and was achieved in collaboration with P Malaney in the early 1990s. In that work, we argued that the reason for the erroneous claim is that economists appear to be unaware that they are continuing to use an old and severely limited version of the differential calculus when a backwards compatible geometric upgrade appropriate to economic theory has been available for years. In this lecture we will argue that all of economic theory can be upgraded without loss to a geometric and field theoretic perspective. In so doing we will encounter a new group valued index of bilateral trade valued in  $GL(2, \mathbb{R})$ , understand why path dependence is actually desirable rather than a "Cycling problem", rethink the representative consumer as a field theoretic concept, and see that Cardinal Utility theory is a naturally occurring Principal G-Bundle with a relative of the Virasoro Group as its fiber, and Ordinal Utility Theory as its base space. When income expansion paths are added it acquires a natural connection which solves the changing preference problem, while the Samuelson-Shephard Cost Function becomes a natural section of the function space bundle in question.