

The Wilsonian paradigm asserts that hierarchies imply the existence of new UV physics to maintain naturalness. However, we know that this strong imperative can be avoided by vacuum selection. The classic example of this is the Peccei-Quinn mechanism whereby a marginal coupling, which is the zero mode of a dynamical field, relaxes to zero due to the specific form of the field's potential. This type of mechanism was generalized by Abbott, in a cosmological setting, to attack the cosmological constant problem. Recently similar ideas have been used in the context of the electro-weak hierarchy problem. In all of these cases one has to choose particular dynamics (such as coupling to a sector which has an instanton induced potential). In this talk I will show that relaxation mechanisms appear quite naturally in a generic collection of field theories, at the cost of having bounded target spaces and breaking space-time symmetries.