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A Unitary Vision of Grothendieck's 40 Main Years (1951-1991): The Models TSK (Topos of Sheaves over Kripke Models)

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Abstract. We present a "mathematical critics" model to understand Grothendieck's work in a unitary perspective, blending history (through Intuitionistic Kripke Models), phenomenology (through Sheaves), and metaphysics (through Toposes). Six periods (Functional Analysis, 1949-53; Abelian Categories, 1955-57; Algebraic Geometry, 1958-64; Arithmetic Geometry, 1964-67; Topological Algebra, 1981-91; Mathematical Philosophy, 1985-87) become connected through some fundamental pendulum dialectics: projections-injections, foldings-unfoldings, archetypes-types. This helps to explain Grothendieck's unifying concepts and techniques, through their universal and natural characteristics.