

## How Holton's Thematic Analysis Can Help to Understand Why Fred Hoyle Never Accepted Big Bang Cosmology

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**Abstract :** After an intense dispute between the big bang cosmology and its big rival, the steady-state cosmology, some important experimental observations, such as the determination of helium abundance in the universe and the discovery of the cosmic background radiation in the 1960s were decisive for the progressive and wide acceptance of big bang cosmology and the inevitable abandonment of steady-state cosmology. But, despite solid theoretical support and those solid experimental observations favorable to big bang cosmology, Fred Hoyle, one of the proponents of the steady-state and the main opponent of the idea of the big bang (which, paradoxically, himself he baptized), never gave up and continued to fight for the idea of a stationary (or quasi-stationary) universe until the end of his life, even after decades of widespread consensus around the big bang cosmology. We can try to understand this persistent attitude of Hoyle by applying Holton's thematic analysis to cosmology. Holton recognizes in the scientific activity a dimension that, even unconscious or not assumed, is nevertheless very important in the work of scientists, in implicit articulation with the experimental and the theoretical dimensions of science. This is the thematic dimension, constituted by themata – concepts, methodologies, and hypotheses with a metaphysical, aesthetic, logical, or epistemological nature, associated both with the cultural context and the individual psychology of scientists. In practice, themata can be expressed through personal preferences and choices that guide the individual and collective work of scientists. Thematic analysis shows that big bang cosmology is mainly based on a set of themata consisting of evolution, finitude, life cycle, and change; the cosmology of the steady-state is based on opposite themata: steady-state, infinity, continuous existence, and constancy. The passionate controversy that these cosmological views carried out is part of an old cosmological opposition: the thematic opposition between an evolutionary view of the world (associated with Heraclitus) and a stationary view (associated with Parmenides). Personal preferences seem to have been important in this (thematic) controversy, and the thematic analysis that was developed shows that Hoyle is a very illustrative example of a life-long personal commitment to some themata, in this case to the opposite themata of the big bang cosmology. His struggle against the big bang idea was strongly based on philosophical and even religious reasons – which, in a certain sense and in a Holtonian perspective, is related to thematic preferences. In this personal and persistent struggle, Hoyle always refused the way how some experimental observations were considered decisive in favor of the big bang idea, arguing that the success of this idea is based on sociological and cultural prejudices. This Hoyle's attitude is a personal thematic attitude, in which the acceptance or rejection of what is presented as proof or scientific fact is conditioned by themata: what is a proof or a scientific fact for one scientist is something yet to be established for another scientist who defends different or even opposites themata.

**Keywords :** cosmology, experimental observations, fred hoyle, interpretation, life-long personal commitment, Themata

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