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Arni S.R. Srinivasa Rao* (arrao@augusta.edu), Augusta, GA 30909, and **James R. Carey**, Davis, CA. *From Fibonacci to Alfred Lotka and beyond: Modeling the dynamics of population and age-structures.*

The subject of population dynamics is hundreds of years old and is been studied by famous mathematicians such as Fibonacci, d’Alambert Daniel Bernoulli, Euler, etc, Concepts such as stability and stationarity of population are essential pillars of population dynamics. In the last century the works by Alfred Lotka laid the foundation for the population stability theory, which was developed further by William Feller through renewal equations. Ansley Coale and Norman Ryder (during 1960s and 1970s) brought several properties of stationary populations from the Life Table perspective. During last decade new identities of stationary population have emerged due to Carey’s Equality (early 2000s). James Carey’s experimental work and deeper insights helped to discover newer perspectives of stationary populations by Vaupel (2009) and Goldstein (2009). Rao and Carey (2013/2015) have proved a fundamental theorem in stationary population using insights from Carey’s equality by blending with algebraic and combinatory principles. These newer results bring similar patterns that are comparable to renewal type of theory due to Lotka, Feller and others. (Received August 05, 2016)