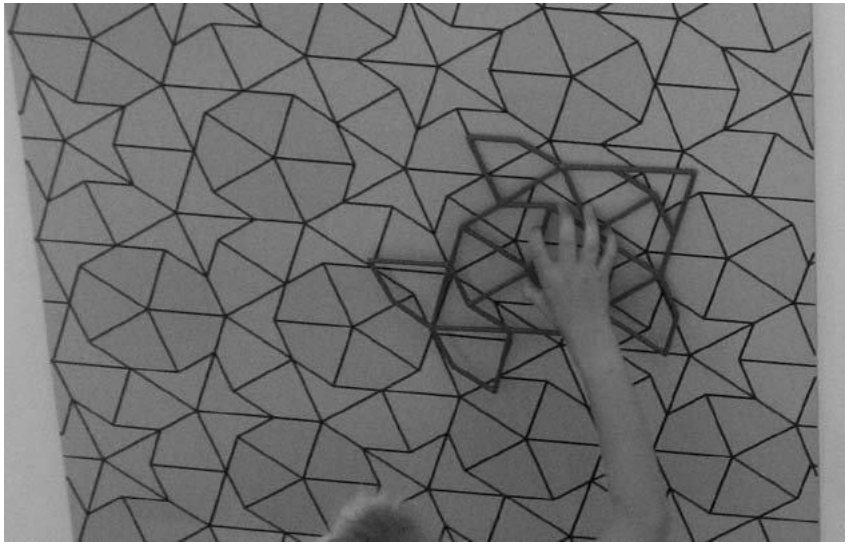

Arthur M. Geoffrion, Ramayya Krishnan

E-Business and Management Science: Mutual Impacts (Part 2 of 2).

A time-varying quantile can be fitted by formulating a time series model for the corresponding population quantile and iteratively applying a suitably modified state space signal extraction algorithm. It is shown that such quantiles satisfy the defining property of fixed quantiles in having the appropriate number of observations above and below. Like quantiles, time-varying expectiles can be estimated by a state space signal extraction algorithm and they satisfy properties that generalize the moment conditions associated with fixed expectiles. Because the state space form can handle irregularly spaced observations, the proposed algorithms can be adapted to provide a viable means of computing spline-based non-parametric quantile and expectile regressions.