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C^*-algebras, fractals, wavelets and dynamics.

With recent developments in a number of related areas we have seen diverse overlapping mathematical advances meeting on the common ground of multiscale theory. With hindsight this is perhaps not surprising as both iterated function system (IFS)-fractals and wavelets rely on recursive and iterated multiresolution constructions. The multiresolution idea is geometric, but it also has several separate facets to it, some deriving from vision, some from artificial intelligence, and some from operator theory. Motivated by a recent wavelet algorithm for affine IFSs due to Dorin Dutkay and the speaker, we will present the subject in overview, and highlight some of the differences between the more traditional wavelet constructions and their fractal IFS counterparts. The dynamics part of the title refers to Smale spaces. (Joint work with Dorin Dutkay.)