Time and band limiting: 1950-2016.

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Back in the 1950's Claude Shannon posed the problem: you have a signal of finite duration and you only know its frequency components on a finite band. What is the best use you can make of this information?

Remarkable mathematical work to answer this question was developed at Bell Labs by D. Slepian, H. Landau and H. Pollak starting in 1960.

I want to remind the audience of what they found, and then attempt to show recent developments in what some people may call "pure math" motivated by trying to understand this piece of "applied math".