Abstract: This thesis is focused on proving the Love-Young inequality and clarifying the manner in which it relates to a fractional Brownian motion. To begin with, several estimates alongside the concept of p-variation of a function are presented. The connection between functions of finite p-variation and regulated functions is then highlighted and used to prove the aforementioned Love-Young inequality. Deficiency of the pathwise approach to stochastic integration is recognised and later discussed amongst the properties of fractional Brownian motions. This constitutes the main application of the featured theory which is the integration with respect to irregular functions.