The usual Gauss transformation $U(x) = \frac{1}{x} - \left[\frac{1}{x}\right]$ for $x \in (0, 1]$ gives rise to a dynamical system which is nothing but the usual continued fraction expansion $[a_1, a_2, \cdots]$. The invariant measure for this dynamical system is given by $d\mu(x) = \frac{1}{\log 2} \frac{1}{1+x} \, dx$ for $x \in (0, 1]$. Now instead of the usual continued fraction expansion, if we consider the $\theta$-expansion corresponding to some $\theta \in [0, 1)$, then this expansion also corresponds to some dynamical system which is obtained from a generalized version of the Gauss transformation given by $T(x) = \frac{1}{x} - \theta \left[\frac{1}{px}\right]$ for $x \in (0, \theta]$. In this talk, we make an elaborate study on the generalized Gauss transformation. (Received September 16, 2008)