On the quasi-greedy property and uniformly bounded orthonormal systems

We derive a necessary condition for a uniformly bounded orthonormal basis for $L^2(\Omega)$, Ω a probability space, to be quasi-greedy in $L^p(\Omega), p \neq 2$, and then use this condition to prove that many classical systems, such as the trigonometric system and Walsh system, fail to be quasi-greedy in $L^p, p \neq 2$, i.e. thresholding is not well-behaved in $L^p, p \neq 2$ for such systems.