Working out an idea of Huang and Leung (Math.Ann.350 (2010)) we can show that all classical compact symmetric spaces can be represented as sets of inclusions of either one of the following two types: $\{A^p \subset A^n\}$ for $p < n$ or $\{B^n \subset A^n\}$, where A is equal or closely related to the tensor algebra $K \otimes L$ of two division algebras $K, L \in \{R, C, H\}$, and where B is a certain half-dimensional subalgebra of A (joint work with S. Hosseini). We will discuss a possible extension of this result - at least on the Lie algebra level - to exceptional symmetric spaces where also the octonions will show up. This is work in progress.