Some Subclasses of the Real-Valued Honorary Baire Two Functions on $\mathbb{R}^n$. Preliminary report.

Certain subclasses of the class of Baire one real-valued functions have very nice properties, especially concerning their points of continuity and their preservation of connectedness for many connected sets. A Gibson [weakly Gibson] function $f : \mathbb{R}^n \to \mathbb{R}$ is defined by the requirement that $f(U) \subseteq f(U)$ for every open [open connected] set $U$ in $\mathbb{R}^n$. It is known that Baire one, Gibson functions are continuous, and that Baire one, weakly Gibson functions have Darboux-like properties in the sense that if $U \subseteq \mathbb{R}^n$ is an open connected set and $U \subseteq S \subseteq \overline{U}$, then $f(S)$ is an interval. A summary of the study of the situation where the Baire one condition is replaced by honorary Baire two will be discussed. Distinctly different results are found. (Received September 22, 2011)