Set-Defined Colorings in Graphs

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For a nontrivial connected graph G, Frank Harary and Mike Plantholt introduced an edge coloring $c\colon E(G) \to [k] = \{1, 2, \ldots, k\}$, where adjacent edges may be colored the same, that gives rise to a vertex coloring $c'\colon V(G) \to \mathcal{P}([k])$, where $c'(v)$ is the set of colors of the edges of G incident with v and where $u \neq v$ implies that $c'(u) \neq c'(v)$. We take another look at this concept and present recent results in this area of research. This is joint work with Z. Bi, G. Chartrand, S. English and P. Zhang.