Those who propose gerrymandering solutions often assert that following a well-defined set of "neutral" criteria will result in fair districts. A two-year mapping project of over 14,000 legislative districts in five Midwestern states demonstrates that seemingly-neutral criteria can have second-order bias, in that criteria often produce districts that can favor a political party. This mapping project further reveals that simple heuristics, for example drawing compact districts, fail to account for practical legal and election administration considerations, such as respecting the Voting Rights Act and maintaining the integrity of city and county boundaries. (Received September 15, 2008)