The Tooth Fairy in Experimental Design: White Lies We Tell Our Software

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Many of us told our children about the mythical Tooth Fairy when they were young, to add a little enchantment and mystique to childhood. Similarly, we don't always tell our software the whole truth. This talk will feature four examples making use of Design-Expert's (DX) comprehensive design-building facilities to build the desired design while not revealing everything to DX. Example one replaces numeric variables with categoric in the build to achieve an even spread of values in the design. Once built, we switch the variables back to numeric. The second example does the same thing with categoric variables – switched to numeric in the build. The third example builds a comprehensive design piecemeal – two overlapping constrained optimal designs are built, then combined into a single candidate set from which the final design is built … with one more twist. The final example explores a new design class – a replicated geometric full-factorial crossed with easy to change model variables to achieve a split-plot-like structure with good modeling properties.