**New contributions in the SoSym extension of the ICMT 2009 Paper:**

**First new contribution:**

We integrate the notion of meta-model pruning into the approach to deal with large input meta-models such as the UML. The meta-model pruning algorithm prunes a large meta-model such that only required concepts and their obligatory dependencies are preserved. The result is an effective input meta-model that is the true input domain of the model transformation under test. Transforming such a meta-model to Alloy results in a smaller set of signatures and facts making solving using Alloy highly scalable.

**Second new contribution**

The experiments performed in the ICMT 2009 paper do not study the effects of multiple non-isomorphic solutions for the same test strategy. In this paper, we use Alloy’s inherent symmetry breaking scheme to generate multiple test models for the same test strategy. This essentially helps us test the robustness of the testing strategy with respect to the SAT solver. We show that despite multiple Alloy solutions the overall bug detecting ability has a strong correlation with coverage based test strategies.

**Third new contribution**

Automatically generated non-isomorphic solutions helped us discover new pre-condition constraints in the model transformation case study. Automatically generated models often contain structures never foreseen by human experts who design pre-condition contracts for a model transformation. Models that generate exceptional behavior such as infinite looping or creation of invalid output models helped us detect patterns that were generalized to new pre-condition constraints. We enlist 9 such pre-condition constraints in the paper. Automatically generated models help us save an enormous amount of time to correctly specify the input domain of a model transformation. Many pre-conditions are detected through experience and years of use. Faults due to invalid specification of pre-conditions can lead to problems during the lifetime of a transformation resulting in several man-hours of debugging activity.