Local constructions of manifolds
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Starting with a tree of tetrahedra, say you are allowed to recursively glue together some two boundary triangles that have nonempty intersection. You may perform this type of move as many times you want.

Let us call "Mogami manifolds" the triangulated 3-manifolds (with or without boundary) that can be obtained this way. Mogami, a quantum physicist, conjectured in 1995 that all triangulated 3-balls are Mogami. This conjecture implies an important one in discrete quantum gravity (namely, that there are exponentially many triangulations of the 3-ball, in terms of the number of tetrahedra.)

We sketch a couple of connections between this new notion and existing ones, and disprove Mogami's conjecture using a topological trick.

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