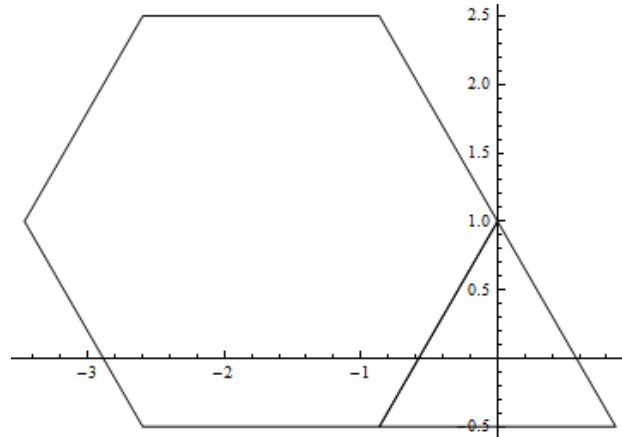


GeneticsOfPolygons.org

Summary of dynamics of the equilateral triangle: $N=3$

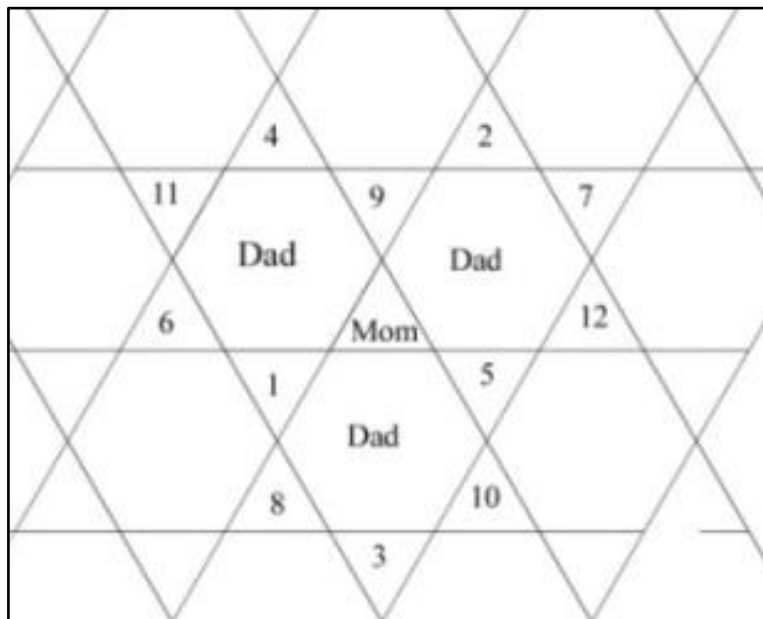
The First Family shows Mom and hexagon Dad.



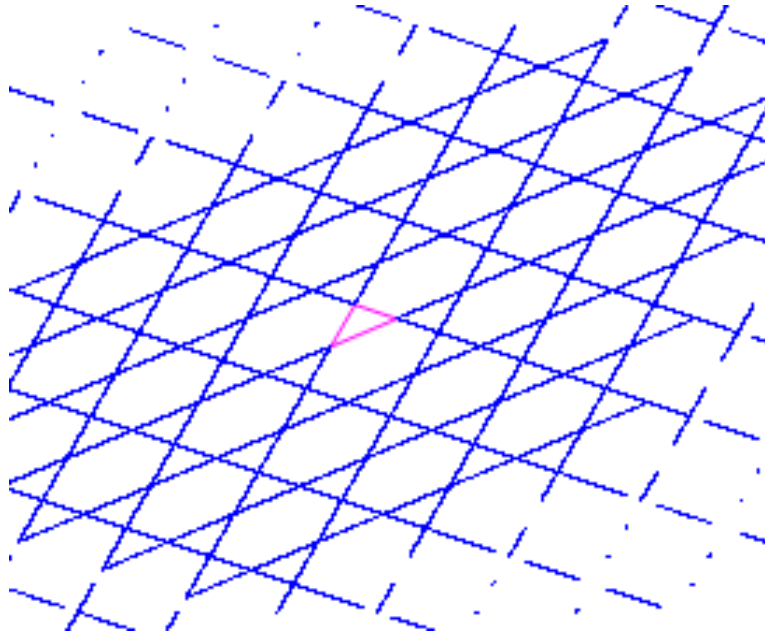
The web is shown below. The first ring of three Dads have period 3 (plotting centers). The remaining points inside the Dads have period 6. The Moms do not have period doubling so each Mom in the ring of 12 Moms has period 12. They are numbered here in the order of the mapping

In general ring k has $2k$ Dads and $12k$ Moms and these are also the periods (plotting centers of Dads). The first ring of Dads are '1-step relative the Mom at the origin, so their step sequence is (1), the second ring has step sequence (211) then (21211), so each ring concatenates another (21). The limiting sequence is (21) which has winding number .5

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All triangles are affinely equivalent, so they all share the same dynamics. Below is the web for an arbitrary triangle, showing that the ring structure is unchanged and so are the periods.



For inner billiards, this affine equivalence fails and triangles have still not been categorized. It is not even known whether all triangles have a periodic orbit, although there is evidence pointing in this direction.