

# **Star-of-David Moneyfold by Fred Rohm: An essay in the verbal communication of origami**

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The communication of origami normally involves both eye and ear, with a strong bias in favor of the visual. Due to the circumstance that Lillian Oppenheimer is an exceptionally verbal person, we at the Origami Center are kept constantly aware of the importance of words in origami teaching. (Very early in my association with Lillian, I overheard her instructing a grandchild in the Folding of a forgotten model, over the telephone, apparently as a matter of course: I have never forgotten that demonstration!) I do not expect words to supplant diagrams in the communication of origami, but I do think that they can be used more fully than they have been to clarify and explain pictures, particularly for the new folder who is not yet at home with the conventions of origami illustration. An occasional effort to teach an origami model by words alone is a valuable exercise in precision of expression and a lesson in humility to those who thought they knew how to say what they meant, without ambiguity. To learn a model from a written description of the folding procedure, without diagrams, requires close attention, both to the words and to the model as it develops. The directions here given can be followed: several folders - admittedly not beginners - have done it. Happy folding!



This method of making the Star works only with an American one-dollar bill, as it makes use of landmarks that are part of the printed design. There are other methods that use angles established by folding and work with any sort of paper, but they are more laborious and less precise.

Choose a new bill on which the white margins running lengthwise on the green side are about equal in width. The green side will be the outside of the finished star.

Begin with the black side up and the lettering upright, in reading position.

1. Bring the left-hand end toward the right until the edge exactly bisects the letter "I" of "America." Fold. Turn the model over and bring the other end to the fold you have just made. Turn the model over again and turn back the part of the first end that projects beyond the second crosswise fold. You now have three equal panels and a tab.
2. Turn the model over again, so the non-tab end is uppermost. Bring the cut edge of the end to the crosswise mountain fold. Reverse the fold that separates the remaining two panels, so that it is a mountain fold on the black side. Bring the mountain folds on either side of it to match this middle one. The paper is now accordion-pleated, and you have six equal panels and a tab.
3. Open everything out. With the green side up, mountain fold the long white margins backward to form hems on the black side. The crease on each side passes along the fine green line that delimits the fine white line just outside the patterned area, and the fine white line shows on the green side after the folds are made. Turn over. With the hems in place, bring the two long edges together, a valley fold on the black side, and crease hard. Take out this middle line fold and pleat the paper up into accordion pleats again, being sure that the folds pass neatly through the hems and that all the edges match.
4. Open all the crosswise folds except the fourth from the non-tab end and the one that sets off the tab. Just leave the tab in place and pretend it isn't there. The black side of the paper is now up, and you have four panels on one side of the vertical mountain fold and two panels on the other. On the longer side, make diagonal creases across all four panels, from the top of the vertical fold to the bottom corner at the end of the bill, and from the bottom of the fold to the top corner. Take each fold out as soon as it has been firmly creased. On the shorter side of the model, make the folds from the top and bottom of the vertical crease to the center line at the end of the bill. (Be sure the tab is folded down, or the angles will be all wrong!) Now unfold the vertical fold and put in the fourth one from the tab end. (Second from the non-tab end.) Repeat all the diagonal folds on the sides opposite to those on which the first sets were made. Then flatten the paper out. It should be evenly "quilted" with equilateral triangles forming a pattern that may be seen as rows of "diamonds."
5. Pleat the model up again into accordion pleats and true the edges. There are now three vertical mountain folds on the green side. Reverse-fold the top and bottom of each of

these folds, using the creases, of the diagonal grid which are already present. Again, true the edges. The face of the model now consists of two complete hexagons with a half-hexagon at each end. Across the face of each hexagon are three creases, a vertical valley fold and two diagonal mountain folds. Reverse the diagonals, making them valley folds. The easy way to do it is to fold the hexagon in half two ways, and that gives you an excellent opportunity to check on the accuracy of the folding. If it is good, the edges of all the hexagons will match when folded in half in any direction.

6. With the model pleated up, work now on the three vertical mountain folds on the green side. Your landmarks are the diagonal creases across the hexagons and the lengthwise crease that runs through the bill at the center line. Bring the top end of a vertical fold to the center of either adjoining hexagon. The folded edge will lie along the diagonal crease. Crease hard, but only as far as the center line crease. Unfold and repeat the operation with the bottom end of the vertical fold. Unfold, and repeat both operations on the other side of the vertical fold. All these little creases are now mountain-and-valley, and together they delimit a small diamond-shaped area of which the vertical fold is the center line. Repeat the whole process with the other two vertical folds.
7. At one of the vertical folds, flatten out the fold and make a mountain fold all around the little diamond. Push the center of the diamond down, so that a valley fold forms across the middle at the widest point. Be sure there is a mountain fold developing from each side corner of the diamond to the center of the hexagon on each side and valley folds from the top and bottom of the diamond to the center of the hexagon. Bring the top and bottom ends of the little diamond together and press all the folds flat, Repeat at the other two vertical folds. The model is now a flat hexagon, or more properly, two hexagons, front and back, with three little "bird-mouths" between them.
8. Unfold the model no more than you must to lock the ends together. First unfold the tab and reverse the diagonals that converge on the center line. Then open the hems of the other end and tuck the hems of the tab under them. The cut edge of the non-tab end should come to the valley fold that delimits the tab, forming a third whole hexagon. As soon as the reverse folds at the edges of the model have been refolded, the ends of the bill will be firmly locked together.
9. Since the two faces of the model are alike, it does not matter which you work on first. Each face is outlined by three long triangles with their side points touching. The midpoints of the three original hexagons virtually meet at the center of the model. Turn these points outward, opening a triangular hole. The folds pass between the bases of adjacent triangles at their middle lines. Press them firmly. All the folds from here on will need firm handling, as the model is thick for its size. Now, bring the outer central point of one of the three wide triangles at the points of the triangular hole to its base at the middle line, transforming the triangle into a bar. Roll the bar inward, the fold passing along its inner edge. The little "bird mouth" underneath will open into a truncated diamond. Repeat with the other two triangles. The three bars now form a triangle, and the hole in the middle is a hexagon.

10. Turn the model over. On this side, fold inward the points of the hexagon that are above the corners of the triangle on the other side. The crease runs from the outer or central point of one triangular area to that of its neighboring triangle, and the resulting mountain fold lies along the mountain-folded edge of the layer below. As each fold is made, unfold it and bring the outer point to the crosswise crease, then refold. When all three corners have been folded into bars, the star is finished. Put it to press under a big book or squeeze it between boards in a vise to set the folds and keep the model flat.