

1 Sonobe Variations

As previously discussed in the preface, the Sonobe unit is one of the foundations of modular origami. The variations presented in this chapter may have been independently created by anyone who has played around enough with Sonobe units like I have. Nevertheless, it is worthwhile to present some of my variations in a dedicated chapter.

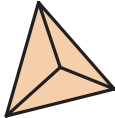

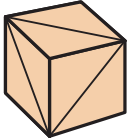

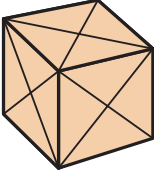
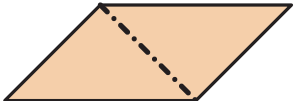
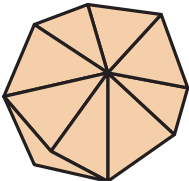

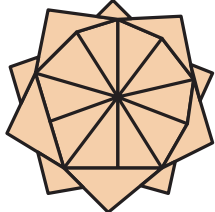

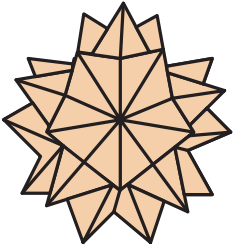

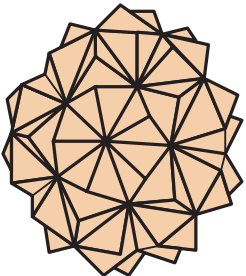
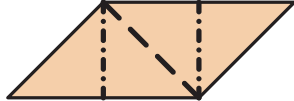
The Daisy Sonobe is my very first own creation. I borrowed the idea of making variations to simple Sonobe units to achieve dramatic end results from modular origami queen Tomoko Fuse. After mak-

ing some of these models, you will be on your way to creating your own variations.

With the addition of extra creases to a finished unit as listed in the table on page 2, Sonobe units can be assembled into a 3-unit Toshie's Jewel, a 6-unit cube, a 12-unit large cube, a 12-unit octahedral assembly, a 30-unit icosahedral assembly, a 90-unit dodecahedral assembly, other bigger polyhedral assemblies, and even other objects such as birds, flowers, and wreaths. You may try making any shape from the table with any Sonobe variation.



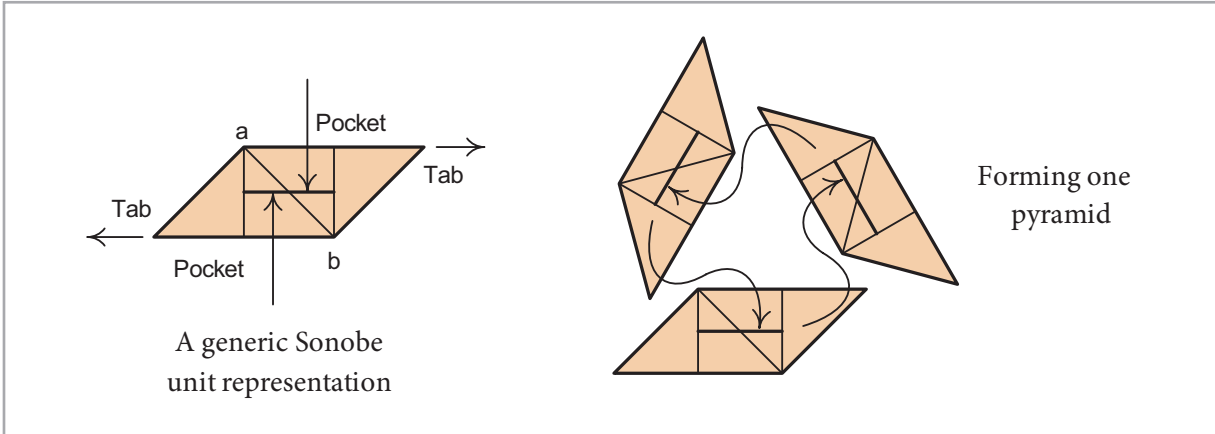
Toshie's Jewels made with Sonobe variations (clockwise from top left: Swan Sonobe, Snow-Capped Sonobe 1, Daisy Sonobe, Snow-Capped Sonobe 2, and Striped Sonobe).

Model	Shape	# of Units to Fold	Finished Unit Crease Pattern
Toshie Takahama's Jewel		3	
Cube		6	
Large Cube		12	
Octahedral Assembly		12	
Icosahedral Assembly		30	
Spiked Pentakis Dodecahedral Assembly		60	
Dodecahedral Assembly		90	

Sonobe Assembly Basics

Sonobe assemblies are essentially “pyramidized” polyhedra, each pyramid consisting of three Sonobe units. The figure below shows a generic Sonobe unit and how to form one pyramid.

constructing a polyhedron, the key thing to remember is that the diagonal ab of each Sonobe unit will lie along an edge of the polyhedron.

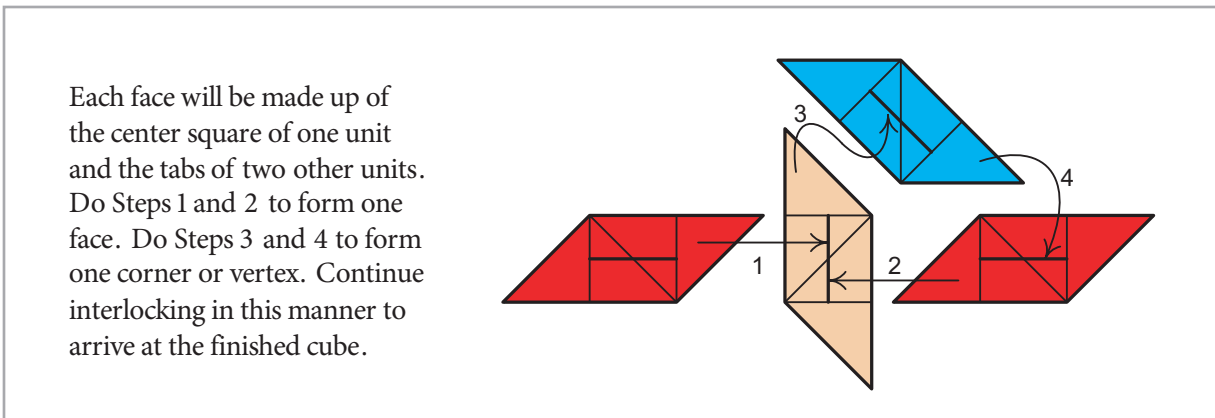


Sonobe Assembly Guide for a Few Polyhedra

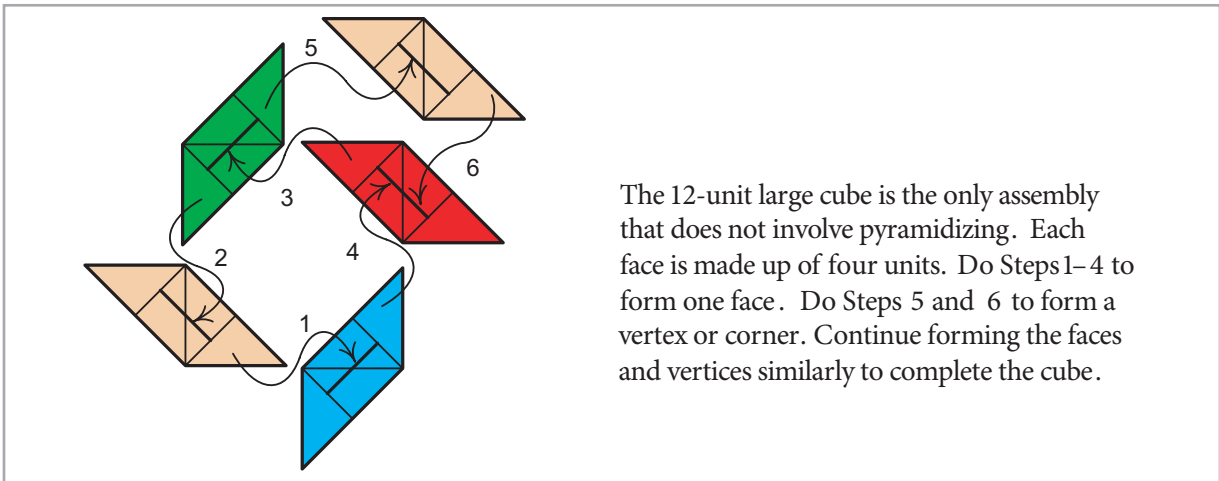
1. Toshie's Jewel: Crease three finished units as explained in the table on page 2. Form a pyramid as above. Then turn the assembly upside down and make another pyramid with the three loose

tabs and pockets. This assembly is also sometimes known as a Crane Egg.

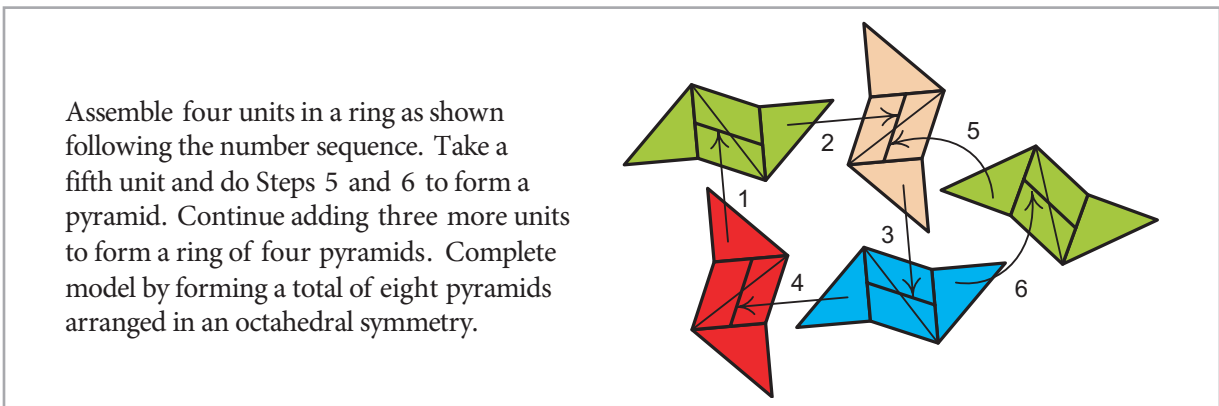
2. Cube Assembly: Crease six finished units as explained in the table on page 2.



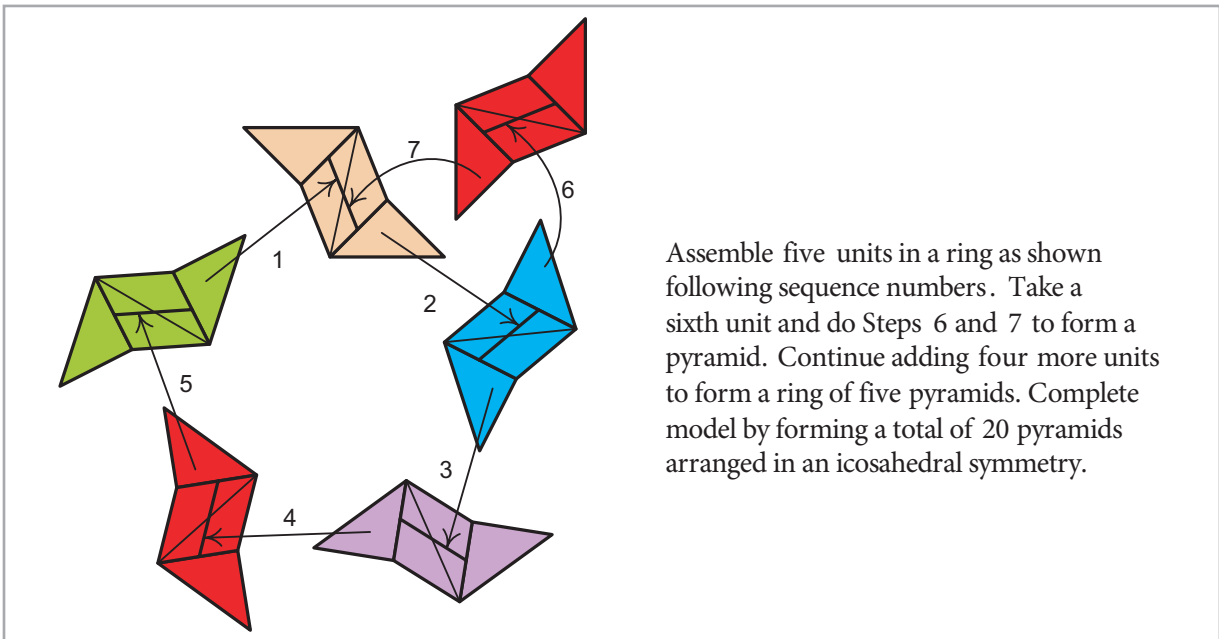
3. Large Cube Assembly: Crease 12 finished units as explained on page 2.



4. Octahedral Assembly: Crease 12 finished units as explained on page 2.



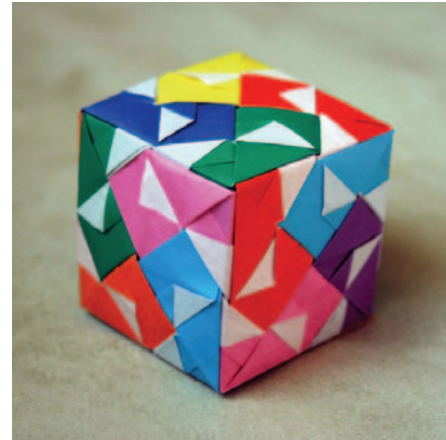
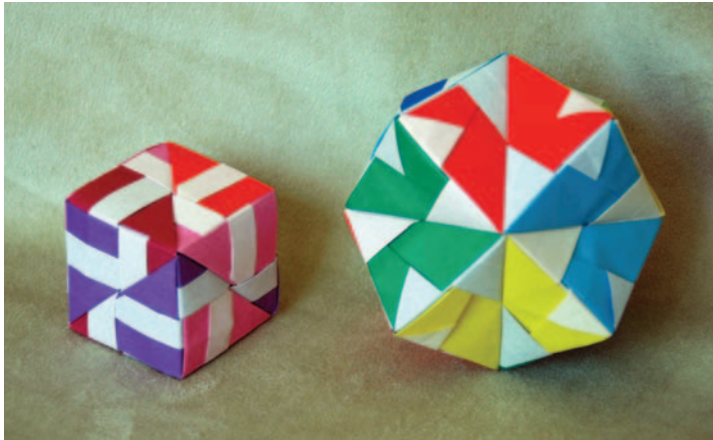
5. Icosahedral Assembly: Crease 30 finished units as explained on page 2.



6. Spiked Pentakis Dodecahedral Assembly: This model will be discussed at the end of this chapter. Please see page 15.

7. Dodecahedral Assembly: This is similar to the icosahedral assembly. Fold 90 units and crease the finished units as explained in the table on page 2.

Form a ring of five pyramids. Surround this with five rings of six pyramids such that each of the first five original pyramids is also a part of a ring of sixes. Continue in this manner to complete the ball. You can also think about this assembly as a dodecahedron where the faces are not flat but consist of a ring of five pyramids.

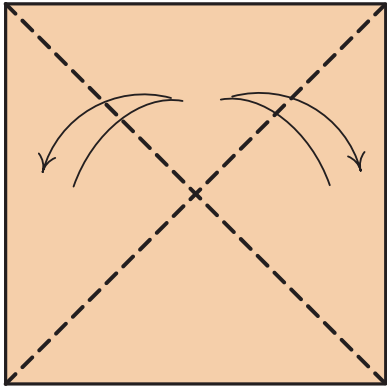


Striped Sonobe Cube, Swan Sonobe Octahedral Assembly, and Daisy Sonobe Large Cube.

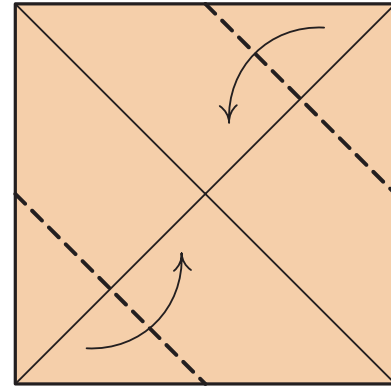


90-unit dodecahedral assembly of Snow-Capped Sonobe 1.

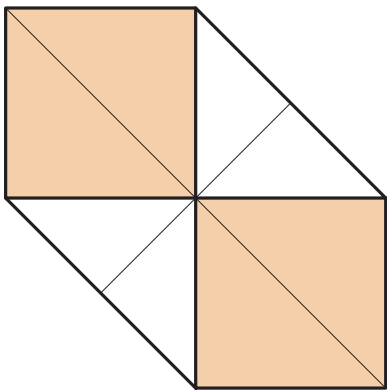
Daisy Sonobe



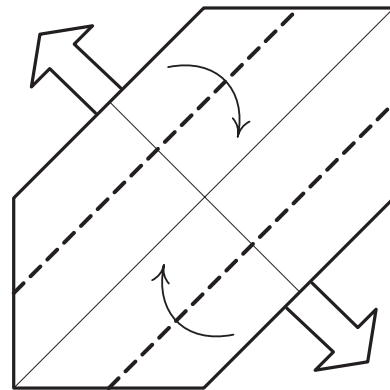
1. Crease and open diagonals.



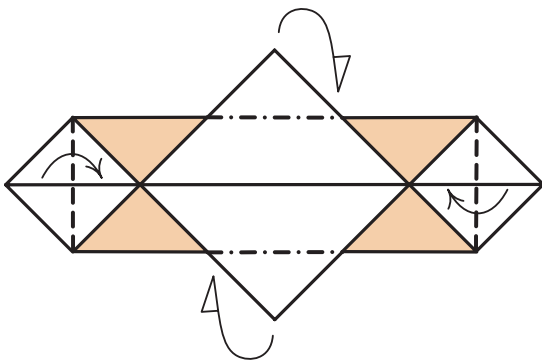
2. Bring two corners to center.



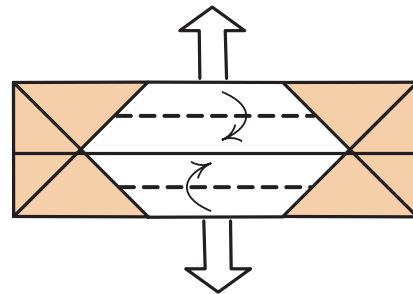
3. Turn over.



4. Bring edges to center, top layer only.

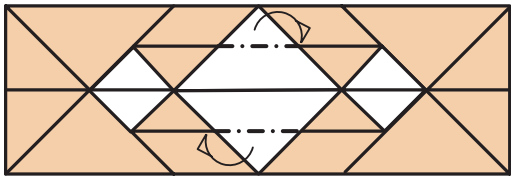


5. Tuck back top and bottom corners under first layer. Fold in left and right corners.

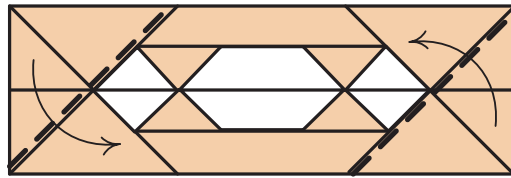


6. Fold as shown, top layer only.

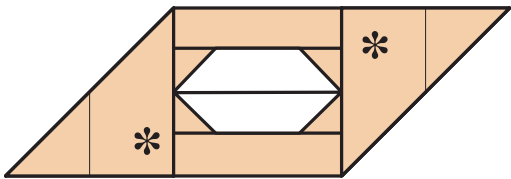




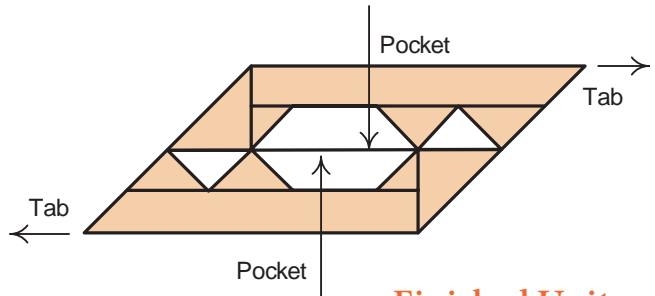
7. Mountain fold corners and tuck back.



8. Valley fold as shown.

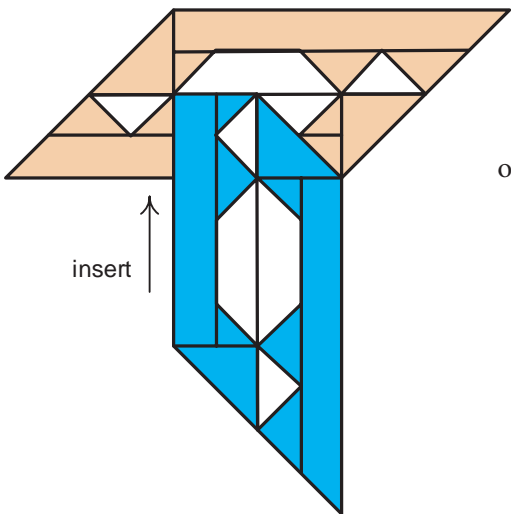


9. Tuck flaps marked * in opening underneath.

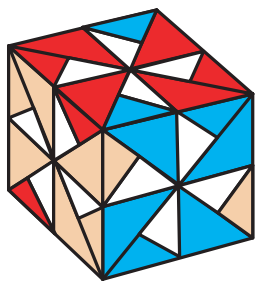


Finished Unit

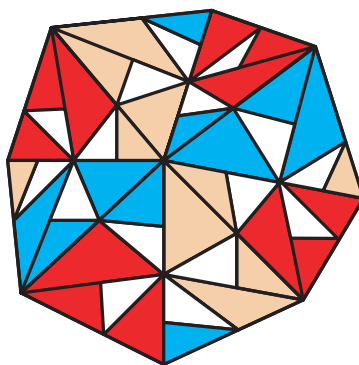
Assembly



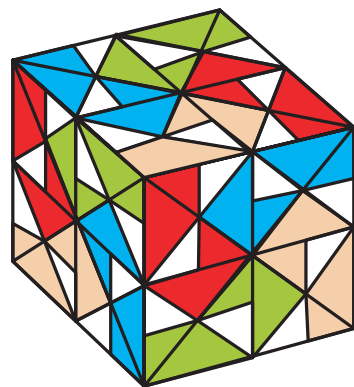
Refer to pages 2–5 to determine how many units to fold, the crease pattern on the finished unit, and how to assemble.



6-unit cube assembly



12-unit octahedral assembly



12-unit large cube assembly