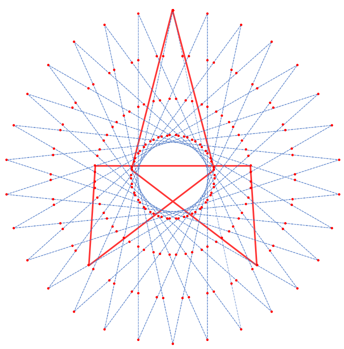
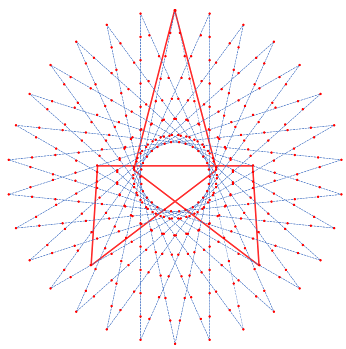
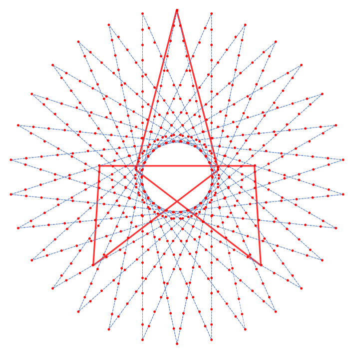
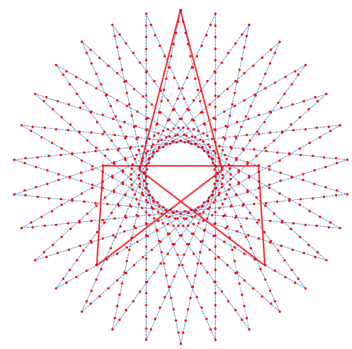
Different Images Arise as *S* Varies Unless *S* is a Multiple of 7

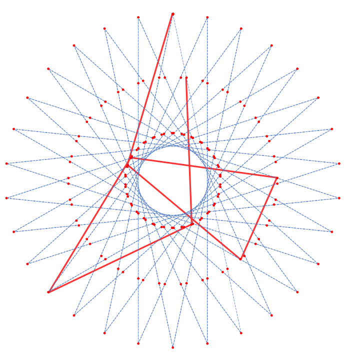
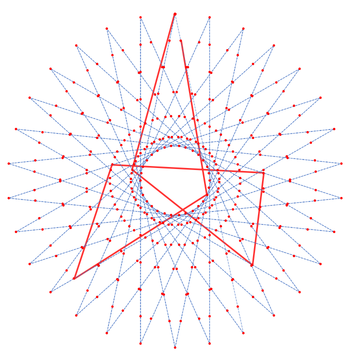
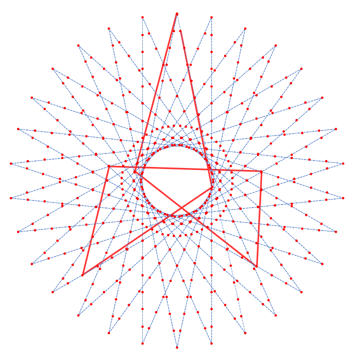
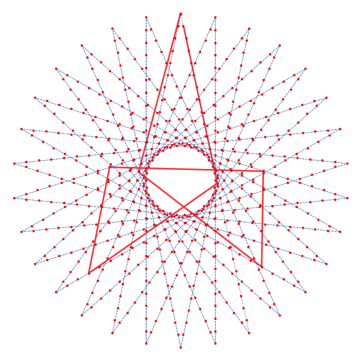
We know that when P is determined by *The 7-Line Generator Function*: $P = \text{ROUND}(k \cdot n \cdot S/7,0)$ for $k = 1$, 2, or 3, we obtain images where the 7^{th} line is close to the top (at dots ±1, 2, or 3 on the VF) unless it is at the top. Elsewhere we saw that when k varies and S is a multiple of 7, the same dots are used. Here we examine what happens as S varies for fixed k.

$n = 7 \cdot m$. If n is a multiple of 7 then $P = k \cdot m \cdot S$ and the image will be a regular 7-gon, 7,2-star, or 7,3-star unless J is also a multiple of 7 in which case the image is a single point. The reason is straightforward. Whenever P is a multiple of S, only the vertices of the vertex frame, VF, are used in the final image. As a result, in this context we typically restrict our discussion to those images based on n which are not multiples of 7.

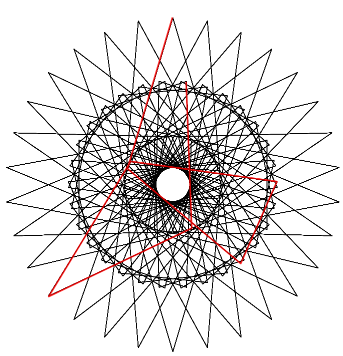
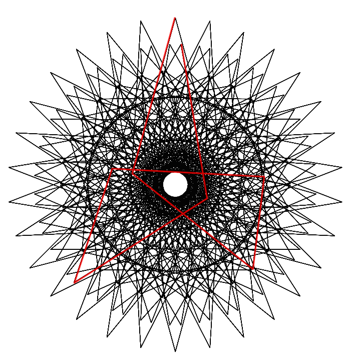
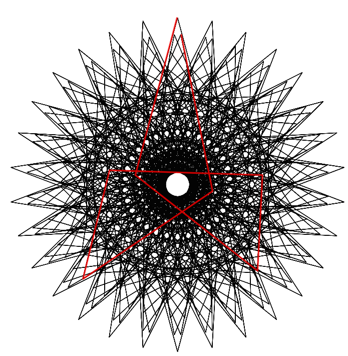
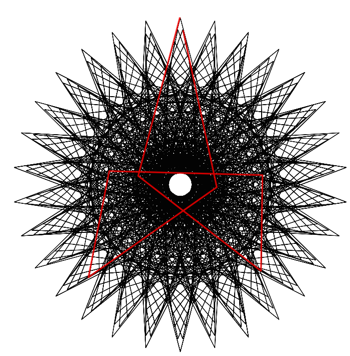
$S = 7 \cdot m$. If S is a multiple of 7 then $P = k \cdot n \cdot m$ and the image will be an irregular, single-cycle, 7-line figure because the 7^{th} line always ends at the top. These four images are $n = 30$, $J = 13$, $k = 2$, with $S = 7 \cdot m$ for $m = 1$-4 with **subdivision dots** and **VF** included. For $m = 1$, $P = 60$, **210 dots**, and SCF = 30. For $m = 2$, $P = 120$, **420 dots**, and SCF = 60. For $m = 3$, $P = 180$, **630 dots**, and SCF = 90. For $m = 4$, $P = 240$, **840 dots**, and SCF = 120. In each instance, the result is **THE SAME IMAGE**.

This image was chosen because it represents the archetype image for *Three Shape-Shifting Triangles*, the godfather of this chapter. Given this situation, an S two smaller than those multiples of 7 will produce a *cracked open single-step* image which is a twisted version of the image above. The first 7 lines of each is shown, the third is the original 3SST.

What happens as S increases? As S increases, the image is *cracked open* less (since a subdivision is smaller), but one can readily see the 3SST family relation in the first 7 lines and in the final images (with 150, 360, 570, 780 lines) shown next.

If you choose S two larger than 7, 14, 21, and 28, you have *overly closed* versions of 3SST that fill in backward on the VF.