

**Ariadna/Homo 1** is a human sound experience that is influenced by the corolla spider's foraging behavior.

The corolla spider (*Ariadna segestriidae*) is found in the Namib Desert, an arid landscape in southern Africa. To avoid exposure to heat and sun, the spiders spend most of their time underground in burrows. The spider lines the entrance of the burrow with quartz crystals, runs a trail of silk from each stone down into the base of the tunnel, and waits with its legs resting on the strands of silk\*. Quartz is piezoelectric and is useful in transferring vibrations from the crystal, through the silk strand, to the spider. As organisms on the desert surface brush against the stones they produce vibrations, which the corolla spider receives and distinguishes as sounds of predators or sounds of prey. Quartz is used as a tool to extend the hearing range of the spider.

This installation borrows the sensory extension technique and adapts it for human perception. 4 microphones are placed around the gallery (see map). The microphones are made from piezoelectric transducers and crystals (rochelle salt). The microphones pick up surface vibrations, which are then sent through microphone cable to the speaker sets located on the wall in the main gallery. Preamplifiers increase the sounds to make them audible to human ears. The microphones displace sounds from beyond the main gallery, extending our hearing range.

#### PIEZOELECTRICITY:

##### 'ELECTRICITY RESULTING FROM PRESSURE'

When certain solids are mechanically stressed (by pressure or vibration) they produce voltage. Conversely, these solid materials will change shape when electricity is applied to them. Piezoelectricity is commonly found in analog watches and cigarette lighters. Piezoelectric properties of quartz and rochelle salt were used to detect submarines in WWI as an early form of sonar.

Some piezoelectric materials include: quartz, rochelle salt, tourmaline, topaz, lead titanate, bone, tendon, silk and DNA.

\*GOULD, JAMES L., AND CAROL GRANT GOULD. *ANIMAL ARCHITECTS: BUILDING AND THE EVOLUTION OF INTELLIGENCE*. NEW YORK, NY: BASIC, 2012.

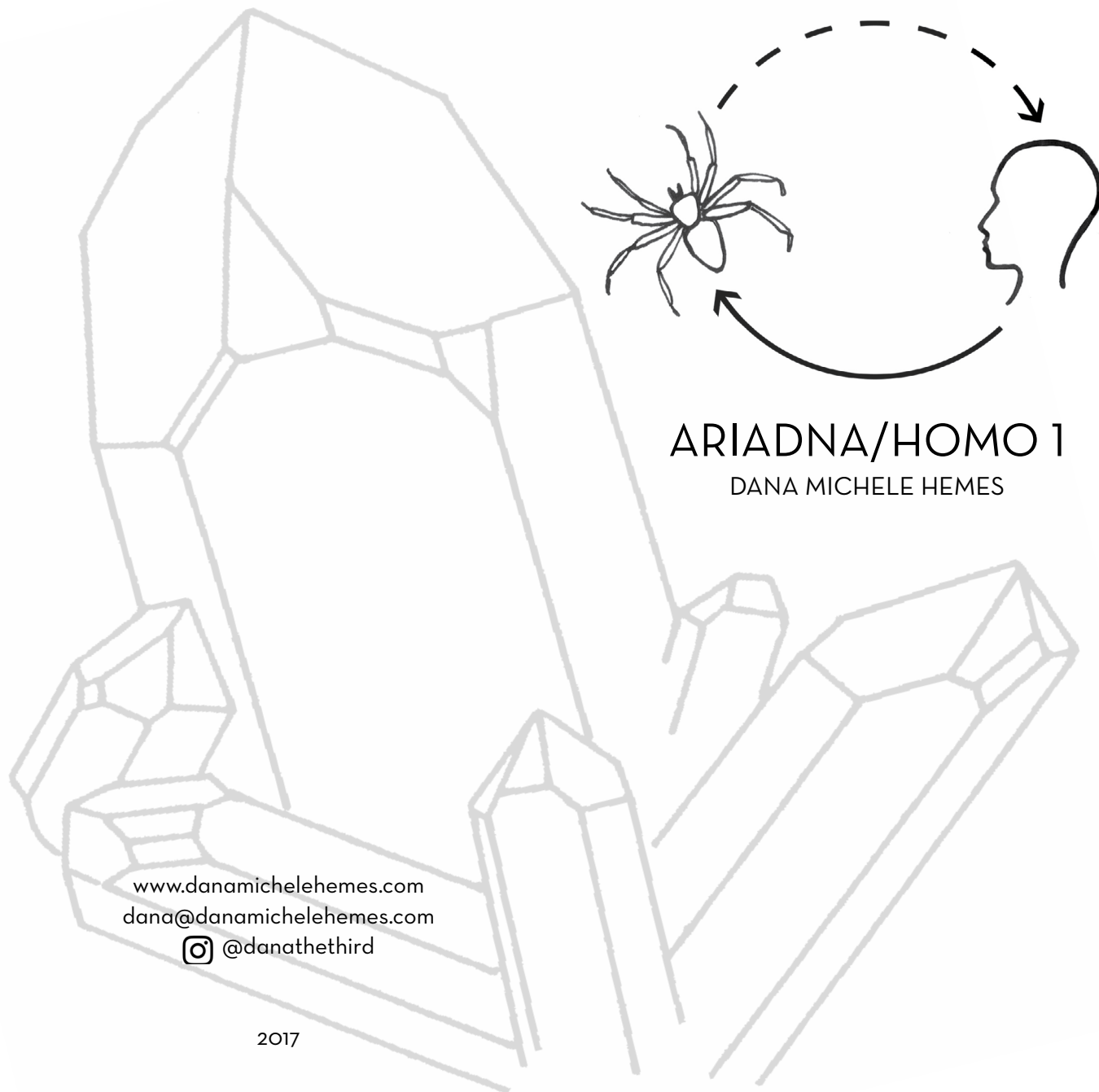
## POTASSIUM SODIUM TARTRATE (ROCHELLE SALT) RECIPE

### INGREDIENTS AND TOOLS:

- 100 g CREAM OF TARTAR
- 30 g SODIUM CARBONATE
- 130 g DISTILLED H<sub>2</sub>O
- SCALE
- DIGITAL THERMOMETER
- DOUBLE BOILER
- COFFEE FILTER
- PLASTIC CONTAINER

### PROCESS:

1. Set up double burner with an inner container that can hold ~4 cups.
2. Combine distilled H<sub>2</sub>O and cream of tartar.
3. Heat mixture to 158°F (70°C).
4. Add 1 tsp. of sodium carbonate and stir. The mixture will fizz.
5. When fizzing subsides, repeat step 4.
6. Continue adding sodium carbonate until liquid turns clear and it no longer fizzes when stirring.
7. Strain solution through coffee filter.
8. Pour strained solution into a plastic container and place in refrigerator or a cool location where it will not be disturbed. Crystals will form as liquid cools (~8 hours in refrigerator; 2-5 days at room temperature).
9. Remove crystals from solution to dry.



www.danamichelehemes.com  
dana@danamichelehemes.com

 @danathethird