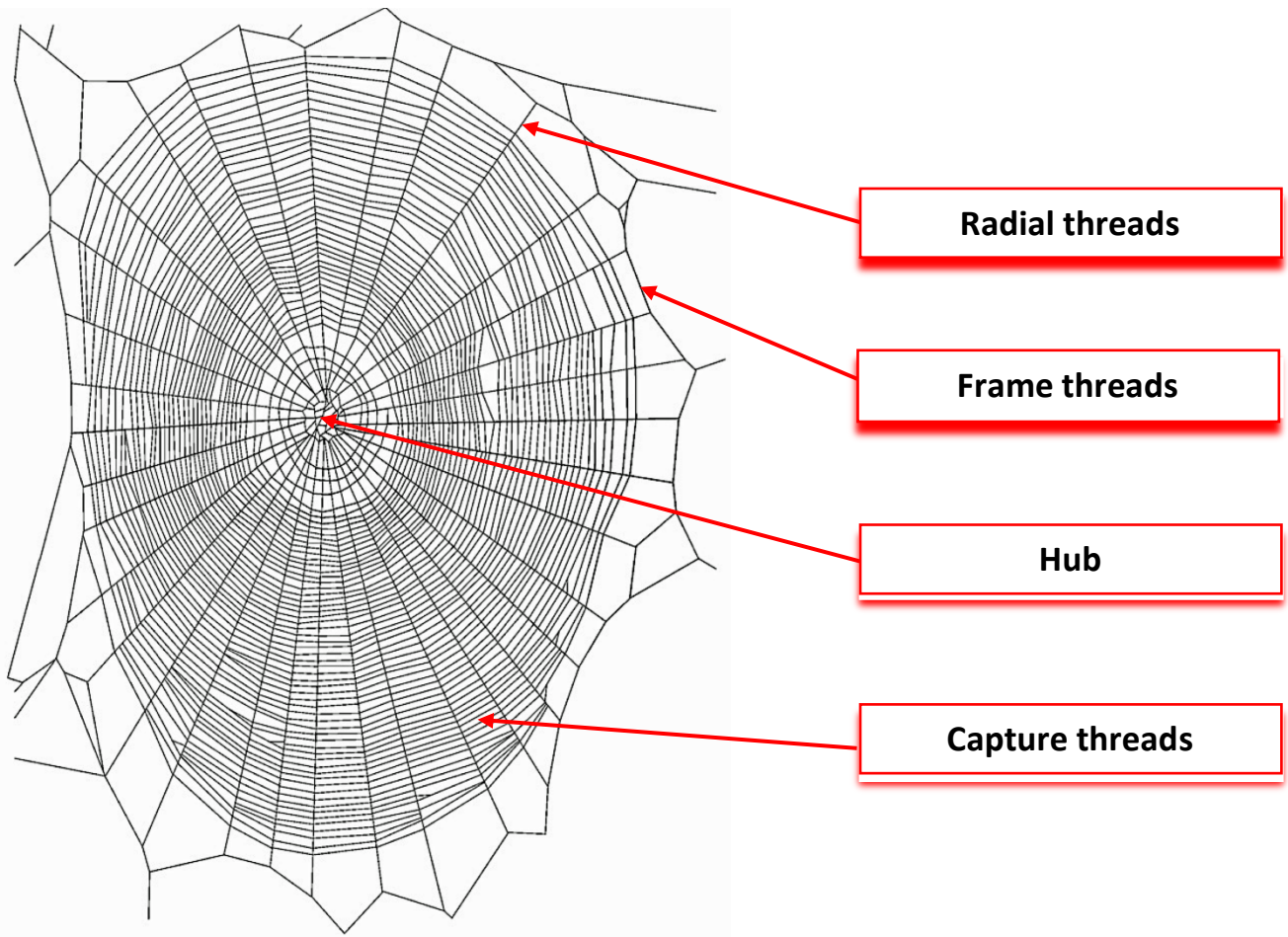


Orb Web Construction and Features

Parts of the Web

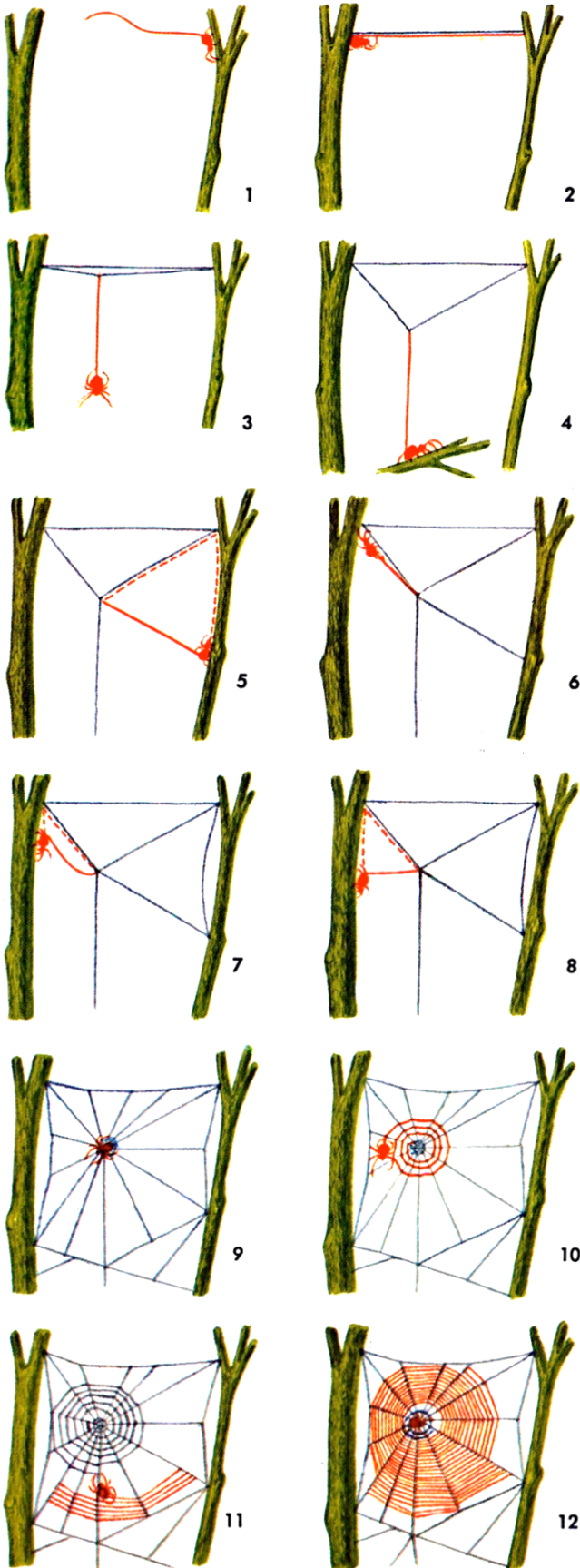


Only the capture threads of the spider's web are sticky! The capture threads are laid out in a spiral shape known as the "capture spiral" which starts near the frame threads and extends all the way in towards the hub.

It's the job of the capture threads to stick to the prey when it contacts the web, which gives the spider time to hurry over and secure it. The radial and frame threads are strong and rigid, and they act as shock absorbers to prevent damage from the impact of a bug hitting the web.

Orb web diagram adapted from: Opell, B.D. and Stellwagen, S.D. 2019. Properties of orb weaving spider glycoprotein glue change during *Argiope trifasciata* web construction. *Scientific Reports* **9**, 20279.

Construction of the Web Step by Step



- 1 The spider sits at one end of its web-building area and spins a silk thread which is carried by the wind.
- 2 Once a bridge is formed, the spider walks back and forth while spinning more silk to strengthen the bridge.
- 3 The spider attaches a new thread to the center of one of the bridge threads and drops down.
- 4 The Spider secures the vertical thread to something below the bridge, forming a fork or Y-shape. The center of this fork will become the hub of the web.
- 5 The spider spins a radial thread from the hub and pulls it taught.
- 6 The spider fastens the radial thread.
- 7-9 The spider repeats the procedure above to create and fasten more radial threads, adding additional threads until the web is secure. 10 The spider creates a temporary spiral, starting at the hub.
- 11 Once the temporary spiral is done, the spider reverses direction and begins to work backward. As it works backward, it rolls up the old thread and puts down a new, closer-spaced sticky spiral.
- 12 The spider retraces its steps until the entire capture spiral is complete.

After the web is completed, the spider may add other decorations that are specific to the species. Additionally, it may build a silken retreat off to the side of the web with rolled up leaves, along with a thread that serves as a direct line between the hub and the retreat. This line will detect vibrations from insects caught in the web.

Adapted from: Levi, H.W., Levi, L.R., Zim, H.S. 1968. *Spiders and Their Kin*. Golden Press, New York.