



THE APPLE CORE

OFFICIAL JOURNAL OF THE JOHNNY APPLESEED SOCIETY



Volume 2, Issue 5

December 2021 – January 2022

Museum Interviews Proceed

January 31, 2022. Interviews have been completed for the Business Manager who will lead the Johnny Appleseed Educational Center & Museum's re-opening effort this and spring. As we reported in the last issue, this position is transitional: the person selected will oversee the cataloguing and redisplay of the collection, the interior improvements to the historic Browne Hall building, and will make connections with local, state and national groups to build support for the Museum and its programs.

The Business Manager's final task will be to help establish the procedures for recruiting his or her successor: the person who will serve as permanent director of the Educational Center and Museum.

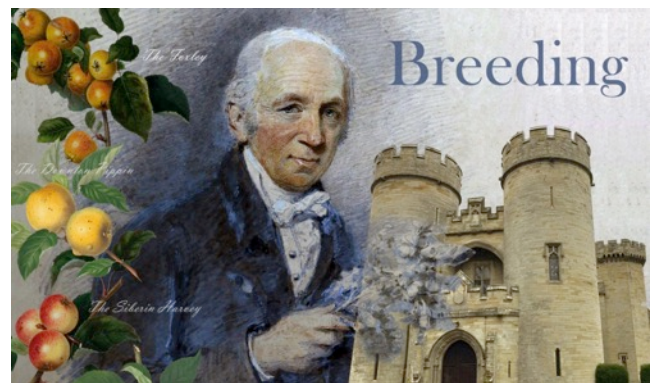
While the hiring process goes on, the committee for Museum redesign continues to work on making the renovated exhibit more engaging, more interactive, and more informative. This is a big challenge: John Chapman's choice of a life of voluntary simplicity means that he left behind little in the way of tangible items for display.

Our understanding of the man and his contributions comes from his interactions with the many others who left us stories of their encounters with him. Chapman's life spanned the foundational years of the American republic: from Concord and Bunker Hill, where his father fought, to westward expansion into the Ohio River valley, war with Great Britain and its Native American allies in 1812-15, and on to the annexation of Texas in 1845. Just as these events provide context to his life, his own work as entrepreneur, missionary, and frontiersman—living the life of usefulness that was the foundation of his faith—give a particular meaning to those events.

And that is story the new Museum plans to tell, as soon as we can re-open.

Gentleman of Genius: Pomological History from Apples & People (UK)

The British website "Apples & People" (on the web at <https://applesandpeople.org.uk>) has been mentioned in these pages before. Starting last year, they have been publishing stories of the close connection between apples and human history: a projected 46 in all, through May, 2023.



From *Four faces of Knight* by Chris Hellowell, commissioned for *Apples & People* by Hereford Cider Museum Trust © 2021

Their latest profiles Thomas Andrew Knight (1759–1838, above) of Herefordshire, England. Herefordshire is an area west of Oxford, running along the Welsh border, one of whose principal towns is Leominster—the town for which John Chapman's birthplace was named.

Knight bears no direct connection to Chapman (other than a lifelong interest in apples), but he appears to have played an important role at a transitional time in the apple's long history.

Before the 18th century, plant reproduction was poorly understood. This was long before Mendel's discoveries of inheritance: and despite millennia of breeding animals for desirable traits,

it had not yet dawned on people that plants, too, could be bred.

All that changed in the 1730s (Andrea Wulf tells the story in detail in *Brother Gardeners*, Doubleday 2009). The discovery of cross-pollination led to an explosion of horticultural experiments, and Thomas Knight was a leading explorer, including important work with apples. He published well-respected books on pomology, from which later British and American pomologists drew. To quote from the site:

Knight was a source for both John Lindley's scientific theory of horticulture and Davy's chemistry of agriculture. He essentially outlined the process of evolution by natural selection fifty years before Darwin's 'On the Origin of Species', and his breeding experiments are acknowledged in the first chapter of that work

Knight, like several of his contemporaries, was also a great international correspondent, sending both letters and plant materials:

He exchanged seeds with a correspondent in Persia and sent large numbers of scions of his new fruit trees to the Massachusetts Agricultural Society, helping to develop the North American apple industry . . . Knight had an enquiring mind, a keen sense of observation, and an ability to frame his investigations precisely. Shy and introverted, he worked largely independently in rural Herefordshire for most of his life, but his findings were profound.

To find out more, visit the beautiful *Apples & People* website. If you do visit, you can leave an email address to receive a notice when each new story is published. Highly recommended!



Nathaniel Chapman, Wheelwright?

If we know few details about the everyday life of John Chapman, we know even less about his father, Nathaniel. We know he was born in Topsfield, Massachusetts in 1746, the thrice-great grandson of English immigrant Edward Chapman, who had arrived in the Bay Colony in 1639. We have his two marriage records, to Elizabeth Simonds in 1770 and Lucy Cooley in 1780 (Elizabeth having died in 1776), and we know when his 13 children were born.

There are a few official military records—he appears to have fought at Bunker Hill as a private, to have been with Washington's army in the 1776 New York campaign, and to have served as "captain of engineers," finishing his service at the newly-opened Springfield, Massachusetts armory from 1779 to 1780. And we know he relocated with his second wife and all of his children (except the eldest, daughter Elizabeth) to Ohio in winter of 1805-6, where he died the next year.

Both of Chapman's scholarly biographers, Robert Price and William Kerrigan, note that he appears never to have owned property. Yet in both communities in which he lived, he married into prominent families, the Simonds in Leominster, and the Cooleys in Longmeadow. And he supported a large family without ever having more than a few acres to farm. How did he manage this?



William Johnson's Camp by Ron Embleton, showing colonial troops behind a log breastwork

Kerrigan has identified sources indicating he apprenticed with an uncle as a carpenter. When he first enlisted with the Continental Army, it was as a private in a company of carpenters. Kerrigan assumes he would have been assigned to the construction of "breastworks": raised, temporary

screens of earth and logs, behind which an infantry can fire with safety (*see illustration, above*).

But Nathaniel Chapman served most of his military time in a company of "Carpenters and wheelwrights." And his final year at the armory—where breastworks were not an issue—was surely spent as wheelwright, rather than just a carpenter. And a "Captain of wheelwrights" as well.

So what exactly did wheelwrights do? They made and repaired the wheels and axles of the wooden carts, wagons, and in Nathaniel's case, gun carriages that were in wide use before our modern rubber tires ever came into use. The skills involved crossed the line between woodworking and blacksmithing, as the illustrations below indicate.

Figure 1 below illustrates the basic parts of the wheel: a hardwood hub, to which wooden spokes are attached; A set of curved pieces (the *felloes*), one for each pair of spokes, linked to each other by hardwood dowels; and a rim or *tyre* that compresses the wheel together, made of either hardwood or iron.

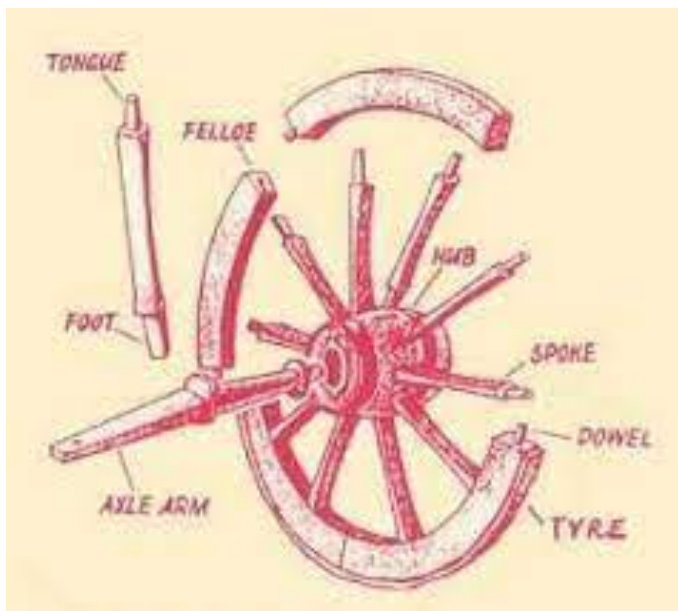


Figure 1. Parts of a Wagon Wheel

Assembly begins at the hub, where the *foot* of each spoke is hammered into a groove in the hub (*see Figure 2*). The curved *felloes* have holes drilled to fit the *tongues* of the spokes, two to each felloe. The wheel above has ten spokes, and so five felloes. The felloes in turn are joined to one another by hardwood dowels. When all felloes are snugly in place, the woodworking part of the job is done, and the blacksmithing part begins.

In Figure 3, we see the work in its late stages. Here, the wheel for an artillery carriage is being *straked*—red-hot iron strips are pounded to the wheel's shape and nailed in place, restricting the wood's ability to expand with moisture.



Master wheelwright Phill Gregson and Andre De Lisle nailing *strakes* to traditional wooden canon wheels. From worldwidewheelwright.com

Figure 4 shows the final stages. At the right, two men apply *strakes*, while at center six others work with a hammer and three *devil's claws* to place an iron rim onto a straked wheel.



Figure 4. Wheelwrights applying the *tyre*. From Diderot's *Encyclopédie* (1751-66)

As the final illustration shows, wheelwrighting required more than one pair of hands. Nathaniel Chapman had a company of workers while he was a captain of wheelwrights, but how did he continue practicing this craft after 1780, when he moved to Longmeadow (just south of Springfield and the armory) and married Lucy Cooley? Did he work with a cooperating blacksmith? Did he take on apprentices or journeymen? Or did he cease making and repairing wheels altogether, and return to simple carpentry?

We simply do not know. Given the small population of Longmeadow, it is unlikely he could have made a living solely from making new wheels. On the other hand, given the rough roads of his day and the crude construction of wagons, the need to repair wheels of all sizes was likely more than an occasional necessity.

And what of his oldest son, John? Did a looming future as a journeyman wheelwright, bound to the woodshop and forge, encourage a young lad to leave home in his teens for an outdoor life in the Northwest Territory? We can only speculate . . .

Apple of the Month: The Hewes (or Virginia) Crab Apple

Not all crab apples are "spitters"—the bitter woody fruits fit only for hogs. Crab apples are the only apple species native to North America, and the Hewes Crab has something of a "presidential" reputation.

Anyone who has visited a commercial orchard knows that apples come in many sizes, shapes and colors, and most assume that crab apples are just an inferior strain: small, harsh-tasting and fibrous, though the crab apple trees themselves are prized for their dense, fragrant spring blossoms of white or red.

But as with all things apple, it is a good deal more complicated than that. *Malus*—the Latin for a mast, an upright pole, or a fruit tree—is a biological genus, to which between 35 and 55 species belong.

All our "eating apples"—different as they are—are varieties of just one of these species, *Malus domestica*, the so-called "orchard apple." That leaves over three dozen additional species, including *Malus sieversii*, the wild forest apple of Kazakhstan, which appears to be the ancestor of all the other species.

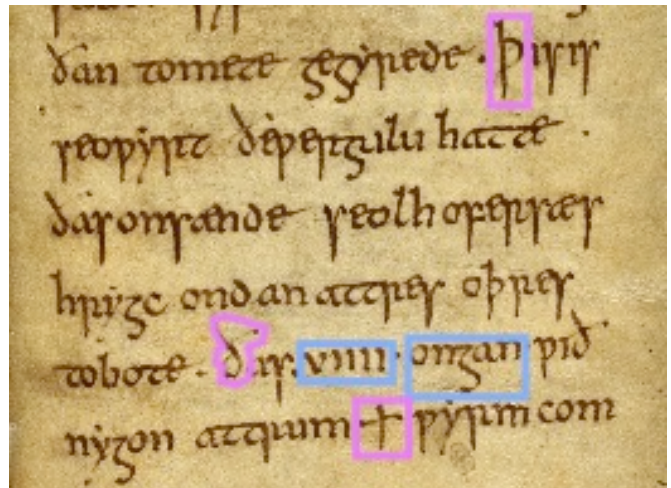
And that also includes the only four apple species native to North America: *Malus fusca*, the

Oregon crab of the Pacific northwest; *Malus ioensis*, the Prairie crab of the upper Mississippi valley; *Malus coronaria*, the Sweet crab of the Great Lakes–Ohio River valley; and *Malus angustifolia*, the Southern crab to which our Hewes crab is related. All four were known to, and used by, Native Americans for centuries before the European colonizations began.



A cup full of Hewes crab apples. Photo from Scott Farm Orchard, www.scottfarmvermont.com/hewes-virginia-crab

The oldest mention of crab apples in English literature is in the Old English "Nine-Herb Charm" from an early 10th century manuscript:



The two lines beginning at the pink box at top read:

*Dis is seo wyrt ðe wergulu hatte;
ðas onsænde seolh ofer sæs hrygce
ondan attres opres to bote.*

which translates as:

*This is the herb that is called the crab apple—
which sends the seal across the spine of the sea,
an enemy of another poison, its remedy.*

In the charm, *wergulu* is the Old English for "crab apple."

The Hewes Crab (some early mentions have it as Hughes) is a hybrid: a cross between a true *Malus angustifolia* (Latin for "narrow-leaved") and an unknown varietal of *Malus domestica*. It appears to have originated somewhere in tidewater Virginia early in the 18th century, or about 100 years after the first English settlement at Jamestown.

Among Thomas Jefferson's papers is an 1814 letter to James Mease, who had inquired about the origin of the Hewes (here, Hughes) crab:

On my return home after an absence of five weeks, I find here your letter of May 24. Of the history of the Hughes's crab apple I can furnish nothing more than that I remember it well upwards of 60. years ago, & that it was then a common apple on James river.

"Upwards of 60 years" would go back to 1750, and apparently it was then already well-known and "common" in southern Virginia, so its origin could easily go back to the late 17th century.

In Creighton Calhoun's fine book *Old Southern Apples*, we find that:

In the deeper south it ripens in mid-August. An observer in the 1810s noted, "The trees bear abundantly, the fruit ripens late and is free of rot of any kind. The fruit is small and hard and therefore bears the fall from the tree without bruising. It grinds small and the pulp is remarkably tough, yet parts with its juice readily, and the must runs from the press very fine and clear."

The juice of crab apples was traditionally intermingled with the must pressed from sweet apples to impart a tart edge to cider. The brightness of fermented cider largely depended upon a substantial admixture of crab apple juice, and the Hewes was the most ancient and revered of cider crabs in southern cider making.

The fame of the Hewes crab—often called the Virginia crab by orchardists from other states—as a cider apple was more than local, as we find on the Digital South website:

(<http://www.digitalsouth.org/oldsouthernorchards/>):

On May 3 1814, Daniel Smith's famous Burlington N.J. Nursery advertised in the Georgetown *Federal Republican* newspaper 28 different cider apples of which only three were crabs. These three were the most famous crab apples in North America—the English Hagloe crab apple, the French Metoisse crab apple, and the Virginian Hewes. (p. 4) In the 1820 crab cider became a general commodity in the eastern United States, so commercial scale planting of the fruit must have occurred. In the 1840s the Siberian crab apple began to supplant the Hewes in areas north of Virginia as the favorite cider crab. But as late as the 1888 pomologists in Illinois would claim "Of all the cider

apples known, none are better than those called the Virginia or Hewes crab"

Today the Hewes is having something of a revival because of the growing popularity of apple ciders, and it is likely to be found at any of the orchards specializing in heirloom apples.

And while it is too tart for most palates eaten fresh, its sweetness comes out with cooking, as in crab apple jellies. Crab apples make great jellies precisely because of their size, which increases the ration of skin to flesh: the pectin which sets the jelly is in the skin. You may not have heard of crab apple sauce, however. The following recipe, courtesy of **Whitman Brook Orchard** in the Upper Valley of Vermont may get you to give it a try.

Hewes Crab Apple Sauce

(www.whitmanbrook.com/hewes-applesauce)

Preheat the oven to 200 degrees.

While the oven is warming, place a bounty of fresh Hewes apples in a baking dish, piled high to keep them from drying out during the cooking process (tenting the apples with foil is a helpful option).

Slow roast the apples for at least 2–4 hours—the longer the better—turning them gently every 30–45 minutes. Soon, the kitchen will be filled with warmth and the fragrance of autumn.

When ready to serve, increase the oven to 375 and roast them for 20–30 minutes longer. The skins will split and the flesh brown — bring them to the edge of burnt, without burning them. Remove the apples from the oven and pass them through a food mill to separate the sweet, roasted flesh from the stems, seeds, and skins. If you don't have a food mill handy, you can force the apple flesh through a fine sieve.

The flavor of this applesauce is exceptional on its own, paired with a savory dish, or as a perfect finish to a fall meal. A topping of ice cream or sweet cream (whipped or not) will send it over the top for a simple and rustic seasonal dessert.

Serve warm, or place the finished applesauce in glass jars to be canned and preserved.

Teacher's Corner: Roots and Branches

by Judith Maule & Jeff Taylor



Look at any tree: it would fall over if it were just balanced on the trunk where it touches the ground. You can't see what holds it up, just like when you look at your friend standing waist-deep in a pond—you can't see her legs, but you know they are there!

So what do the roots of a tree look like? Just as the branches of the tree grow up and out to seek sunlight and air, the roots grow down and out to seek out the water and nutrients the tree needs to grow. And just as the tree's trunk has branches, which then have smaller branches growing from them, the roots also branch out in a great circle around the tree.

How far out do the roots grow? A tree is like a great umbrella: rain that falls on its topmost leaves drips down and out, and falls mostly along the outer edges of the lowest layer of leaves. Scientists call this circle beneath the outermost leaves the "drip line" of the tree (see Figure 1).

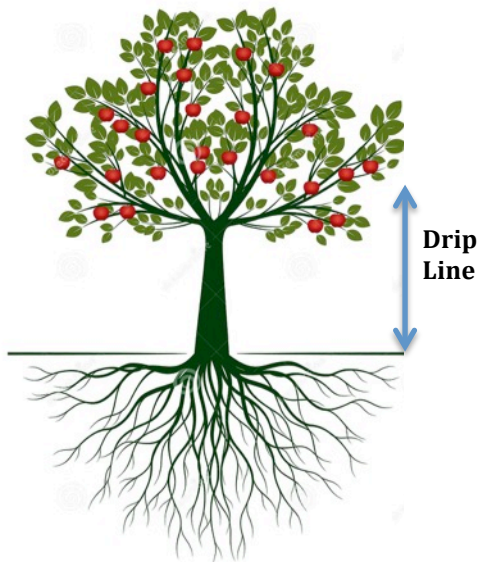


Figure 1. The Drip Line, from Dreambox (*URL at end)

The roots of the tree also grow outward to the drip line, where they will find the most water.

While we can't usually see the tree roots mirroring its branches, we can get an idea of this "as above, so below" behavior using the pit of an avocado, three or four toothpicks, and a glass jar. Stick the toothpicks in a ring around the middle

of the pit, and balance it atop the jar. Then pour in water until the bottom of the pit is just covered (see Figure 2). Be sure it is right side up! The wider, flatter end of the pit goes in the water—that's where the roots will appear.

Place your avocado tree in a warm, well-lit spot and be patient: it will take a few weeks to get going. The roots will slowly extend into the water and begin branching, and as they do, a stem will emerge from the top and eventually begin leafing (see Figure 3). Notice that the roots in the jar do not spread out much. They do not need to, because they are already surrounded by water!

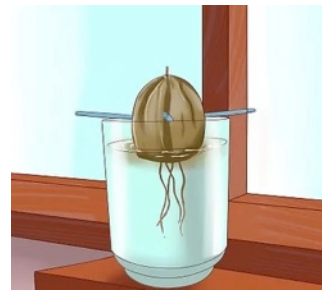


Figure 2



Figure 3

When a tree grows from seed, its roots spread not only down, but out, helping to anchor the tree in the ground. The root system is almost like an upside-down version of the tree above ground. We call this mirroring behavior "symmetry," and you can explore it while waiting for your avocado pit to sprout.

You will need:

- Three pieces of colored paper (I have used brown, blue and green),
- A pencil,
- Scissors and
- A glue stick.

An inexpensive photo frame is a nice extra, but not necessary. If you do use a frame, be sure to cut down your three sheets of paper so each fits snugly within the frame.

First, I folded the brown paper in half, then in half again. The folded paper has four edges: two display four edges of the paper, one displays two single folds, and the last is a single solid edge, four layers thick. This last, thick edge will be the middle of the tree trunk. The edge with two

single folds is the ground from which the trunk will grow: keep it at the bottom (see *Figure 4*).

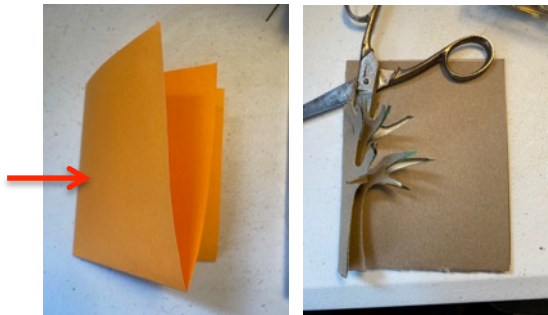


Figure 4.

Figure 5.

Next, I used my pencil to sketch the right half of my tree. I didn't make this too thin or complex, because I am going to cut along these lines later! When my "half-tree" looked good to me, I used the scissors to cut carefully along the lines, until the tree came free from the folded paper (see *Figure 5*).

Finally, I unfolded my cut-out. Symmetry! (see *Figure 6*).



Figure 6.

The top of my tree looks just like its bottom. My trunk seemed too long, so I cut away a piece from the middle (make the cut with the tree re-folded, as in *Figure 7*) and carefully glued the two pieces of the tree together (see *Figure 8*).



Figure 7.

Figure 8.

I folded one of the two remaining pieces of paper in half, and cut along the fold: this represents the earth in which the tree is growing. With a few dabs from my glue stick, I attached this cut piece to the third, uncut piece of paper (representing the sky), and then I attached my tree, with the trunk and branches above, and the roots below (see *Figure 9*).

Cutting and folding is not for everyone! If you like to draw, you might try making your own tree freehand (see *Figure 10*). You could then draw the roots yourself. Or you can do what I did: make a copy of your tree and, after turning it upside down, attach it to your original (see *Figure 11*).

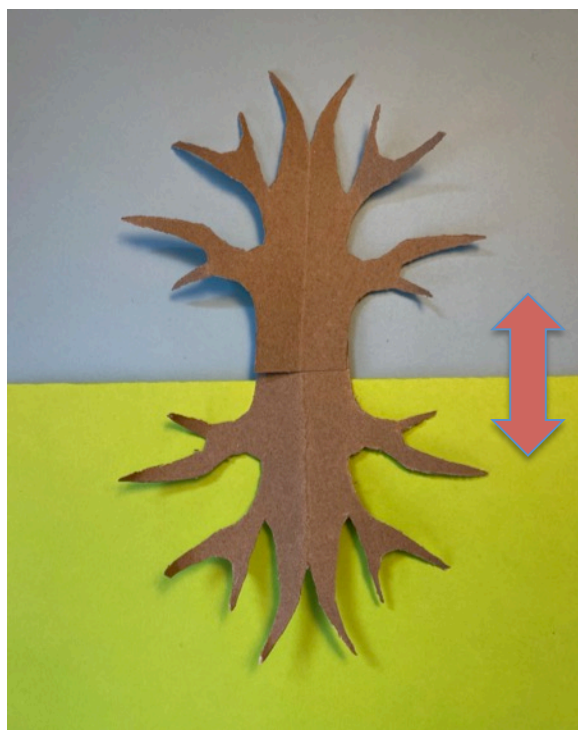


Figure 9. Reflective Symmetry

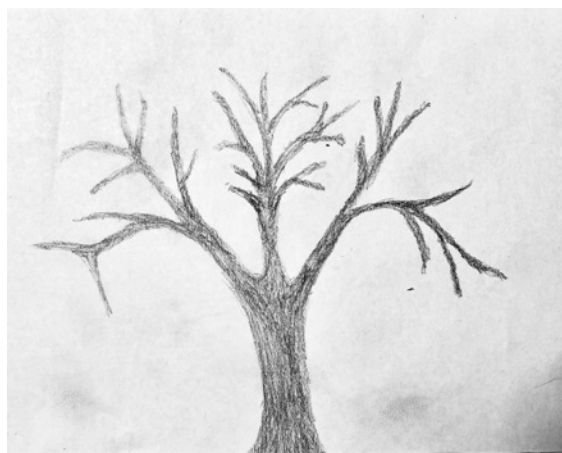


Figure 10. Freehand Sketch

If you look closely, you can see that this is a different kind of symmetry: it is *rotational* (you turned it around) rather than *reflective* (as in a mirror image).

This is clearly a winter tree! If you want, you can cut out some green patches for leaves, but remember that doing this will hide the symmetry, and that is what we wanted to see. This is, after all, a mid-winter project.

When you are done, you can hang it up, or give it to a friend—then show her how to make her own!

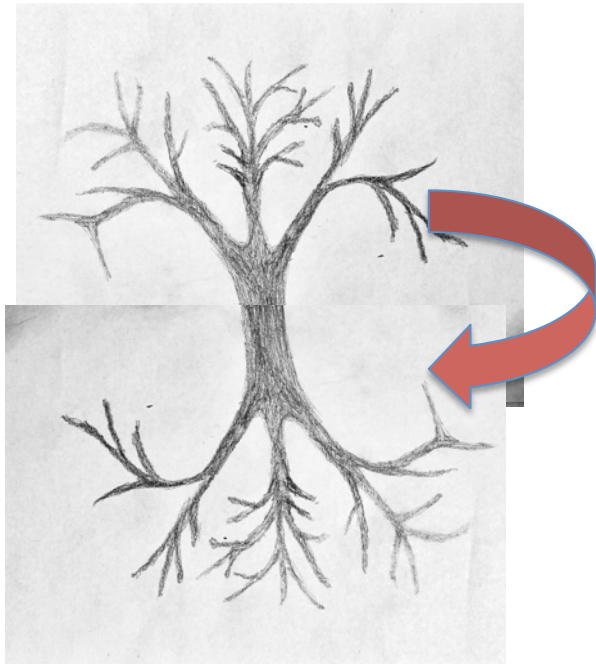


Figure 11. Rotational Symmetry

*The URL for the apple tree illustration used in Figure 1 ("The Drip Line") is:

<https://www.dreamstime.com/beautiful-vector-apple-tree-white-background-roots-illustration-concept-pictogram-green-isolated-red-fruits-plant-image157390944>

About the Apple Core

The Apple Core is the official newsletter of the Johnny Appleseed Society, published bimonthly in February, April, June, August, October, and December, to members of the Johnny Appleseed Society.

About the Johnny Appleseed Society

The *Johnny Appleseed Society* is a nonprofit educational organization which seeks "to preserve and promote the legacy of John 'Johnny Appleseed' Chapman (1774 - 1845) through both educational activities, and the wide dissemination of educational materials that relate John Chapman's work and values to the world in which we live."

Membership is open to all who share our purpose. Annual dues are \$25 for voting members, \$10 for student members, and \$250 for Life membership. For more information, visit:

www.appleseedsociety.net