

# Construction of a Labyrinth Earthwork

The Wave Meander earthwork near Gualala, CA.

I was fortunate to be able to create a labyrinth earthwork for EN outside her beautiful home a little north of Gualala. The project began 5 to 7 years ago and culminated over the summer solstice weekend in 2009. The design finally chosen was the wave meander (Fig. 1). I had first created the design back in 1989 (Fig 2), my plan had

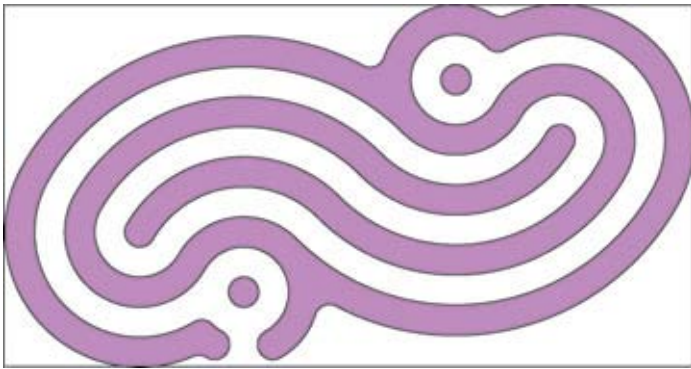


Fig. 1. The wave meander labyrinth design

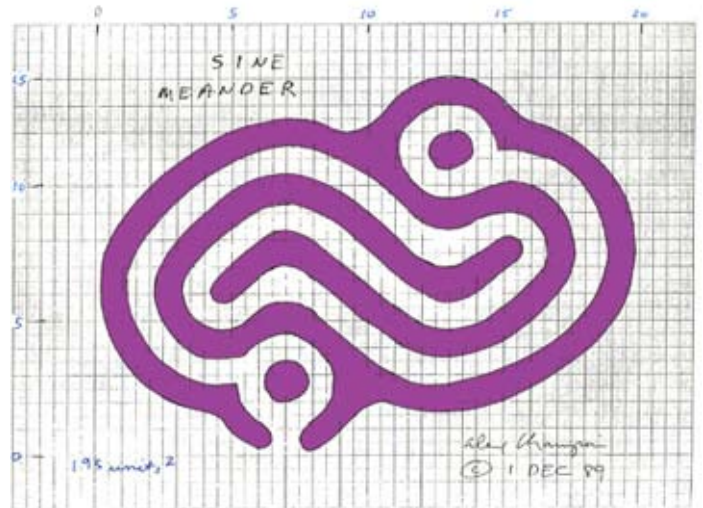
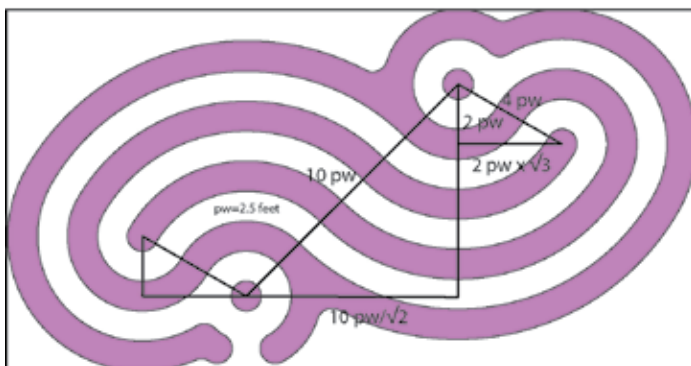


Fig. 2. The original design in 1989

been to combine a sine wave with the meander pattern. Last year I created a version that could be laid out with a compass and straight edge (Fig. 3). I made it in chalk at the dowsers' West Coast Conference (Fig. 4). I modified it slightly and laid out the new version for C G in her front yard in Sebastopol which she made into a neat rock labyrinth (Fig. 5).

The wave meander made sense for EN's property because the site chosen near the house was rectangular and the length to width ratio of the wave meander is close to 2 to 1. There is a 5% or more slope at the site and it was notoriously wet. In fact the "dig in" we had planned for early May was delayed because rains caused the site to become soggy wet and the owner sank into the muck some 6 inches to a foot. My impression was that the area

## The Wave Meander Labyrinth



width = 23 pw, height = 12 pw  
 for pw = 2.5 feet, height = 30 feet, width = 57.5 feet  
 path length = 233 feet  
 area = 1,310 square feet

Fig. 3. The layout of the wave meander design



Fig. 4. The Wave Meander design at the Dowsers West Coast Conference



*Fig. 5. The Wave Meander as a rock labyrinth in Sebastopol, CA*



*Fig. 6. The site for the wave meander earthwork after preparation*

received all the water runoff from the upper part of her property. My first thought was to put a french drain around the top on both sides, going down and meeting outside the design at the bottom. We couldn't do that because the leach field was 30 or 40 feet above the labyrinth and to the right.

The site was prepared by first scrapping off the organic matter which turned out to be this mat producing grass that spread by stolons. The top 3 or so inches was moved to the bottom of the site where it created an area with a less steep slope. The soil was then churned up about 2 feet with a backhoe (Fig. 6). It was all rich, slightly clayish soil, easily broken up, easy to shovel and perfect earthwork material because the mounds created from it would hold together.



*Fig. 7. The soggy area in the middle of the site.*

The soil at the site dried rather slowly, and the client noticed that one area did not dry out at all and there were small puddles of water at one spot (Fig.7). Randy almost got stuck in the area when he gave the site one last going over with a rototiller a few days before. I was very worried about drainage problems. After much discussion and talking to John Thomas, a landscape architect, it was decided to put a drainage bar underneath the path with a depth of 6 inches and width of 14 inches. Normally the sides of the mounds come down at a 45 degree angle to a 14 inch wide path. It was decided to dig straight down another 8 inches, and use the extra earth to help make mounds. In the first 6 inches we would put drainage rock wrapped all around with weed retardant black cloth. On top we would put 2 inches of path rock.

We laid out the design on Friday evening. It took an hour or so. Then James and I did some digging around





*Fig. 8. The wet area at the exit of the earthwork after installation of the drainage system*

the center mound, creating it and part of the path in the area. We stopped when James hit some water on the path above the mound.

Since I really didn't know what might happen when we started digging on Saturday, I decided to prepare for the worst by starting at the bottom and make the drainage ditch in the path immediately and then fill with drainage rock. Then a system would be in place to receive any water we might run into. There are three places in the path where water could accumulate, so we put the drainage bar through the mound at those locations and also put 3 inch pipe at the bottom of the ditch through the mounds. At the lowest spot in the design the pipe was extended to where it could drain out onto the land. We know the system was working because the water spot had moved to below the design (Fig. 8).

Emily hired three workers, Randy, Sam and Carlos (the latter are brothers). They were superb workers and it was mainly through their efforts that we were able to dig out the whole earthwork in one day. Also helping was James DeSurra who is a good friend of mine. In the mid 1990s, I made a 93 foot Cretan earthwork at his retreat, the Mother Tree, west of Sebastopol. So he knew the whole process of what goes into making an earthwork, and was very helpful in showing the volunteers what to do. Also making a major contribution was Mel, a fine woodworker and massage therapist, who was used to hard physical labor. I came to trust Mel in his opinion about the problems we ran into. I have not done any hard physical work since 2006, so I was only able to do a little digging. Mostly, I oversaw the whole operation, my contribution was final shaping of the mounds which is mostly rake work.

Emily had a number of people who were there for 2, 3 or 4 hours, Nancy, Bea, Kaye, Linda, Jan, Karen, Paige, Vince, Wayne, Mary Dee, Ralph and Laraine, Michael, Jim, Alana, Susan and Peggy and others I'm not remembering. Some cut the black cloth in three foot sections. Others helped with the digging. Some helped Emily fix lunch and dinner for 8 to 9 to a dozen or more people. We ate very well.

My goal was to dig out each path until we hit water, and then we would stop. So digging was started up three of the four path branches of the design. Sam and Carlos made the paths to the normal specifications, and Randy got down and dug most of the drainage trench with Mels help.

Imani with his bobcat came around noon, and we hadn't really dug out that much.

In addition, there also was a rush to get the weed cloth cut. Nancy and Mel and Randy placed the cloth and Imani came down with his front loader filled with drainage rock which he procured from the place it was stored on the parking lot above. It was a messy affair, but it got done, and eventually the black cloth was laid down over the rock and secured to the rock with nails. Before the path rock was added at the very end, Michael with Emily's help swept and removed all the earth debris that had fallen in.

When we got as far as we could, then bob cat man got out and starting digging; It seems that he couldn't just sit there and wait until we got things ready for him. By that time more volunteers had come and the digging went very fast. By the time the drainage ditch was dug, I calculated that about 22 tons had been moved and shaped. (using as the weight of the soil at 80 pounds per cubic foot).

After Saturday lunch, Mel and Randy started digging in the soggy area and found a spring, nothing dramatic, just

a small trickle that continuously ran down the path and out at the bottom. The soggy earth in the path produced a soggy mound, and the whole mound starting flowing into the path. Just before the drainage rock was added Mel widen the path. We waited until the next day for the mound to dry, before we molded it into the proper shape. About five o'clock or so on Saturday all the drainage rock had been added. Then, Imani did do some shaping around the earthwork before leaving.

I was exhausted after a nine hour day, barely able to stand, the shower refreshed much, then a wonderful dinner with interesting people. Later, Emily gave me a massage with Young Living Essential Oils which was very helpful and much appreciated.

On Sunday, the paid worker was Daniel who was there for about four hours, and Randy who came in the afternoon. The plan this day was to do final shaping on the mounds, followed by seeding the mounds and covering the seeds with compost, all the time keeping the mounds wet throughout the day. There was some pretty heavy winds throughout the day that dried out the mounds more quickly than usual. The final step was to add the path rock.

James, Daniel (another terrific worker) and I started at the entrance and worked our way around the earthwork on the outside mound, making all parts of the mound the same size and shape. This is part of the job that I like best, getting the slopes just the right angle, around 50 degrees, so that they were steep yet grass could grow on them. That took most of the morning. At the top, Daniel with my help, shaped the area above the upper outside mound, and used earth from that region to increase the size of the outer mound, which always looks small from higher ground. The outside was also shaped so that surface water flowed around the mounds to either side. When the site was first cleared of debris, there was a large hump of earth in the area that was impeding the natural flow of water. It was very satisfying to completely reshape the area.

Ralph and Lorraine came in late morning and worked for 3 or so hours getting the black cloth to lie flat, do some rearrangement of the drainage rock, and clean out any improperly placed drainage rock. They were helped by Susan, Peggy and Mary Dee. I didn't want to see any black cloth after adding the path rock.

Next the seed was added, a grass seed mixture from LE BALLISTERS in Santa Rosa, and some low growing wildflowers that were placed on the top of the mounds. Then, the seed was covered with compost. The goal was not to see any seed (which the birds would love) or the brownish earth underneath. Michael started cleaning the path from the entrance, and Emily joined him, and when they were moving up the last path to the center, we started adding the rock at the entrance. We developed a chain. Karen and James put rock into buckets, and Mel and Randy carried into me who dumped them on the path. I lasted until the entrance path had gone up a ways, made a 180 degree turn and go down the entire length of the design to the bottom. I then joined Karen to shovel rock into buckets. James transferred them to Mel and Randy who moved down the two inner paths from the top. And before we knew it, the path was covered.

Next was cleanup work which included disposing of rock and debris from all around the outside. The several piles of left-over compost were moved away from the earthwork. Next the entrance rock, a pause stone where



*Fig. 9 The pause stone at the entrance of the labyrinth*





*Fig. 10. James and Emily walking the finished earthwork*

one can set their intention before walking, was added. I didn't measure it but it seemed a good 3 inches thick and three feet wide by four or five feet. Mel said it weighed about 400 pounds. He moved it using left over pieces of the 3 inch plastic pipe. He had no problem handling it which was impressive. Then we lifted it up next to its place at the entrance, and entrance area was made level and ready to received the stone. A lot of discussion went into exactly the way the stone was to be placed. I think we got it right (Fig. 9). The approach to the stone and labyrinth became apparent after a compost pile was moved from the area; more shaping has to be done there. A little more cleanup and we were finally done.

moved and shaped 20 some tons of earth to make the raw earthwork. Then we put the finishing touches to the mounds and path. I was very satisfied with the result.

If someone asked me to describe the experience of making an earthwork, I say INTENSE. In two days plus a third of a day, we painted the design on the ground,

Before the layout on Friday evening we performed a beginning ceremony in which the four directions were brought in, then as a group, we drummed around the perimeter. Next we made a circle around where the entrance mound was to be, and I said a small prayer. At the end around sunset on Sunday, we walked the design and made a circle around the center mound, I read a prayer and others added. Also, before the seeding of the mound, lead by Laraine with Emily's help, we did a blessing of the mounds and seeds. The ceremony, sprinkling of ocean water on the mounds, was performed as we walked to the center and out.

From the client's house, the kitchen and living room face the ocean which is a mile and a half or so away. The windows, and deck outside the kitchen, allows one to see a panoramic view of the ocean beyond a largely forest foreground. As pointed out by Ralph on Sunday, the wave meander earthwork reflected an ocean wave in two ways, it has a wave path and a wave is seen in the cross section of the earthwork. The flow of the path reflects the up and down nature of the ocean surface caused by waves. The path first goes up, then down, then up, then



*Fig. 11. A view from the bottom of the earthwork about a month after construction*



*Fig. 12. The wave meander earthwork*



*Fig. 13. The natural waves  
of the author's earthworks*

down, and finally up to the center (Fig. 10). In the photo of James walking the central inner path, he is very close to the point where one changes direction (a key characteristic of the meander pattern); for James he was going from clockwise to counterclockwise.

I was again fortunate to have very good workers and volunteers which made the ordeal a pleasant enough affair as it is ever going to be.

About a month later, I went back and took some pictures (Figs. 11 - 13). The natural waves of my earthworks can be seen in Figure 13.

Have shovel, will travel,

Alex Champion