



Impact Statement

Jennifer Cao, Grade 9

***Uncovering the Unknown Depth*, 2026**

Colored pencil, marker, paper on pen, 9 x 13 inches

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Unsung Hero: Marie Tharp

In recent years, as more female individuals have participated in STEM fields, we've come to better appreciate the pioneers that moved forward and inspired them. These trailblazers are heroes by navigating and exploring what was previously thought to be impossible for them. One of whom may be less well known is Marie Tharp. Marie Tharp was a geologist and marine cartographer whose contribution to the world of oceanography has been nothing short of remarkable. This was my thought after I delved deeper into biographies about her. Before that, I was also coincidentally learning about oceanography, yet I didn't hear much about her, so I was very much intrigued by her work, and I knew I wanted to learn more about her. It was then that I realized how her ideas and values made it more worthwhile to capture her story.

As a child, Marie grew up learning mapmaking under the guidance of her father. This fueled her passion for geography at a young age, which she later went on to study. But it wasn't until WWII and a shortage of men that universities started accepting women like Marie into science programs. At that time, there was also not much known about the ocean floor, and it was widely accepted that the structure was flat and featureless. Marie was ambitious and wanted to map the ocean floor. Unfortunately, this was also during a time when women were still treated unfairly and weren't even allowed aboard ships for research purposes due to superstitions of bad luck. But from the sonar data she received, she was still able to use the numbers to map the unknown depths. From this, she uncovered evidence that there were in fact canyons, ridges, and other various formations on the ocean floor. Most importantly, there were mid-ocean ridges. This was not received well, and her discoveries were criticized when she explained it could support the continental drift theory (which was widely controversial at that time). It was even dismissed as "girl talk" by her peers.

Despite all this, her spirit of exploration drove her to continue making maps to prove her case, and to share her findings. It wasn't until an expedition set to prove her wrong filming the ocean floor ended up proving that she was correct all along! Her maps of the ocean floor later served as solid evidence to theories such as continental drift and plate tectonics as it became slowly accepted. These were one of the greatest theories developed in the 20th century, and was a significant paradigm shift that changed our views forever. Without her efforts, oceanography and other earth sciences might not be the way it is now.

In my interpretation, I wanted to emphasize Marie Tharp with her figure placed in the center. Surrounding her are irises that symbolize key traits that Marie embodied: wisdom and valor.

These flowers also have a blue-violet color which I believe pair well with the fact that her work is predominately regarding oceans. The background of the image is dark and gloomy but slowly turns vibrant when closing in on Marie to draw attention to what's positive rather than the negatives. One of the negatives being barriers on the windows which were placed in the inside rather than the outside to symbolize how she is prevented from conducting research on the ship and other activities due to her gender. Nonetheless, Marie Tharp still looks towards the audience with a calm expression. I tried drawing her with ink and pen after seeing how beautiful the maps she created were (which were hand drawn and truly outstanding) and used colored pencils to add in the details. Overall, the piece was meant to showcase her achievements and heroism.

Marie Tharp went through several obstacles and challenges throughout her scientific endeavor which I find very inspiring. It's difficult to stand your ground, even if you have evidence, especially when everyone else disagrees. I would find this confrontation terrifying and would start hesitating on whether my idea is truly correct or not. So how she stood her ground and her continuous efforts is remarkable and will remind me to stay true to my beliefs and myself. Along with the fact that she was able to accomplish so much despite all the discrimination against women, it makes me want to hopefully one day complete endeavors of my own. All in all, I'm sure I will not be the only one who will be inspired by her story.

References:

"About Marie Tharp | Lamont-Doherty Earth Observatory." [Columbia.edu](https://ldeo.columbia.edu/about-marie-tharp), 2012, [marietharp.ldeo.columbia.edu/about-marie-tharp](https://ldeo.columbia.edu/about-marie-tharp).

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