2018 Annual Report

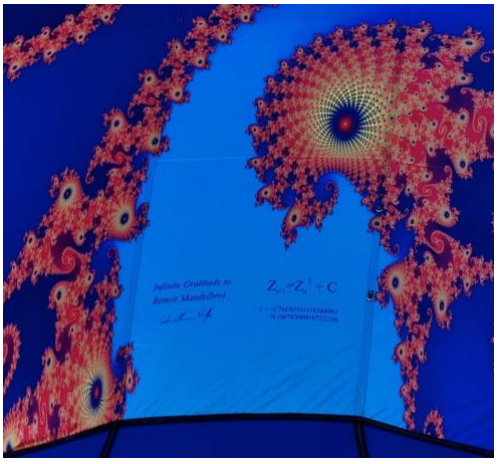
Summary

- In 2018, the Fractal Foundation reached about 11,000 people in New Mexico and Minnesota, of which over 4,750 (44%) were children. We are proud to be getting our message out about how cool science and math are to people across a broad range of ages, from K-12 and university students to senior citizens.

- For the third year in a row, funding from Sandia National Laboratories helped us reach about 2,500 teachers and students from Title I Albuquerque Public Schools.

- We are happy to share infinite gratitude for the generous donations from the Tarbell Family of Albuquerque. With these and other donations, the Fractal Foundation was delighted to introduce "Infinitude" to the world at this year's Albuquerque International Balloon Fiesta. The fractal printed hot air balloon is full-size and features an image of the Mandelbrot Set fractal. The image contains approximately 100 billion pixels, making it the highest resolution fractal ever generated.

- Our staff went from five in 2017 to four in 2018 due to staff leaving the Foundation for maternity and other employment opportunities.



The Impact of our Outreach

Outreach at Schools

We reached the greatest number of children (about 3,500) through our outreach conducted at schools. We visited at over 20 different schools throughout the year, where we gave a presentation to a large group of students or led hands-on activities in classrooms. We are proud to report that we participated in Cleveland Middle School's Fractal and Star Party, a student and family event celebrating the beautiful of fractals in science and math, an event that demonstrates our efforts of spreading fractals in the community.

Special Events

Our second greatest impact with children was at special events, where we spread our fractal message to about almost 800 students. Events included

- the Roswell Science and Art Festival in Roswell, NM
- the Explora Science, Technology, Engineering and Math (STEM) Fiesta
- the Fractal Camp at the National Museum of Nuclear Science and History
- the Belen STEM Day in Belen, NM
- Can Can Wonderland
- the Young Writers and Artist Expo
- STEM day at the Railyards Market
- a summer camp sponsored by Sandia National Labs (HM Tech)
- Fraternity Date Night and the NM Museum of Natural History and Science (Museum)
- the Lobo Life Party in the Museum
- two different city Library events
- a visit to a senior center
- the Interplanetary Festival, Santa Fe Institute

We reached over 1,100 adults and children at these events; the single largest event was the Roswell Science and Art Festival, where an estimated 150 children for Roswell, NM's surrounding area went home with a handmade fractal marshmallow toothpick tetrahedron.

First Friday Fractal Shows

Our ever-popular First Friday Fractals show at the Museum drew over an estimated 5,300 adults and 750 children over the course of the year. Each month, the Fractal Foundation hosts a set of four shows in the museum's planetarium where members of the public watch mind-blowing fractal zooms while learning about fractals and the Fractal Foundation's outreach efforts.

Special Fractal Shows

Fractal shows for schools groups at the Museum's planetarium continue to gain in popularity. Six school groups either came to a private show at the Museum or bought group tickets to attend First Friday Fractals. In addition, a private party held at the Museum requested the Fractal Show during for their guest during the party. The Fractal Show also was presented in the Goddard Planetarium as part of the Roswell Science and Art Festival in Roswell, NM. We reached about 200 children and 300 adults at all of these special fractal shows.

Before- and After-School Partnerships

We continued our four-year-long partnership with Children's Choice in running a 11-week-long after school program at a public elementary school in Albuquerque in the fall of 2018. Our last day showcased fractal projects that the students worked on during their 10 weeks for parents and additional teachers and administration. We also continued our two -year-long partnership with Rio Rancho S.A.F.E after school programs in running two 10-week-long after school programs at two different Rio Rancho elementary public schools in the spring and fall 2018. Each week Fractal Educators shared fractals with two half hour classes ranging in the first class K-2nd grade and the last half hour 3rd-5th grade students. What we enjoy about these programs is the long-term and in-depth instruction that children receive in contrast to the traditional one-time visit.

Teacher Training

The biggest impact we had with teachers in 2018 was presenting our fractal activities (Fractivities) at the New Mexico STEM Symposium. Through this event, we trained about 100 teachers on teaching about fractals, utilizing free curriculum for Fractivities on our web site, and leading these Fractivities.

Thank You, Funders!

Because the Fractal Foundation is primarily a fee-for-service non-profit organization, schools pay us to give presentations or lead Fractivities with their students. Thus, schools with little to no funds for special programs cannot afford to host us. However, we were able to reach about 1,500 teachers and students from Title I Albuquerque Public Schools because of funding from Sandia National Laboratories. We are grateful for their support!

We are also grateful for the support of the Tarbell Family and Jason Fischer, for making possible our exciting new:

Fractal Hot Air Balloons!

The Fractal Foundation was delighted to introduce "Infinitude" to the world at this year's Albuquerque International Balloon Fiesta! The fractal printed hot air balloon is full-size and features an image of the Mandelbrot Set fractal. Our mission is to use the beauty of fractals to inspire interest in science, math, and art, and this balloon is truly inspiring. In true fractal form, the self-similar imagery is visible over a large range of scales, from miles away to millimeters away. "Infinitude" has already generated a huge amount of interest and enthusiasm and is rapidly becoming a crowd favorite in Albuquerque and beyond. As the balloon stimulates people's curiosity ("what IS that?!?") - we can explain that the image shows the behavior of a simple algebraic equation, calculated millions of times. Each point in the image was run through the equation 3 million times to determine its fate, and then colored accordingly. And the image is zoomed in 7 billion times from the original Mandelbrot Set. The entire image contains over 100 billion pixels, making it the largest, highest resolution image ever made. The equation and starting coordinates are shown at the mouth of the balloon (and on the thousands of trading cards we've given out) so interested viewers can recreate the image if they wish. At the mouth of the balloon is

also the dedication: "Infinite Gratitude to Benoit Mandelbrot". The name "Infinitude" comes from contracting "Infinite Gratitude."

Staff

The Fractal Foundation employed a total of six staff in 2018: the Fractal Foundation founder and Creative Director, Dr. Jonathan Wolfe; Executive Director and Minnesota Education Director, Jennifer Schuetz Hadley; the New Mexico Education Director, Emma Eckert; and two educators in New Mexico, Serena Wright and Cynthia Kuchera. In mid-2018, Julie Tyrrell took over as New Mexico Education Director, as Emma Eckert left the position due to maternity leave, and continues currently.