

Mathaphor as a Literary Tool

Sarah Voss

Follow this and additional works at: <https://scholarship.claremont.edu/jhm>



Part of the [Arts and Humanities Commons](#), and the [Mathematics Commons](#)

Recommended Citation

Sarah Voss, "Mathaphor as a Literary Tool," *Journal of Humanistic Mathematics*, Volume 13 Issue 1 (January 2023), pages 232-238. . Available at: <https://scholarship.claremont.edu/jhm/vol13/iss1/19>

©2023 by the authors. This work is licensed under a Creative Commons License.

JHM is an open access bi-annual journal sponsored by the Claremont Center for the Mathematical Sciences and published by the Claremont Colleges Library | ISSN 2159-8118 | <http://scholarship.claremont.edu/jhm/>

The editorial staff of JHM works hard to make sure the scholarship disseminated in JHM is accurate and upholds professional ethical guidelines. However the views and opinions expressed in each published manuscript belong exclusively to the individual contributor(s). The publisher and the editors do not endorse or accept responsibility for them. See <https://scholarship.claremont.edu/jhm/policies.html> for more information.

Mathaphor as a Literary Tool

Sarah Voss¹

Sarahvoss1@outlook.com.

Synopsis

Drawing from one of my recent sermons, I chart the path of mathaphor (metaphor drawn from mathematics) as a literary tool. Following a short history of the concept, I detail contemporary author Colum McCann's significant use of a geometric term to unveil and encourage compassion.

Thirty years ago, I stopped teaching calculus to Nebraska undergraduate students, attended theological school in Chicago, and wrote a ministerial doctoral thesis which, in 1995, became *What Number Is God?*—a volume in SUNY's series on Western Esoterism. That title was short for *What Number Is God? Metaphors, Metaphysics, Meta-mathematics and the Nature of Things*. It opened doors for my work on math and spirituality. It also marked the place and time when I first began to understand that metaphors drawn from mathematics could be effectively employed as literary tools, an endeavor I have loved. In this book I used metaphors drawn from mathematics to show that they can help even those who are not math specialists gain insightful understandings of the spiritual world and social behavior. After SUNY published this work, I coined the term “mathaphor” to indicate a metaphor drawn from mathematics. I have used it in many applications since. (See, for example, [5, 6, 7] for more on metaphors drawn from mathematics).

I am not the first person to use mathaphors as a literary tool. For instance, two variations on holography occur in the titles (and content) of Michael Talbot's book, *The Holographic Universe* (1991) and Stanislav Grof's vol-

¹ Sarah Voss is a Unitarian Universalist minister affiliated with the First Unitarian Church of Omaha NE. Portions of this essay are drawn from “Context and Compassion,” a recent “math” sermon which the author initially offered on 10/24/2021 to the First Unitarian Church of Sioux City, IA.

ume on *The Holotropic Mind* (1990). Another appears in the content of Frank Tipler's *The Physics of Immortality* (1995) where the author holds that the human soul "is nothing but a program being run on a computer called the brain," and that the universal wave function is bounded by an Omega Point which he describes as "an omnipresent invisible field, guiding and creating all being, and ultimately Personal" — all mathematical features which Tipler claims as traditional defining properties of the Holy Spirit [4, page 185]. There are many more such uses of mathaphor which, together, span the human presence on earth. The Pythagoreans (ca. 530-520 BCE), for instance, said that number rules the universe, and Plato (429-348 BCE) held that God ever geometrizes. Many of these metaphorical expressions were used to validate philosophical treatises that we might today link to the ethereal realm of theology.

Not everyone has accepted the use of mathaphors. After I was ordained in 1992, I began to offer "math" sermons from the pulpit. After one of the first, I discovered that that four-letter "m" word frightened some self-defined mathaphobes. In a class I taught to seminarians ("Math, a New Language of Theology"), one of my students later told me that when she had first passed through the classroom door, the math she'd expected to encounter in the class had tempted her to go right out the other. She turned out to be a wonderful student who was glad she had signed up for the course. On the other end of the spectrum, Episcopalian priest and biochemist Arthur Peacocke once told me that he became concerned when people took metaphors from science and used them in popular literature because he felt it was too easy to misuse the science involved (private conversation, Oxford, 8/23/97).

Peacocke, who some years later would receive the noted Templeton Prize for Science and Religion, was correct, of course: it *is* easy to misrepresent the science and/or the related mathematics. Nonetheless, I have found that (if done gently) introducing the math/science with a metaphor can ultimately give non-mathematicians a better feel for what the math that lies behind it means and how it applies to the spiritual notion(s) involved. Similarly, as long as the metaphor is not abused, most scientifically oriented individuals are happy to know that those who find math/science less than friendly can actually become more willing to try out the math.

An illustration of the way I've used mathaphor in workshops is the dollar auction, which is an experiential example I culled from game-theory literature about the Prisoner's Dilemma. In this mathematical game, a dollar bill

is auctioned off according to the normal procedures of an auction where the highest bidder takes the whole dollar, but in the dollar auction the second highest bidder has to pay his/her/their last bid as well. Those who agree to participate in the game soon realize the snare they've encountered. Invariably, the procedure turns into a lose/lose situation. Nobody really wins. With discussion, players and observers recognize that in actual practice more attention to the initial rules of the game is the best and perhaps only way to avoid a real-life counterpart of, say, a nuclear weapons race or, for another instance, questionable gene editing. Sometimes it's wisest just to NOT engage in the game. The dollar auction is one example of how a metaphor drawn from mathematics can help us learn about and even change moral behavior.

My efforts to develop and use such resources have been personally challenging, highly satisfying, and on occasion even spiritually rewarding, but largely this work has been that of a single, committed pioneer — i.e., me. And then I found acclaimed author Colum McCann and his brilliant 2020 novel *Apeirogon*. Suddenly, I was not alone! This prize-winning author intentionally uses a mathaphor not just occasionally, but as the essential structure to tell an entire tale of spiritual triumph over discord, heartbreak, disaster, and hatred.

An apeirogon is a term used in mathematics: it refers to a generalized polygon — a many-sided figure with a countably infinite number of sides. Figure 1 (from my personal photo collection) shows a science toy which illustrates a many-sided polygon with a limited number of sides. The view through the spaces it forms is flexible and interesting. An artistic rendition of an apeirogon offers a two-dimensional version of a generalized polygon (see, for example, [1]), but an actual apeirogon has infinite dimensions, and thus one's imagination clearly is the best visualization! Imagination also helps in understanding how an infinitely-sided geometric figure is also perfectly real, sort of like God is in our ordinary vision — real and beyond real, both.

Apeirogon (the book) tells the true story of a Jew and a Palestinian, each of whom lost young daughters to the violence in the Middle East, who then turned their grief into an organization called Combatants for Peace [2, page 238]. Both the organization of McCann's book and its title are paradoxes. Welcome paradoxes! The book is a symbol for how we can turn grief and pain into something vibrating with true compassion.



Figure 1: An expandable facsimile of a three-dimensional apeirogon.

Apeirogon contains 1001 “chapters” — some long, some only one line, and some seemingly unrelated to the main story. All of them, taken together, help us examine the notion of compassion from many different perspectives and contexts. There are constant surprises in this book, some small and numerical, such as the ones about “amicable” numbers (a pair of numbers whose sum of their proper divisors equal each other, such as 220 and 284),² or the way the first half of McCann’s “chapters” are labeled from 1 to 500, followed by a chapter numbered 1001, and then a second set of chapters declining in number from 500 back down to 1. Some of the surprises are large, too, such as how all of this weird structure encourages the reader to suspend normal responses and actually believe that we can change as a collective body of humans and learn to be a more compassionate species.

These are the crucial facts of *Apeirogon*:

² The proper divisors of 220 are 1,2,4,5,10,11,20,22,44,55, and 110. Of 284 are 1,2,4,71, and 142.

Bassam Aramin's ten-year old daughter Abir is shot by a rubber bullet fired from an M-16 rifle that had been manufactured in the town of Samaria, North Carolina. The bullet leaves the gun at more than 100 mph and traveled 15 meters through the air before it smashes into the back of Abir's head, crushing the bones in her skull. Abir had gone to the grocery store to buy candy. Two hours later — while stalled in an ambulance near a checkpoint, Bassam reaches into his daughter's school bag and finds the candy beneath her schoolbook. The border guard who fired the shot is 18 years old.

Then, about 10 years later, Rami Elhanan's 13-year-old daughter Smadar is killed while walking arm-in-arm with her girlfriend near an outdoor restaurant in Jerusalem. The bombers are dressed as women, explosive belts wrapped around their stomachs, wearing headscarves to hide their faces. They are all from a village in the West Bank. For two of them, it is the first time they had ever been in Jerusalem. The force of the blast on Ben Yehuda Street knocks Smadar high in the air. Smadar. From the Song of Solomon. The grapevine. The opening of the flower.

And so, Colum McCann gradually unfolds the story of these two grieving men, so different one from the other, yet so much the same, too. The book *Apeiogon* tells it all. And it tells it from many different perspectives. That's where the metaphor of the title comes in, and, in essence, it says it all. It's not just a metaphor: it's a mathaphor, a literary tool with increasingly recognized impact.

Here is how my friend Steve Skinner, a retired high school physics and chemistry teacher, describes the book:

The word "Apeiogon" is from a Greek word meaning infinite sides, and since the story line is about two very different points of view in the Mideast conflict, using an infinite-sided polygon means that the view is different looking at the whole problem from the point of view of any face, literally any human face or any "issue" face [*sic*] (personal correspondence, October 17, 2021).

To be sure, not everyone cares for this literary tool as much as Steve and I do:

McCann has formatted his book like the geometric oddity for

which it's named, in a sequence of brief, disconnected sections that threaten to go on eternally. ... Reading it is like listening to an erudite conspiracy theorist explain their thesis of the universe, the thesis being that just about every meaningful thing that has ever happened is connected, and connected specifically to Israel and Palestine. The idea that those places are by nature capital-M Meaningful [*sic*] too often substitutes for an attempt to really see, or question, what that meaning might be. McCann, in "Apeirogon," has taken that substitution to a new extreme [8].

But others get it:

Apeirogon is structured as 1,001 individual chapters, some as short as a sentence, some comprising Sebald-like photographs, some merely blank spaces (a reflection of one of the mathematical theorems that underlie the novel). ... I kept thinking as I read it about all the ways that *Apeirogon* could have failed, about the ammunition it might have provided to all of those who claim that no one should write a novel that reaches beyond their own particular experience. It could have been maudlin, tawdry, exploitative, trite. Instead, it's a masterpiece, a novel that will change the world, and you don't hear that very often [3].

Such different responses echo the tension in using metaphors drawn from mathematics to which I referred earlier. Necessary, perhaps, to bring about more creative change.

To read *Apeirogon* is to embrace the power of compassion. Some of this book is fiction. Some is true. It doesn't matter. These two men came together in their grief, then helped form a group they called Combatants for Peace; they are now showing us how compassion can champion everything else. Today, Aramin and Elhanan travel the world together, sharing their stories, promoting peace. McCann, with his innovative writing, is helping us all walk through these new doors. Indeed, with his careful selection of a geometric term to mold and then unfold the story of the Mideastern conflict, McCann has broadened the literary toolbox while simultaneously evoking a sweet compassion of the human spirit. What more can we ask of a mathaphor?

References

- [1] John Baez “May 2015 Diary,” contains related drawings by Greg Egan. Available at https://math.ucr.edu/home/baez/diary/may_2015.html, accessed January 6, 2023.
- [2] Colum McCann, *Apeirogon*, Random House, 2020.
- [3] Alex Preston, “Apeirogon by Colum McCann review — a beautifully observed masterpiece,” *The Guardian*, February 24, 2020. Available at <https://www.theguardian.com/books/2020/feb/24/aperoigon-a-novel-by-colum-mccann-book-review>, accessed on January 4, 2023.
- [4] Frank Tipler, *The Physics of Immortality*, Doubleday, NY, 1995.
- [5] Sarah Voss, “A workshop to introduce concepts of moral math,” *Journal of Humanistic Mathematics*, Volume 2 Issue 2 (July 2012), pages 114–128. Available at <https://scholarship.claremont.edu/jhm/vol2/iss2/10>, last accessed on January 31, 2023.
- [6] Sarah Voss “Moral mathematics,” a chapter in Springer’s reference work, *The Handbook of the Mathematics of the Arts and the Sciences* edited by Bharath Sriraman (Springer, Cham, 2021). doi:10.1007/978-3-319-57072-3_79
- [7] Sarah Voss “Mathematics and theology: A stroll through the garden of mathaphors,” *Theology and Science*, Volume 4 Number 1 (2006), pages 33–48.
- [8] Talya Zax, *Fascinated by the Israeli-Palestinian conflict — and exploiting it*, *Forward*, February 25, 2020. Available at <https://forward.com/culture/440450/aperoigon-colum-mccann-israel-palestine-review-bassam-aramin-rami-elhanan/>, accessed on January 30, 2023.