Afflatus Creations Peer-reviewed Multidisciplinary Journal
ISSN: 3049-4338 [Online]
Vol. 2, No. 8, July – Sept 2025

Compass and Shadow

Hand-Drawn Impossibilities: A Personal Exploration

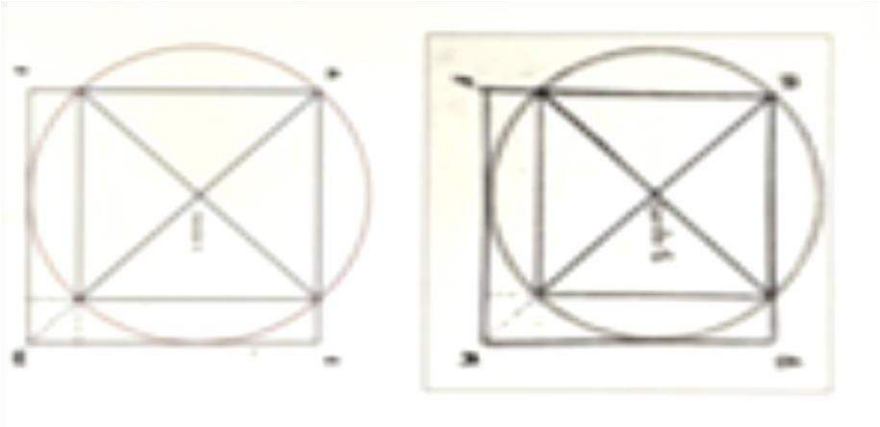
By Timothée Bordenave
Paris, France

I am not a mathematician, I must say this again and again, because it shapes everything you are about to read. I am simply a man from Paris who has spent years drawing with a compass, chasing the quiet beauty of shapes that others, long ago, declared impossible to capture.

An Early Fascination

Since childhood I have been drawn to what I once called "alternative mathematics." Not because I wished to challenge the truths of geometry, but because I was enchanted by the mystery that lives in its ancient questions. When my secondary school teachers dismissed my fascination with those questions, my curiosity only deepened. If these problems—squaring the circle, dividing an angle into three equal parts—are known to be unsolvable with classical tools, why do they still whisper to us after two thousand years?

Tools of Simplicity



My attempts to approach the square-circle relationship through simple construction methods

Every figure you see in these pages is drawn entirely by hand, using only the instruments the Greeks would have known: compass, straightedge, set square. No computers, no formulas, just the patient conversation between hand and paper. My method is not a method in the scholarly sense; it is, as the French word empirisme suggests, a practice of trial and error, a rhythm of trying and trying again.

I stop when my eye and my small hand-measurements tell me that the figure is as close as a human gesture can bring it. Family and friends sometimes tell me my figures seem very close to perfect ratios, though they differ in how close they think the match might be. Their gentle debate pleases me more than any claim of precision could.

The Ghosts I Chase

I know the history of these problems. Lindemann proved in 1882 that π is transcendental, beyond the reach of compass and straightedge. Wantzel showed in 1837 that angle trisection requires solving equations impossible with classical tools. Yet when I construct my nested squares and

Afflatus Creations Peer-reviewed Multidisciplinary Journal
ISSN: 3049-4338 [Online]
Vol. 2, No. 8, July – Sept 2025

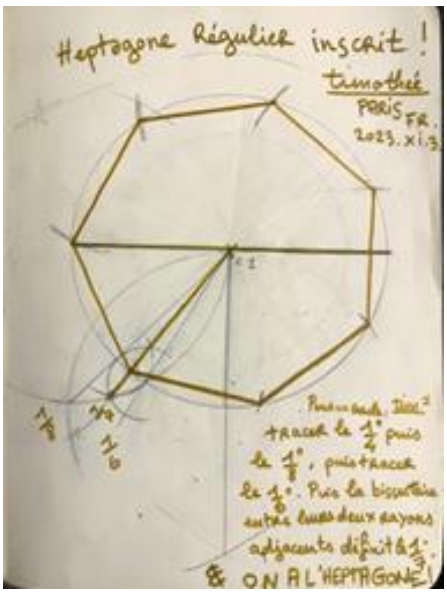
circles, when I attempt my angle divisions, something remarkable emerges, not solutions, but a kind of visual poetry.

Hand-drawn explorations marked "quasi-trisection

I mark my angle attempts "quasi-trisection" because I am honest about what I achieve. The beauty lies not in reaching perfection but in how close one can come through patient construction. I am not solving these problems. I am dancing with them.

Experiments, Not Proofs

At times I have played with ideas that I jokingly call my "prosperous isosceles theory," not a theory at all, but a way of noticing how one triangle can give birth to another, how certain proportions seem to echo themselves. These are not algebraic discoveries. They are simply visual experiments: an intuition that if a figure is nearly right on a small scale, then enlarging it with the same construction might make the difference feel even smaller.



My November 3rd, 2023 construction where I wrote triumphantly "& ON A L'HEPTAGONE!"

ISSN: 3049-4338 [Online]
Vol. 2, No. 8, July – Sept 2025

I cannot prove this. I can only observe it, and invite others to look with me. When I completed my seven-sided figure construction, I felt I had touched something eternal, not because I had solved anything, but because the attempt itself had revealed unexpected beauty.

Drawing as Dialogue

Each drawing begins as a question and ends as a kind of quiet satisfaction. The process varies from one problem to another. I always work with what the French call empirisme, a hit-and-miss procedure drawn from intuition rather than calculation.

Let me describe one example: my approach to creating a square whose area approximates that of a given circle. I begin with a circle of any radius and trace the inscribed square through its diagonals. Then I choose two adjacent sides of this inscribed square and extend them outward, away from their meeting point, until they form two sides of a new square that is tangent to the circle. This new square comes remarkably close to matching the circle's area,though I cannot claim mathematical precision, only visual satisfaction.

Pages from my working notebooks, showing the empirical process of measurement and adjustment

The Joy of Nearness

There is a special pleasure in approaching an ideal you know you cannot reach. To come close, to sense the shape of perfection just beyond the edge of certainty, this is the real gift of the work. My constructions are not solutions. They are, in their way, small poems in line and arc, evidence of the human desire to understand beauty even when understanding remains incomplete.

I work in what I call the margins of geometry, that space between the possible and the impossible where approximation becomes art. When I trace a circle with my compass, I am not merely drawing, I am participating in an ancient dialogue about space, perfection, and human aspiration. The slight tremor in my hand that prevents perfect roundness is not a flaw to be eliminated but a signature of the human in the realm of the ideal.

ISSN: 3049-4338 [Online]
Vol. 2, No. 8, July – Sept 2025

Why This Still Matters

In our digital age, when any geometric figure can be drawn with computational precision, why does my analog approach matter? Because mathematics is not merely about results, it is about understanding. When I construct an approximation by hand, I develop an intuitive grasp that no amount of digital calculation can provide.

My work connects me to a tradition stretching back millennia, to every human who has wondered about the hidden relationships between shapes. We are part of a conversation across centuries, united by curiosity and the desire to understand through making.

An Invitation, Not a Claim

I offer these figures not as a new mathematical theory but as what I might call "a positive experiment," borrowing a phrase from chemistry and physics. They are meant to amuse, to provoke wonder, perhaps to inspire scholars and readers to consider again the old questions of proportion and harmony.

I claim no truth beyond this simple fact: that drawing with a compass and ruler can still awaken the imagination, and remind us that some mysteries are valuable precisely because they remain unsolved.

I am not in possession of any mathematical truth. I am a humble person, a simple man, not educated for mathematics beyond the baccalaureate level. The question I wish to ask here is only this: "Gentle, noble scholars, would these naive figures perhaps amuse you or capture your interest by chance?"

The ancient Greeks, 2,500 years ago, shaped much of our civilization. Like the temple at Delphi advised, I try to know myself, I am educated enough to recognize that I am neither particularly clever nor important in this world. But perhaps there is value in sharing these small experiments in seeing, these attempts to touch the beautiful impossibilities that have fascinated human minds across the centuries.

The Dance Continues

Each day, I pick up my compass again. Each day, I discover something new in the patient rhythm of construction and measurement. These drawings are a conversation, between my eye and the page, between ancient mathematics and modern curiosity, between what we can measure and what we can only imagine.

The impossibility proofs do not defeat this work, they illuminate it. Knowing that certain constructions cannot be achieved exactly makes the near-achievements more precious, not less. My approximations gain meaning from their relationship to the impossible ideal, like shadows that reveal the shape of unseen objects.

This is the true joy of my explorations: not in conquering the impossible, but in learning to dance with it. In that dance, mathematics becomes not just computation but celebration, a celebration of human curiosity and the endless, beautiful mystery of geometric form.

ISSN: 3049-4338 [Online]
Vol. 2, No. 8, July – Sept 2025

All constructions shown were created by hand in my Paris workshop between 2018 and 2025, using only traditional tools in the classical manner. They represent my personal investigation into the beautiful impossibilities that have captivated minds for over two millennia.

-*-

Editor's Note

Timothée Bordenave's work belongs to the ancient tradition of those who find meaning in the attempt rather than the proof. These drawings are not theorems; they are meditations, acts of quiet discovery where art and mathematics meet. His honest acknowledgment of limitations, combined with genuine wonder at geometric beauty, reminds us that even our most "naive" figures can open a dialogue across centuries. By sharing these explorations, the author invites us not to solve old problems but to experience the joy of approaching beauty through patient, humble practice.

Timothée Bordenave is a Paris-based writer and visual artist whose work spans literature, painting, and geometric exploration. Author of more than twenty books including poetry, fiction, and philosophical essays, his writings have been translated into multiple languages and featured in international publications.

Named *Author of the Year 2025* by the literary organization "O to Be," Bordenave's recent visual art has been exhibited internationally, including at Tokyo's Metropolitan Art Museum. His practice encompasses contemporary painting and what he terms "alternative mathematics," hand-drawn geometric investigations of classical impossibility problems using traditional compass and straightedge.

Working from his Paris studio, Bordenave explores the intersections of faith, creativity, and mathematical curiosity. His interdisciplinary approach reflects a commitment to what he describes as "approaching beauty through patient, humble practice," creating work that bridges artistic expression and intellectual inquiry.