

Neglected Classic

In each issue of Expositions, we draw attention to a “neglected classic,” an important contribution to the humanities that has lost favor or fallen out of fashion. In particular, we spotlight works that foster interdisciplinary thinking. For our first issue, we present a review of a new scholarly edition of Edwin A. Abbott’s “Flatland: A Romance of Many Dimensions,” a beguiling piece of Victorian literature that addresses the connections—and conflicts—between the humanities and the sciences.

Edwin A. Abbott. *Flatland: A Romance of Many Dimensions*. Introduction by Thomas Banchoff. Princeton, NJ: Princeton University Press (Princeton Science Library), 2005. 136 pp. \$9.95 pb. ISBN 0691123667

A.C. McCarthy, City University of New York Graduate Center

A classicist by training and an Anglican clergyman by profession, Edwin A. Abbott (1838–1926) published some fifty volumes, including studies of Shakespeare, an edition of Francis Bacon’s *Essays*, and a number of theological works. He corresponded with George Eliot and was intensely interested in the cause of women’s education several decades before female students could take university degrees. As the headmaster of the prestigious City of London School from 1865–1889, Abbott initiated a cutting-edge curriculum that required the study of English literature and chemistry and offered instruction in advanced mathematics and shorthand. Yet, despite his involvement in the rich intellectual life of the second half of the nineteenth century, Abbott is best known today for a single novel, *Flatland: A Romance of Many Dimensions*.

First published anonymously in 1884 and continuously in print ever since, Abbott’s *Flatland* tells the story of A. Square, a member of the professional class in a two-dimensional reality. Through the intervention of a mysterious Sphere, he journeys to the three-dimensional Spaceland and becomes convinced of the truth of the “Gospel of Three-Dimensions”—and the possibility of even higher-dimensional spaces.

By narrating the efforts of the Sphere to convince A. Square of the reality of the third dimension through example and analogy, Abbott gives his three-dimensional readers a sense of the method by which they, too, might be able to infer other conceptions of reality that evade the traditional standards of scientific proof, human perception, and language itself. The analogical method of *Flatland* has proved flexible enough to serve as a touchstone for more than a century of scientific investigations, and the book has something of a cult status among mathematicians. In his introduction to the recently reissued Princeton Science Library edition of *Flatland*, leading Abbott scholar Thomas Banchoff, a mathematics professor at Brown University, notes that, as today's computer animation technology makes it possible to visually represent multi-dimensional objects, "there is no better introduction to the problem of dealing with higher-dimensional slicing phenomena than this book" (xvii).

However, the mathematical usefulness of *Flatland* cannot fully account for its enduring popularity, nor explain the novel's relevance in the context of the liberal arts. Victorian readers understood *Flatland* as a satire of the more repressive aspects of nineteenth-century British society, particularly its restrictions on women's opportunities and the privileging of social status over ability. Anxiety about identity and the potential for deceit underlies the whole of Flatland's politics, which provide for the control of the lower classes (represented as Isosceles triangles), restrictions on women (who are invariably straight lines in a world of triangles, squares, and polygons), and repression of Irregular shapes. Social interaction is a matter of life and death:

If even the angle of a respectable Triangle in the middle class is not without its dangers; if to run against a Working Man involves a gash; if collision with an officer of the military class necessitates a serious wound; if a mere touch from the vertex of a Private Soldier brings with it danger of death;—what can it be to run against a Woman, except absolute and immediate destruction? (12)

Flatland is, moreover, a society that has traded aesthetic creativity and intellectual discovery for safety and security: the practice of painting was banned after the Chromatic Sedition threatened to make women visually indistinguishable from the priestly Circle class.

The construction of Flatland society allows Abbott to foreground the disruptive power of higher dimensionality. Seemingly secure binaries, such as inside/outside, are revealed to be dimensionally-bound constructions. Just as A. Square, a being of two dimensions, is able to view the “insides” of Lineland’s one-dimensional inhabitants, the Sphere’s three-dimensional perspective gives him access to Flatland’s private inner spaces. A. Square first reacts to the Sphere’s visitation as a kind of home invasion, and for all his talk about male “rationality” (as diametrically opposed to feminine “affections”), part of his resistance to the Sphere’s logical argumentation originates in a powerful feeling of violation. He is deeply offended when the Sphere touches him in the stomach—a feat that no two-dimensional being could perform on another: “It seemed intolerable that I should endure existence subject to the arbitrary visitations of a Magician who could thus play tricks with one’s very stomach” (79). Visiting Spaceland proves that the Sphere is no magician, but it cannot allay the more deeply disturbing implication that higher dimensions of perception do not correlate with increased moral sensibility. When A. Square moves to worship the Sphere for his “omnividence”—a divine attribute in the teachings of Flatland’s theologians—the latter replies: “Is it so indeed? Then the very pick-pockets and cut-throats of my country are to be worshipped by your wise men as being Gods: for there is not one of them that does not see as much as you see now” (82). Indeed, no advanced visualization techniques can dispel the deeply disturbing realization of the fragility of the distinction between inside and outside, human and divine. The spiritual shock of the inter-dimensional encounter is as much a part of *Flatland’s* story as what it has to teach us about scientific perception.

In his introduction, Banchoff contrasts *Flatland’s* first section with fictional travelogues told by visitors to exotic lands. “It is as if the story of Gulliver were told by the mayor of Lilliput or the adventures of Alice by the White Rabbit,” he writes (xxii). However, both Lilliput’s mayor and the white rabbit are characters with stable “insider” status in their communities. The situation of Abbott’s narrator is at once more complicated and more poignant, for his experience in Spaceland isolates him from his countrymen both intellectually and physically. He is arrested and thrown in jail at the end of the novel for speaking publicly about

the third dimension, and it is here that he remains, vainly attempting to hold on to his memories of Spaceland, reduced to the quixotic mantra, “Upward, not Northward” (103). A. Square’s imprisonment makes his often approving descriptions of the social arrangements of Flatland, even those he apparently repudiates in his confinement, particularly—and tragically—ironic. Though the author’s introduction to the second edition (published just a month after the first) claims that A. Square has relaxed some of his more extreme views on women and the lower classes, he evidently persists in regarding himself as a unique case of wrongful imprisonment in a system that is otherwise sound.

The central sections of Banchoff’s introduction ably situate *Flatland* within the context of Victorian science as well as that of modern computer animation techniques, which use the methods devised by Abbott and others as the basis for creating visual representations of objects in four dimensions and beyond. The clarity of his explanations of *Flatland*’s mathematics will be especially helpful to readers from humanities disciplines, whose scientific education may have stopped at the undergraduate or high school level. He anticipates some of the confusions that may arise from popular misconceptions of current science, such as the assumption that the fourth dimension is always time. For A. Square, Banchoff notes, time would be the third dimension, and

for beings whose universe has a spatial fourth dimension, the fifth dimension would be the one assigned to time, and in general we can expect that time will come in right after the dimensions that are reserved for space. (xxvii)

The structure of Banchoff’s introduction, however, privileges the mathematical aspects of *Flatland* and treats them as largely independent of the novel’s other concerns. While it is certainly appropriate to dwell more fully on the former in an introduction aimed at an audience with scientific interests, Banchoff perhaps overstates his point when he claims that the

major reason for our interest in *Flatland* [is] that for the first time we can achieve some of the dreams of our ancestors a century ago and obtain direct visual experience of phenomena in a dimension higher than our own. (xxvi)

His examination of *Flatland's* social satire, style, and historical context appear perfunctory next to the more fully realized section on “Flatland and New Modes of Visualization.” The latter section, for instance, contains a number of references to other works on the dimensional analogy, but he does not provide any suggestions for further reading on other subjects, implying that the literary and social levels of *Flatland* are so self-evident as to need little examination.

Banchoff provides a more in-depth discussion of the philosophical and historical sources of *Flatland* in his article “From *Flatland* to Hypergraphics” (1990), which places Abbott more fully in his religious and intellectual milieu. A less simplistic treatment of *Flatland's* relationship to nineteenth century culture appears in an article by Elliot Gilbert, who argues, “in *Flatland* we are dealing with an unassuming but insightful study of a persistent nineteenth-century preoccupation, the quest for new creative directions in a culture powerfully—if more and more uncomfortably—committed to history and tradition.” However, if Banchoff too quickly dismisses the complexities of *Flatland's* social dimensions for modern readers, Gilbert tends towards the opposite extreme of marginalizing the science of the novel’s “quirky geometric fantasy” (Gilbert 1991, 396), a view of the novel obviously not shared by mathematicians.

Perhaps the fullest and most balanced portrait of Abbott can be found in Ian Stewart’s introduction to and notes in *The Annotated Flatland* (2001). While he gives ample space to the mathematical concepts in the novel (and includes a number of detailed diagrams), Stewart presents Abbott as a consummate Victorian intellectual and clergyman, who was concerned not only about the search for scientific knowledge but about its spiritual consequences, an orientation that links Abbott to more canonical nineteenth-century authors such as Arnold and Tennyson. He draws upon Abbott’s other writings, particularly *The Spirit on the Waters* (1897), to illuminate the principles set forth in *Flatland's* dedication, which wishes that we, the inhabitants of Spaceland,

May aspire yet higher and higher / To the Secrets of FOUR FIVE OR
EVEN SIX DIMENSIONS / Thereby contributing / To the Enlargement
of THE IMAGINATION / And the possible Development / Of that most

rare and excellent Gift of MODESTY / Among the superior races / Of
SOLID HUMANITY.

Banchoff, for his part, pays little attention to Abbott's theology and perhaps overstates the uniqueness of his view that "the techniques of literary criticism developed by classical scholars should be used with the same vigor to examine the Scriptures" (xxi). At a time when science and religion are frequently portrayed as being mutually exclusive, if not actually hostile to each other, the marginal role given to Abbott's theology represents a missed opportunity for a profitable discussion.

Given the interdisciplinary range of Abbott's own interests, it is clear that *Flatland* should be read at the intersection of science and the humanities. Indeed, the most important reason for reading and discussing *Flatland*, particularly in an undergraduate classroom, lies not in what it teaches about dimensionality or Victorian culture specifically, but in the process of engaging the methods from across the liberal arts curriculum. The brevity and readability of *Flatland*, not to mention its social, mathematical, and political suggestiveness, makes it a quintessentially "teachable" text, offering numerous possibilities for classroom discussion. Though instructors will want to have Stewart's more comprehensive edition on hand, the reprint of the Princeton edition provides an ideal starting point for undergraduate reading in multiple dimensions. Moreover, it gives humanities scholars in particular the opportunity to make the non-scientific possibilities of *Flatland* as compelling as Banchoff has made its mathematics.

References

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