

“Yet more spacious Space”: Higher-Dimensional Imagination from *Flatland* to *Lilith*

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*Ah, the two worlds! so strangely they are one,
And yet so measurelessly wide apart!*
(*Lilith* 153)

L*ilith*'s seven-dimensional universe defies the three-dimensional expectations of Mr. Vane and many of George MacDonald's readers: multiple objects can occupy the same space, a single book can be both in Vane's library and in Mr. Raven's, and people's thoughts and prayers become seven-dimensional beasts and birds. In formulating the laws of this seven-dimensional world, MacDonald analogously extends the mathematical principles that apply to physical realities to also operate on mental and spiritual realities. The particular way in which he imagines this extension is remarkably parallel to the way Edwin Abbot's *Flatland* develops the concept of higher dimensions. Ideas about the fourth dimension were "very much 'in the air' in the late 1800s" (Stewart xix), but the striking similarities between the way both authors imagine dimensions suggests that MacDonald's thinking was directly formed by Abbott. I can find no hard evidence that MacDonald read Abbott's *Flatland*, but as both authors were ministers living in England who had interests in math and education,¹ it seems quite probable that MacDonald read *Flatland* sometime after its publication in 1884 and before he began writing *Lilith* in 1890. MacDonald's reading of Abbot, one might speculate, caused *Lilith* to be shaped by *Flatland*'s use of dimensions in three particular ways: both books conceive of the interactions between lower and higher-dimensional beings in parallel ways; Mr. Vane and A Square follow similar paths as they learn about higher dimensions; and *Lilith*'s solipsistic perversion of her ellipsoidal brain echoes Abbott's descriptions of Lineland and Pointland. These three parallels suggest three important points of agreement between Abbott and MacDonald regarding dimensionality: lower-dimensional beings may not be able to perceive or even accurately imagine realities that exist in higher dimensions; because of this conceptual weakness, the only way to grasp higher dimensions is to

be miraculously forced into them, and opening oneself to the experience of higher dimensions increases one’s ability to accurately perceive oneself and others. MacDonald, not surprisingly, makes death a necessary step to entering the highest dimensions, and his fantasy ties higher dimensions to the spiritual world more fully than Abbott’s. Nevertheless, both authors employ strikingly similar understandings of higher dimensions to imaginatively figure mental and spiritual truths as concrete, if invisible, realities that individuals would do well to recognize.

Scholars have proposed several possible sources for the seven dimensions in *Lilith*, but while recent explanations of these seven dimensions illuminate MacDonald’s fantastical world, they do not account for the way these further spiritual dimensions function as analogs to the three physical dimensions. Deirdre Hayward compares *Lilith*’s seven dimensions to Jacob Boehme’s “seven eternally-generating qualities [that] comprise the three-fold nature of God” (59). And while Hayward refers to these qualities as “dimensions,” adopting MacDonald’s vocabulary, Boehme’s qualities are not in any sense analogous to physical dimensions but are rather dialectical stages on the “dynamic, progressive journey towards an eternity which is an ever-generating out-pouring of God’s love and energy” (70). Hayward’s analysis of Boehme’s schema certainly indicates Boehme influenced the trajectory of MacDonald’s plot, and MacDonald may have even chosen the number *seven* because of Boehme’s seven stages, but Boehme’s “qualities” do not correspond to physical dimensions or elucidate the inner workings of MacDonald’s imagined seven-dimensional world. Rolland Hein, in turn, proposes a Dantean influence on *Lilith* that led MacDonald to choose the number *seven* because it is the sum of the three physical dimensions and the four medieval senses of scripture (74). While Hein’s analysis of Dante’s influence on *Lilith* clarifies aspects of Vane’s journey, it fails to satisfactorily account for MacDonald’s particular use of dimensions in the geometrical sense: different levels of meaning are not so much higher mathematical dimensions as they are higher levels along the same dimension.

At the beginning of his investigation of *Lilith*’s dimensions, Hein states his agreement with Greville MacDonald, who seems to have been the first to comment on the seven dimensions of *Lilith*. Hein notes that “all meanings in the imagery of *Lilith* beyond the literal level are closely intertwined, forming ‘an inseparable unity,’ which may be simply referred to as a fourth dimension” (73). He quotes here from Greville’s 1924 biography of his father, in which Greville describes the seven dimensions of *Lilith* as

spiritual analogs to the three spatial dimensions:

[*Lilith*] both binds in one and unfolds the world of concrete Beauty and the realm of abstract Truth. Necessarily also it treats of their condition in dimensions—of which there be seven in all, three concrete, as I take it, and four abstract interblending but more positively vital. The four compose an inseparable unity commonly spoken of as the much debated *fourth dimension*—that concept of existence which, being spiritual, is not indeed independent of the concrete, but contains and controls the concrete three dimensions in creative manifestation. (549)

Particularly notable here is the way Greville links the four extra dimensions of *Lilith* to the contemporary concept of the fourth dimension. While Hayward's and Hein's explanations for the number of dimensions are possible, perhaps MacDonald simply chose seven dimensions to intensify and spiritualize the idea of the fourth dimension that had currency in the society around him; if the fourth dimension holds great mystery and deeper reality, four fourth dimensions hold even greater imaginative potential. Regardless of the exact significance intended by MacDonald's choice of the number *seven*, Greville's comments rightly foreground the spiritual, imaginative content of these higher dimensions and link them to the discussions of the fourth dimension that were "very much in the air."

Abbott's *Flatland: A Romance of Many Dimensions*, published eleven years before *Lilith*, explores the current speculation about higher dimensions in a mathematically rigorous and yet accessible way and with a view toward possible mystical analogies. A Square, the narrator of the book, lives in Flatland, a two-dimensional world inhabited by various polygons. He leads a normal life until one evening a Sphere invades his living room and, after failing to convince A Square of the existence of a third dimension, plucks him into Spaceland. After A Square experiences three-dimensional space and returns to Flatland, he is unable to convince anyone of the existence of a third dimension and is cast into prison because of his heretical views. While the plot seems fairly simple, Rudy Rucker rightly notes that the book has at least three distinct registers of meaning:

Most obviously, it is a satire on the staid and heartless society of the Victorians. . . . The second level of meaning in *Flatland* is scientific. . . . Finally, at the deepest level, we can perhaps view *Flatland* as Abbott's circuitous way of trying to talk about

some intense spiritual experiences. A Square’s trip into higher dimensions is a perfect metaphor of the mystic’s experience of higher reality. (11-12)

It is this third register that closely parallels MacDonald’s use of dimensions in *Lilith*.

MacDonald found scientific facts to be important catalysts for the imagination and believed these material facts might be extended to other areas of knowledge, as he writes in an essay, “[The imagination] is aroused by facts, is nourished by facts, seeks for higher and yet higher laws in those facts; but refuses to regard science as the sole interpreter of nature, or the laws of science as the only region of discovery” (“The Imagination” 2). This predisposition to find spiritual truths in natural laws would have made Abbott’s use of geometric dimensions quite appealing to MacDonald, and MacDonald’s description of the seven-dimensional world in *Lilith* seems to borrow from Abbot in two interconnected ways: higher-dimensional objects can invisibly interpenetrate lower-dimensional ones, and higher-dimensional objects can see inside lower-dimensional ones.

In *Flatland*, before the Sphere takes A Square out of his two-dimensional world, he attempts to convince him of the reality of the third dimension by taking a tablet out of a locked cupboard and then placing it in the opposite corner of A Square’s house (149-50). The Sphere can enter and exit locked rooms in *Flatland* quite easily by rising out of its plane, traveling parallel to it in the third dimension, and then lowering himself back until he again intersects its plane. The Sphere later admits that similar instances of beings entering and then vanishing from closed three-dimensional rooms indicates by analogy that there may be a fourth dimension (171). The seven-dimensional world of *Lilith* similarly interpenetrates the three-dimensional one Mr. Vane understands.² Vane is shocked when Mr. Raven explains to him that the trees and bushes in seven dimensions grow in and through his house, and he must accept that because of these higher dimensions, two objects can indeed “exist in the same place at the same time” (20). This possibility becomes important later in the book when Lilith slips into Vane’s three-dimensional house and then returns to the seven-dimensional world through the mirror in order to avoid crossing the hot stream (157). The interpenetration of these two worlds seems more complex than in Abbott’s conception of dimensionality, however, for Mr. Raven explains that just because a book extends into both Vane’s library and his own, these two places are not necessarily closer together than any other two places in their

respective worlds (158). Mr. Raven leaves Vane with the statement that the relation of the two words is “inexplicable” and “inapprehensible” by him (158). Nevertheless, the interpenetration of higher dimensions that allows objects to move back and forth between MacDonald’s lower and higher dimensional worlds follows a logic similar to that laid out by Abbott in *Flatland*.

In Abbott’s more analytical fantasy, the reader requires only a small step from imagining three-dimensional objects as able to freely enter two-dimensional regions to imagining higher-dimensional objects as able to perceive the “insides” of lower-dimensional objects. As the Sphere explains, if A Square had an eye “not on your Perimeter, but on your side, that is, on what you would probably call your inside,” then he would be able to see into the third dimension (138). The Sphere, then, proves this to A Square by touching his stomach and causing him sharp, interior pain (151). After A Square has been lifted into Spaceland and believes in the existence of higher dimensions, he begs the Sphere to take him to yet higher dimensions, dimensions visible to the Sphere’s insides:

[E]ven as we, who are now in Space, look down on Flatland and see the insides of all things, so of a certainty there is yet above us some higher, purer region, . . . some yet more spacious Space, some more dimensionable Dimensionality, from the vantage-ground of which we shall look down together upon the revealed insides of Solid things, and where thine own intestines . . . will lie exposed to [our] view. (167-68)

The Sphere refuses to “turn my stomach inside out” and denies the existence of any further dimensions, but A Square insists that if a third dimension exists, then by analogy higher dimensions must also (168). As they converse, A Square proposes that perhaps “this other Space is really Thoughtland . . . where I in Thought shall see the insides of all solid things” (172).³

In *Lilith*, MacDonald builds upon A Square’s conception of Thoughtland in the way he depicts the seven-dimensional world. When Vane comes with Mr. Raven to the churchyard and sees prayers in the form of birds, he cannot grasp how living things could come from “a thought, a thing spiritual” (23). Mr. Raven explains that because all existence is the living thoughts of God, so in this other world, “When a heart is really alive, then it is able to think live things” (23). Mr. Raven explains dimensions similar to Vane’s father earlier in the narrative: “*He spoke much about dimensions, telling me there were many more than three, some of them concerned with*

powers which were indeed in us” (41, emphasis in original).⁴ These interior powers, these thoughts and prayers, manifest themselves physically in the higher-dimensional world where there are ten senses and things intangible in the three-dimensional world can be perceived.⁵ MacDonald takes this analogy even further when, after Vane submits to death, he experiences in a dream “the land of thought—farther in, higher up than the seven dimensions, the ten senses: I think I was where I am—in the heart of God” (242). Vane moves from the realm of embodied human thoughts to the higher regions of God’s heart and his thoughts. Here he mingles not just with the thoughts of others, but with their souls: “the soul of everything I met came out to greet me and make friends with me, telling me we came from the same, and meant the same” (257). If the seven-dimensional world is MacDonald’s version of Abbott’s Thoughtland, this more “dimensionable” place seems to be his version of Soulland, where the most interior places of each being become visible in yet higher dimensions of perception.

MacDonald’s apparent borrowing from Abbott extends beyond his similar depiction of the interactions between higher and lower-dimensional realms of existence. MacDonald also has Mr. Vane follow a path similar to that of A Square in his learning about higher dimensions: both Vane and A Square have training in the physical sciences that prepares them for the analogies of higher dimensions; both ultimately have to be forced to experience higher dimensions; and both are somewhat reassured by learning about previous interactions between higher and lower dimensions. On the night before he is visited by the Sphere, A Square “amused [himself] with [his] favourite recreation of Geometry” (113), and the following night, he gives his nephew lessons on arithmetic and geometry (130). A Square’s familiarity with geometry and math enabled him to more quickly grasp the analogous progression from one dimension, to two, and finally to three; even if he could not mentally conceive of what a three-dimensional object might look like, he at least could understand the theory underlying further dimensions. On the very first page of *Lilith*, Vane describes his study of the “physical sciences” and explains the “wonder” they provoked in him: “I was constantly seeing, and on the outlook to see, strange analogies, not only between the facts of different sciences of the same order, or between physical and metaphysical facts, but between physical hypotheses and suggestions glimmering out of the metaphysical dreams into which I was in the habit of falling” (1).⁶ This proclivity to make analogies between physical facts and metaphysical inklings provides Vane the foundation he will need to begin to

grasp the world of seven dimensions.

Previous mental training may help A Square and Vane to grasp higher, analogous dimensions, but both protagonists must finally be compelled by their guides to proceed into higher dimensions; these disorienting higher regions must be explored and personally experienced before they can be understood. After the Sphere futilely tries to enable A Square to conceive of a third dimension, he exclaims in frustration, “Deeds, and not words, shall proclaim the truth” (149), and eventually he pulls forcibly A Square out of his plane of existence (152). A Square is completely disoriented and experiences “a dizzy, sickening sensation of sight that was not like seeing; I saw a Line that was no Line; Space that was not Space: I was myself, and not myself” (155). Even when he begins to adjust, he cannot perceive a Cube as a three-dimensional object until he feels around it and learns about “‘light’ and ‘shade’ and ‘perspective’” (165). Vane is similarly disoriented when he first stumbles over the lip of the mirror into the heath of the seven-dimensional world: “all was vague and uncertain . . . One fact only was plain—that I saw nothing I knew . . . Had I wandered into a region where both the material and psychical relations of our world had ceased to hold? . . . The terror that madness might be at hand laid hold upon me: must I hence forth place no confidence either in my senses or my consciousness?” (8-9). This new realm of existence so disturbs Vane that he takes his first opportunity to get back to what he thinks is the safe, three-dimensional world, and when Mr. Raven shows up at his house and informs him that he is still in the seven-dimensional world and must accompany him, Vane refuses to go (16-17). His remonstrances are useless, however, and when he realizes he cannot return to the three-dimensional world, Vane decides that he might as well “accept [his] fate” and embrace the adventure of “knowing two worlds” (21). For both Abbott and MacDonald, higher-dimensional regions are so disconcerting and unintelligible to lower-dimensional beings that words cannot convey their reality and people must be forced to enter and grapple with higher realities before they can hope to understand them.

Both A Square and Vane find some confirmation for the reality of their disorienting experiences when they learn about previous interactions between higher and lower-dimensional regions. After the Sphere raises A Square into Spaceland, he takes him above a meeting of the High Council of Flatland where they are discussing earlier episodes in which people have claimed to have “received revelations from another World” (160). The council punishes such offenders by death or imprisonment, and when

the Sphere enters their council “to proclaim that there is a land of Three Dimensions,” the leaders simply cite previous such anomalous occurrences and refuse to listen (161). And while this experience causes A Square to realize the serious consequences that may come from his foray into the third dimension, it also demonstrates to him the verity of his experience. In MacDonald’s fantasy, Vane comes across an old manuscript of his father’s that describes an odd encounter he had with Mr. Raven. Mr. Raven told his father that he first traveled to the land of seven dimensions with the help of a distant ancestor of Vane’s, Sir Upward, who studied the “relation of modes” and developed the mirror system that enables people in the three-dimensional world to enter the higher-dimensional region (38). Mr. Raven’s description of Sir Upward recalls the particular mantra that A Square chants when he is back in Flatland to help him remember the direction of the third dimension: ““Upward, and yet not Northward”” (182). MacDonald seems to draw on this idea for both the name of Vane’s dimension-traveling ancestor and for Mr. Raven’s explanation of the direction in which he travels when entering higher dimensions, “not from front to back, but from bottom to top!” (38). When Vane reads this manuscript, he is “consoled” to learn that his interactions with Mr. Raven have some precedent, and he gains confidence in his enigmatic teacher (42). MacDonald’s borrowing from Abbott seems most direct at this point, as he draws not only on this theme of previous interactions between realms of differing dimensions, but also on the particular language Abbott uses to indicate the direction of higher dimensions.

The third, and perhaps most interesting, point of confluence between dimensionality in *Flatland* and *Lilith* involves the comparative blindness and self-centeredness of beings in lower dimensions. In *Flatland*, A Square visits both Lineland and Pointland in dreams, and since the inhabitants of these regions necessarily have more restricted access to other beings, they have a reduced ability to accurately imagine the people around them. The lines in Lineland interact with each other and even marry and reproduce only through chirps, and their “neighbors” along the one-dimensional universe never change (114-16). Yet even this limited interaction with others is better than the solitary “miserable creature” who dwells in “Pointland, the Abyss of No dimensions” (182). As the Sphere tells A Square, “That Point is a Being like ourselves, but confined to the non-dimensional Gulf. He is himself his own World, his own Universe; of any other than himself he can form no conception” (182-83). His hubris knows no bounds because he fancies himself “All in All,” the totality of “Being,” and yet as the Sphere instructs

A Square, “perfect self-contentment . . . is to be vile and ignorant” (183). In contrast to A Square, who could suddenly see inside his fellow Flatlanders when he was raised into the third dimension, those beings confined to Flatland and, even worse, Lineland or Pointland, can see others only shallowly and so develop an inordinate sense of self-importance.

The same principles operate in MacDonald’s world, and Lilith, like the king of Pointland, continually seeks to flatten reality in order to magnify the importance of her own existence. MacDonald expresses this most vividly in his portrayal of Lilith’s brain as a “black ellipsoid” (143). When Vane first encounters her “palace,” he describes it as “a large hall, in the form of a longish ellipse . . . [T]he elliptical wall as well [as the floor] was of black marble, absorbing the little light that reached it. The roof was the long half of an ellipsoid, and the [oval] opening in it was over one of the foci of the ellipse of the floor” (130-31). This half ellipsoid seems an odd depiction of Lilith’s brain and consciousness, but its significance is clarified when Lilith later enters the room alone to think:

[S]he descended to the black hall, and seated herself in the north focus of the ellipse, under the opening in the roof.

For she must think! Now what she called thinking required a clear consciousness of herself, not as she was, but as she chose to believe herself; and to aid her in the realisation of this consciousness, she had suspended, a little way from and above her, itself invisible in the darkness of the hall, a mirror to receive the full sunlight reflected from her person. For the resulting vision of herself in the splendour of her beauty, she sat waiting the meridional sun. (190-91)

Because the mirror receives the full sunlight reflected from her person, it must be hung directly over the other focus. Ellipses are conic sections with two foci such that any light (or sound) radiating from one focus reflects off the walls and simultaneously converges on the other focus. Lilith’s room has grown black and dim, already corrupting the reflective and perceptive ability of her mind, but her egregious perversion of her consciousness is the mirror hung over the other focus to reflect her image back to herself; she has created a self-reflective, self-obsessed imaginative loop that cannot extend beyond herself and even reduces her glory to the two-dimensional representation of a mirror—an image worthy of Flatland. As the princess sits and waits for the sun, the Shadow that follows her, “a flat superficial shadow, of two dimensions” (123), stands directly under the mirror. Like the shadow

that follows Andos in *Phantastes*, this shadow plagues her, constricting her perception by reducing her consciousness from that worthy of a seven-dimensional, ten-sense world to one that merely operates in two-dimensions. Lilith’s relinquishment of her brain to the Shadow blinds her to the reality around her and even inside her. MacDonald indicates this in his description of her waiting impatiently for the sun: “Many a shadow moved about her in the darkness, but as often as, with a certain inner eye which she had, she caught sight of one, she refused to regard it. Close under the mirror stood the Shadow which attended her walks, but, self-occupied, him she did not see” (191). Unlike A Square, who does not have an eye on his inside with which to perceive higher dimensions, Lilith does have the senses needed to perceive the seven dimensions of her world, but she intentionally works to ignore these senses. When the sun shines through the aperture in the roof, she does indeed, “for a few minutes,” see “herself glorious” (191). But the children are at that moment occupying the city, and her power is in fact waning. By the next morning, “courage and will” have abandoned her, and when the sun again “looked in at the eye” of her hall, she appears with a large black spot in her side, black as the marble room (191-92). At this revelation, the “Shadow glided out, and she saw him go” (192). The glorious image of herself was controlled by the two-dimensional Shadow, and as his influence finally wanes, she sees a more accurate, more dimensional view; she sees herself as she is inside, dark and ugly. To put this in the Sphere’s terms, she begins to realize the vileness of her ignorance. Lilith’s desire to control and limit her consciousness led her to manipulate, with the assistance of the Shadow, the light entering her consciousness and use it to create a shallow reflection of her own glory for her own pleasure.

Lilith’s solipsism parallels the arrogant smallness of the king of Pointland, and when Mara leads Lilith through her needed suffering, Lilith experiences “the outer darkness” where, like the Point, she is “spacelessly, absolutely apart” (215). Lilith’s refusal to accept the higher, spiritual dimensions culminates in this isolated self-absorption, but as she slowly relinquishes her control and finally submits to death, she puts herself on the path to experiencing the seven dimensions of her world and ultimately even more dimensions. For it is only when Vane dies that he enters the realm beyond that of seven dimensions. Greville MacDonald also notes the role of death in entering higher dimensions: “Every man has to rise from [the grave], get quit of its three-dimensioned imprisonment; but he will gather strength for the growth of his four-dimensioned wings and for breaking the chrysalid

bonds only by happy acceptance of sleep in God's cemetery, whose exquisite cold is death to all evil" (554). The emphasis on volitional death as the way to higher spiritual reality is one of MacDonald's characteristic focuses, and since death marks the utmost selflessness, it seems a fitting contrast to the selfishness that both he and Abbott associate with lower-dimensional beings.

So while MacDonald's use of dimensions in *Lilith* strikingly parallels the way Abbott imagines them in *Flatland*, his incorporation of death into his dimensional schema and the way he foregrounds the spiritual nature of higher dimensions represent important additions. While many people at the turn of the twentieth century were excited about the possibility of a physical fourth dimension,⁷ Abbott and MacDonald forged a new way of imagining higher dimensions as mental and spiritual directions. Abbott's work has certainly received much attention for its originality, and countless science fictions and geometrical fantasies owe their inspiration to *Flatland*. MacDonald's use of dimensions, however, has remained underappreciated. For instance, even David Neuhouser, a mathematician who has written on George MacDonald and C. S. Lewis, dismisses MacDonald's depiction of dimensionality in *Lilith* and points to *Flatland* as the sole inspiration for Lewis's essay "Transposition," where he uses mathematical dimensions to analogously understand spiritual truths (21-24). Lewis's extensive knowledge of MacDonald, however, suggests that *Lilith*'s seven dimensions also played a formative role in his thinking about the spiritual content of higher dimensions. Recognizing that MacDonald carefully draws on Abbott's understanding of dimensions in creating *Lilith*'s seven-dimensional universe both illuminates the interactions between lower and higher dimensions in *Lilith* and suggests that MacDonald's contribution to the way higher dimensions can be imagined has been overlooked.

Endnotes

1. David Neuhouser documents MacDonald's mathematical turn of mind, which led him to study and teach arithmetic and to populate his novels with protagonists who study math and particularly Euclid (18). For a brief biography of Edwin Abbott, see Ian Stewart's introduction to *The Annotated Flatland*.
2. Stephen Prickett notes the overlapping nature of these two worlds as he explains in reference to Vane's imaginative growth, "His task is not to inhabit one world or the other [the three-dimensional world or the seven-dimensional one], but rather constantly to straddle the two and to insist (despite appearances) on their ultimate congruity" (202).
3. A Square returns to the idea of Thoughtland again in trying to formulate an

apologetic for higher dimensions that his fellow Flatlanders might be able to grasp (191).

4. Vane discovers another example of the way thoughts populate the realm of seven dimensions when he learns that the evil beasts that burrow under the dried lake are the fruits of “men and women of unwholesome mind” (256).

5. Jason Marc Harris understands the relationship between the seven-dimensional world and the three-dimensional one similarly: “MacDonald attempts to unify this secondary world behind the mirror with the everyday surroundings of Vane by presenting the supernatural realm as the spiritual reality underlying the physical world” (89).

6. Vane’s mathematical turn of mind is further revealed when he desires to teach the Little Ones mathematics (69).

7. Chief among these was Charles Howard Hinton; for a summary of his thought and the scientific debate about the fourth dimension at the end of the nineteenth century, see Ian Stewart’s introduction to *Flatland* (xix-xxiii).

Works Cited

- Abbott, Edwin A. *The Annotated Flatland: A Romance of Many Dimensions*. 1884. Ed. Ian Stewart. Cambridge, MA: Perseus, 2002. Print.
- Harris, Jason Marc. *Folklore and the Fantastic in Nineteenth-Century British Fiction*. Burlington, VT: Ashgate, 2008. Print.
- Hayward, Deirdre. “George MacDonald and Jacob Boehme: *Lilith* and the Seven-fold Pattern of Existence.” *VII: An Anglo-American Literary Review* 16 (1999): 55-72. Print.
- Hein, Rolland. “A Fresh Look at *Lilith*’s Perplexing Dimensions.” *Lilith in a New Light: Essays on the George MacDonald Fantasy Novel*. Ed. Lucas H. Harriman. Jefferson, NC: McFarland, 2008. 71-82. Print.
- MacDonald, George. *Lilith: A Duplex*. 1895. Whitethorn, CA: Johannesen, 1994. Print.
- . “The Imagination.” *Dish of Orts*. London: Sampson Low, 1882. 1-42. Print.
- MacDonald, Greville. *George MacDonald and his Wife*. 1924. Whitethorn, CA: Johannesen, 1998. Print.
- Neuhouser, David L. “C.S. Lewis, George MacDonald, and Mathematics.” *Wingfold* 9 (Winter 1995): 17-28. Web. 1 Dec. 2009.
- Prickett, Stephen. *Victorian Fantasy*. Rev. ed. Waco: Baylor UP, 2005. Print.
- Rucker, Rudy. *The Fourth Dimension: Toward a Geometry of Higher Reality*. Boston: Houghton, 1984. Print.
- Stewart, Ian, ed. *The Annotated Flatland: A Romance of Many Dimensions*. By Edwin Abbott. Cambridge, MA: Perseus, 2002. Print.