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“A Great Machine”: George MacDonald and Popular Science

Karl Hoenzsch

George MacDonald’s writings convey his scientific interests and engage with key topics concerning the development of Victorian science such as methodology, psychology, medicine, epistemology, geology, and evolution. Throughout his works, MacDonald denotes science’s positive impact. He does so by utilizing scientific language for descriptive purposes, responding to contemporary scientific debates and discoveries, and valorizing the ascetic demands of the scientific process. When balanced with moral considerations, science is portrayed as a positive force because it demands objectivity through experimentation and the rejection of baseless assumptions.

In the past, other views on George MacDonald and science have prevailed. *The Gold Thread: Essays on George MacDonald* from 1990 contains two essays with competing perspectives. “The Scientific Basis of George MacDonald’s Dream-Frame” by F. Hal Broome attempts to subvert the “sourest of the critical judgments,” which is that “George MacDonald was . . . overly conservative, even reactionary” while “clinging desperately to religion as the modern world passed him by” (87). To modify this assessment, Broome relates MacDonald’s writings to scientific discussions of the Victorian period. Meanwhile, Colin Manlove characterizes George MacDonald’s attitude toward science in “MacDonald and Kingsley: A Victorian Contrast” as “simply to dismiss it as irrelevant to true insight into the world” (150).

Manlove’s position has since evolved. “The Electromagnetic World of George MacDonald’s Visionary Romances” from 2017 examines how *Phantastes*, *Lilith*, and “The Golden Key” provide “an extraordinary blend of mysticism and science” (54). Manlove recognizes “pioneers” who have explored “the topic of science in MacDonald’s thought and life” (54), which suggests how undeveloped an exploration of George MacDonald and science remains. Although an insightful work, Melanie Keen’s *Science in Wonderland: The Scientific Fairy Tales of Victorian Britain* from 2015 can be viewed as a recent indicator of this gap by referencing Kingsley throughout but skipping over MacDonald entirely.

Contrary to inherited misconceptions, MacDonald sustained an

interest in science throughout his life. This fact was once well-established but later disregarded. As Broome acknowledges, Greville MacDonald’s 1924 biography of his father emphasizes George MacDonald’s interests in chemistry and natural philosophy (88). Broome further cites Joseph Johnson whose 1906 biography of George MacDonald claims that MacDonald was “a common-sense mystic, rationalistic rather than fantastic, thinking logically and philosophically in the presence of advancing science . . . for whatever science revealed as true must be in harmony with all truth” (qtd. in Broome 88). Regardless, somehow a “general belief among critics” arose that “MacDonald, after earning his MA degree (including chemistry and natural philosophy) at King’s College . . . later rejected science altogether” while ignoring that MacDonald “continued to lecture occasionally on these topics at Bedford College in the 1860s” (88).

MacDonald’s continued engagement with science is noteworthy. Scientific disciplines evolved tremendously during the Victorian era and underwent a period of fragmentation, a split into discrete fields. As Bernard Lightman explains in *Victorian Popularizers of Science: Designing Nature for New Audiences*, “the sciences were losing their unity, disintegrating” (23). Lightman references William Whewell, an English polymath (1794-1866), who describes this disintegration of the sciences as a “great empire falling to pieces” (qtd. in Lightman 23). This disintegration and associated fragmentation would lead to what was later defined in 1959 by C. P. Snow as the Two Cultures, the divide between the sciences and humanities that persists today. George MacDonald’s writings provide an advanced awareness of this issue of fragmentation and further attempt to bridge this divide.

In “Intellectual Debate in the Victorian Novel: Religion, Science, and the Professional,” John Kucich suggests that the Victorian novel is “a novel of domestic manners, not a novel of ideas,” while “intellectual debates informed Victorian fiction so powerfully that it would not be inaccurate to say that those debates governed both the form and the substance of the genre” (107). *David Elginbrod* and *Alec Forbes of Howglen* follow in this tradition. Both novels depict the modern world as exceedingly fragmented. An open, scientific mindset is presented as key to finding meaning and living well in this modern world.

The two novels’ preoccupation with science was timely. The 1860s were a high point for discourse over how science relates to society and individuals. *David Elginbrod* from 1863 and *Alec Forbes of Howglen* from 1865 participate within this movement. In 1844, *Vestiges of the Natural*

History of Creation by Robert Chambers had been published anonymously and rapidly rose in popularity. Its success led to a public interest in evolution and prepared the way for *On the Origin of Species* by Charles Darwin in 1859, which immediately rose to prominence. A correspondence between popular and professional science was growing.

Robert Wolff's *The Golden Key: A Study of the Fiction of George MacDonald* from 1961 argues that *Alec Forbes of Howglen* is somewhat autobiographical. This view is shared by Richard Reis, another prominent figure of the George MacDonald revival that occurred in the 1960s and 1970s. In his 1972 book *George MacDonald*, Reis calls *Alec Forbes of Howglen* "a largely autobiographical novel" (21) and argues that "many of [MacDonald's] novels, especially, are in part autobiographical; and, as is often the case with autobiographical writers, the novels focus on his upbringing and on his earliest encounters with the world of practical affairs" (20).

For these reasons, *Alec Forbes of Howglen* is a fitting introduction to MacDonald's socialization to science and intellectual discourse. The novel highlights some of the currents driving Victorian engagement with science. Alec Forbes is a medical student. Mr. Cupples, Alec's mentor, is a librarian, anatomist, and amateur scientist. A great conflict arises in the novel through public hysteria over cadavers. The townspeople accuse Alec Forbes' college of mistreating cadavers by burying the bodies haphazardly after use and failing to investigate whether these cadavers were acquired properly. The narrator criticizes this public outcry by arguing that "many a poor creature who would have sold his wife's body for five pounds, was ready to tear a medical student to pieces on the mere chance that his scalpel had touched a human form stolen from the sacred enclosure" (2: 117).

While body snatching was a real and ever-present controversy in the nineteenth century, the narrator's response to this controversy is telling. The dissections are not at issue. Even the haphazard burials are not at issue. The reactionary position of the townspeople is the real problem. The townspeople exhibit an illogical attitude at odds with the dissecting nature of anatomy. This fear of the "scalpel," a fear of the "human form stolen from the sacred enclosure" (2: 117) laid bare, relates to a larger social fear of anatomization. A focus on the anxiety of small parts rupturing unities such as the "human form" (2: 117) is a driving element of *Alec Forbes of Howglen*. Even Mr. Cupples, who in many ways represents a scientific worldview, expresses a similar anxiety when he warns Alec not to "come to regard a man as a

physical machine, and so grow a mere doctoring machine itself” (2: 271).

This fear of anatomization also appears in *David Elginbrod*. A “horror” envelops Hugh Sutherland when he considers how “the mighty All of nature should be only a mechanism” (3: 179). However, a machinelike model of the world simultaneously inspires Hugh:

How many things which, at the first moment, strike us as curious coincidences, afterwards become so operative on our lives, and so interwoven with the whole web of their histories, that instead of appearing any more as strange accidents, they assume the shape of unavoidable necessities, of homely, ordinary, lawful occurrences, as much in their own place as any shaft or pinion of a great machine! (3: 120-121)

And elsewhere, thoughts are described as “thinking wheels” driven by “nervous gear” with the “minute accuracies of a steam-engine” (1: 146).

While serving as a source of anxiety and conflict, the language of anatomized machinery proves to be a helpful idiom for describing the nature of human relations and interiority. An acceptance of one’s place within a larger unity consisting of many little parts serves as a pathway out of Hugh Sutherland’s existential despair and a way out of the fragmenting forces of modernity.

MacDonald incorporates emerging areas of psychology within *David Elginbrod* including associationism. This psychological theory has old roots in Aristotle, but this behavioral model underwent a renaissance of sorts during the nineteenth century with a burgeoning popularity in Britain. Briefly stated, this psychological model holds that thoughts and mental states become associated with past experiences. A partial exposition of associationism appears in *David Elginbrod* when the narrator reflects that “a great many of our dislikes, both to persons and things, arise from a feeling of discomfort associated with them, perhaps only accidentally present in our minds the first time we met them” (3: 231). Human experience thus depicted is causal and depends upon an ungraspable chain of past events lying beneath the surface of conscious thought, a series of “curious coincidences” that become “operative on our lives” (3: 120). Several descriptions connect the psychological model of associationism with the brain’s physicality: thoughts as an “electric flash” (2: 134), “the nervous elements” (3: 206), “nerves of the human body” (3: 206), “nervous gear” (1: 146), and “links in the chain of ideas” (2: 134) along with references to the “brain” and “nervous system” (2: 184). Clearly, MacDonald was not without an appreciation for scientific discussions of his time.

This appreciation did not die out. *Lilith*, published in 1895, is guided by a consideration of the physicality of thought. When the protagonist, Mr. Vane, comes to reflect upon the fantastical things he experiences, he concludes that “I know not whether these things rise in my brain, or enter it from without. I do not see them; they come, and I let them go” (350). This observation portrays the narrator’s strange encounters as arising from a dreamlike state. Mr. Vane clearly views his experiences as valuable, but he does not claim to have experience outside the epistemological uncertainty that characterized Victorian attitudes and anxieties. Recognizing epistemological uncertainty appears unusual given that this story contains such fantastical elements. Why cast the unbelievable events of *Lilith* as possibly dream-based? By basing *Lilith*’s narrative upon plausibility, the story is subsequently cast within a broader social reality of epistemological uncertainty and serves as an earnest recognition of this state. The description of things arising from within or without (and with no clear sense of how to distinguish between the two) also correlates to Victorian understandings of psychology that emerged from Johannes Müller’s *Elements of Physiology* (Broome 93), which was published in London (1837-43). Broome notes how Victorians believed that “images inhabited both the inner and the outer” and that the distinction is relatively indiscernible (95).

With *Lilith*, the choice of a fairy tale to discuss science seems unusual at first glance. However, this approach is not without its peers. As Melanie Keene recognizes, the “nineteenth century” saw “scientific education” as “not just to be had through fusty educational primers: it was also found in wonderland” (2). Throughout the century, fairy tales “were used as an enchanted mirror in which to reflect, question, and distort contemporary society” (13), while “scientific engagement with fairyland was widespread” (18). These fairy tales “give insights into what these new scientific disciplines were trying to do; how they were trying to cement a certain place in the world; and how they hoped to recruit and train new participants” (18).

Illustrating this convergence, Kathy Psomiades observes in “Hidden Meaning: Andrew Lang, H. Rider Haggard, Sigmund Freud, and Interpretation” that fairy-tale writer and anthropologist Andrew Lang valorized Edward Tylor’s model over the totemic model of Max Müller as concerns human development. She writes that “for Tylor, myths are not the debased form of an originally poetic/philosophical/religious approach to the mysteries of the universe, but a primitive form of science” (par. 9). MacDonald’s fairy tales are driven by a similar notion. The character of

Adam in *Lilith* provides evidence for this interpretation. Tellingly, *Lilith*'s Adam is a scientist who operates a machine allowing for interdimensional travel. The mythological father of humankind, Adam represents our early ancestors who practiced primitive science according to Tylor's model. *Lilith*'s final chapters can be read similarly as a mythological yet protoscientific attempt to grapple with the world's destiny.

Victorians had much grappling to do. A fear of evolution pervaded the Victorian period. MacDonald explores this fear in *David Elginbrod*. Hugh Sutherland becomes responsible for teaching Samuel, the son of Mr. and Mrs. Appleditch. Mr. Appleditch is a grocer who means to prepare Samuel for the ministry. While employed by the Appleditch family, Hugh decides to grow out his beard. Mrs. Appleditch is offended by this decision and tells Hugh that “it is a shame for a man to let his beard grow like a monkey” (3: 165). This monkey comparison evokes human evolution. The controversy over Hugh's decision to accept his hair growth embodies the shortcomings of a society that disregards humanity's natural origin. Mrs. Appleditch stands for this social order that distinguishes humans from the animal world from which they emerge. Hugh Sutherland's decision to keep his beard shows that he accepts and recognizes this natural origin.

As Broome notes, MacDonald “took to heart the Biblical statement that nature, whose laws followed God's, clothed as well as cast into the oven,” while “Darwin's view merely rephrased the concept” (99). Nature as it is depicted in MacDonald's writings both heals and doles out destruction. However, the destructive forces of nature are countered by the adaptability of organisms. Destructive forces are ultimately portrayed as generative for this reason. For example, the Little Ones in *Lilith* adapt in response to a difficult change in their environment. When the narrator of *Lilith* first meets the Little Ones, they live in trees and eat the fruit produced by these trees. Later, the narrator returns to the Little Ones and finds that they have evolved: the giants of the area now “destroy the trees on whose fruits the Little Ones lived” (229), which forces the Little Ones to adapt to living in bushes.

These Little Ones appear throughout MacDonald's writings. In *Fairy Tales, Natural History and Victorian Culture*, Laurence Talairach-Vielmas argues that MacDonald's “Little People” (referred to as Little Ones in *Lilith*) “connect contemporary anthropological research with fairy tales” (153). Talairach-Vielmas further claims that the “connections that were drawn between the Little People, now viewed as less evolved creatures with childlike characteristics, and children—[were] a parallel which brought home

the way in which ontology was then believed to recapitulate phylogeny” (153). The deep-seated yet misguided belief at the time was that embryos go through each stage of a species’ development while in the womb (153), which is an idea that lingered into the twentieth century. In *The Hope of the Gospel* from 1892, MacDonald calls evolution “a supposition by antenatal history rendered probable” (202). The skepticism behind this endorsement acknowledges that certain aspects of evolutionary theory were yet to be rigorously evaluated such as the now-disproven recapitulation theory. While MacDonald believed in evolution (and did not participate in the hysteria surrounding it), he refused to claim an elevated understanding of specific elements because doing so would have been unscientific.

MacDonald was also intrigued by discoveries in geological knowledge. His short story “The Golden Key” from 1867 incorporates these discoveries. Geoffrey Reiter’s “‘Down the Winding Stair’: Victorian Popular Science and Deep Time in ‘The Golden Key’” explores the presence of science within the narrative. Reiter suggests that this short story responds to *Vestiges of the Natural History of Creation* from 1844, which provides an early Victorian view on evolution and geological history. As previously mentioned, *Vestiges of the Natural History of Creation* was written by Robert Chambers and published anonymously. This book proved controversial. Chambers anticipated this controversy and therefore requested that his identity be kept a secret. In “The Golden Key,” the protagonist walks down a long set of winding stairs and encounters an Old Man of the Sea, an Old Man of the Earth, and an Old Man of the Fire, all of which correspond to the perceived development of the earth as represented in *Vestiges of the Natural History of Creation*. Reiter observes that in accordance with Chambers’ theory, there is no Old Man of the Air because the earth has never gone through an air-only stage (10). Reiter also calls attention to a key moment in *The Princess and Curdie* from 1883. In this fantasy novel, the narrator mentions caves that have been “waiting for millions of ages—ever since the earth flew off from the sun, a great blot of fire, and began to cool” (qtd. in Reiter 7).

David Elginbrod underscores how the popular science movement had been exploited by unscrupulous characters peddling pseudoscience. Herr von Funkelstein is such a character. Funkelstein holds a public “biology” lecture (1: 129) where he claims to possess knowledge of “physico-psychological phenomena to which the name of spiritualism has been so absurdly applied” (2: 170). Broome argues that through Funkelstein “MacDonald was . . .

criticizing the exploitation of the ignorant populace by men posing as scientists” (91). The so-called biology lecture calls attention to the flawed logic behind a pseudoscience like spiritualism. Funkelstein falsely reproduces Francis Bacon’s method as “to inquire first what the thing is, by recording observations and experiments made in its supposed direction” (MacDonald, *David Elginbrod* 1: 173).

The narrative laments this corruption of the scientific method. In the heading for Chapter VIII of Book I, a critique of pseudoscience appears through a quotation by Bacon, which rectifies his previous misrepresentation by Funkelstein:

It is the property of good and sound knowledge, to putrifie and dissolve into a number of subtle, idle, unwholesome, and (as I may tearme them) vermiculate questions; which have indeed a kinde of quicknesse, and life of spirite, but no soundnesse of matter, or goodnesse of quality. (qtd. in MacDonald 1: 92)

Meanwhile, the character Robert Falconer serves as a counterpoint to Funkelstein. Robert Falconer is an amateur detective who helps Hugh recover a ring stolen from Hugh’s former employer, Mr. Arnold. Hugh is falsely accused of stealing this ring, so its recovery is required to prove his innocence. Driven by reason and concern for others, Robert Falconer applies a scientific outlook to life and its problems and uses the scientific method to assist Hugh. After Hugh describes the situation, Robert Falconer explains that this information has provided him with “material out of which to construct a theory” that will now allow him to “make inquiry upon the theory” just as “Lord Bacon says” (3: 176).

Robert Falconer’s investigative approach follows the scientific process. He begins with observations then formulates a theory, which runs contrary to Funkelstein’s perverse reversal. Robert Falconer emblemizes MacDonald’s vision of how science ought to operate and how people should reason. This vision involves the unification of a moral end (in this case, the absolution of Hugh Sutherland’s reputation) with a dispassionate, reasoned approach to discovery and knowledge. By casting Robert Falconer as a hero, MacDonald valorizes the scientific process and shows how following this process to whatever ends might emerge bears positive results when balanced with moral concerns.

Manlove identifies an essential difference between Kingsley and MacDonald. Kingsley was a “proselytizer in a way that MacDonald is not” (“MacDonald and Kingsley” 150). George MacDonald offers something

beyond many of his more widely studied contemporaries: a scientific outlook on the world that remains freshly relevant. This scientific outlook is one that adopts a nonpartisan, curious approach to discovery and refuses to let assumptions get in the way of evidence. The relationship between George MacDonald and the history of science is an underexplored area of substance. Delving into this area will provide new directions for MacDonald research that relate to broader currents within Victorian studies.

Works Cited

- Broome, F. Hal. "The Scientific Basis of MacDonald's Dream-Frame." *The Gold Thread: Essays on George MacDonald*, Edinburgh UP, 1990, pp. 87-108.
- Keene, Melanie. *Science in Wonderland: The Scientific Fairy Tales of Victorian Britain*. Oxford UP, 2015.
- Kucich, John. "Intellectual Debate and the Victorian Novel: Religion, Science, and the Professional." *The Cambridge Companion to the Victorian Novel*, edited by Deirdre David, Cambridge UP, 2012, pp. 212-33.
- Lightman, Bernard. *Victorian Popularizers of Science: Designing Nature for New Audiences*. The U of Chicago P, 2007.
- MacDonald, George. *Alec Forbes of Howglen*. Bernhard Tauchnitz, 1865, catalog.hathitrust.org/Record/000631247. Accessed 2 Aug. 2018.
- . *David Elginbrod*. London: Hurst and Blackett, 1863, catalog.hathitrust.org/Record/008666769. Accessed 2 Aug. 2018.
- . *Lilith*. 2nd ed., Chatto & Windus, Piccadilly, 1896, archive.org/details/lilithromance00macduoft. Accessed 2 Aug. 2018.
- . *The Hope of the Gospel*. New York: D. Appleton and Company, 1892, catalog.hathitrust.org/Record/100127910. Accessed 2 Aug. 2018.
- Manlove, Colin. "MacDonald and Kingsley: A Victorian Contrast." *The Gold Thread: Essays on George MacDonald*, Edinburgh UP, 1990, pp. 140-62.
- . "The Electromagnetic World of George MacDonald's Visionary Romances." *North Wind: A Journal of George MacDonald Studies*, vol. 36, 2017, pp. 54-70, digitalcommons.snc.edu/northwind/vol36/iss1/3. Accessed 29 Dec. 2018.
- Psomiades, Kathy. "Hidden Meaning: Andrew Lang, H. Rider Haggard, Sigmund Freud, and Interpretation." *The Andrew Lang Effect, Special Issue of Romanticism and Victorianism on the Net*, vol. 64,

2013, doi: 10.7202/1025669ar.

Reis, Richard. *George MacDonald*. Twayne, 1972.

Reiter, Geoffrey. “‘Down the Winding Stair’: Victorian Popular Science and Deep Time in ‘The Golden Key.’” *North Wind: A Journal of George MacDonald Studies*, vol. 30, 2011, pp. 2-12, digitalcommons.snc.edu/northwind/vol30/iss1/1. Accessed 2 Aug. 2018

Talairach-Vielmas, Laurence. *Fairy Tales, Natural History and Victorian Culture*. Palgrave Macmillan, 2014.

Wolff, Robert Lee. *The Golden Key: A Study of the Fiction of George MacDonald*. Yale UP, 1961.