SCIENCE AND THE CHURCH IN 17TH AND 18TH CENTURY FICTION

SUCKING DIVINITY FROM THE FLOWERS OF NATURE: EXPLORATIONS OF THE NATURAL HISTORIAN'S CHANGING INTERACTIONS WITH THE COMMUNITY OF THE CHURCH IN SEVENTEENTH- AND EIGHTEENTH-CENTURY FICTION

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ABSTRACT

After battling savage beasts, wild storms, and his own fears, a shipwrecked man finally escapes his island prison by means of the flying machine he has constructed using his own ingenuity and bits of debris washed ashore. Francis Godwin, Robert Paltock, and Ralph Morris, in their respective narratives *Man in the Moon, The Life and Adventures of Peter Wilkins,* and *The Life and Astonishing Adventures of John Daniel*, build their narratives on variations of that plot. Their proto-science fiction texts, written in the seventeenth and eighteenth centuries, while intended to titillate and amaze their readers, also purposefully highlight the positive potential of experimental science. They respond to doubts and criticisms of the natural history espoused by people such as Francis Bacon, Thomas Sprat, and Robert Boyle, but satirized by authors like Jonathan Swift. Swift, in *Travels into Several Remote Nations of the World*, questions the claims of empirical scientists who aver that natural history can praise God and benefit society. Using their texts as laboratories and mixing religious imagery and metaphor with technological advancement, Godwin, Paltock, and Morris experiment with the potentialities and implications of science, concluding that the natural historian can be both a good Christian and an aid to his community. This project, therefore, delves into questions of science, community, and the Church in the seventeenth and eighteenth centuries, building on previous studies of actual natural historians, but focussing instead on fictional representations of Christian scientists.

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TABLE OF CONTENTS

Introduction

Even before he mentions his life on the Isle of St. Helena and his adventures on the moon, Domingo Gonzalez cautions in Francis Godwin's *Man in the Moon* (1638), "I must be advised how I be over-liberal in publishing these wonderful mysteries, till the sages of our state have considered how far the use of these things may stand with the policy and good government of our country, as also with the Fathers of the Church" (75). At the end of his narrative, Gonzalez does recount his exploits to Church Fathers, a group of Jesuits living in China, who direct him to "put them in writing" (114) and send them ahead to Spain. Gonzalez's flying machine, then, both receives the approval of the Church and is sanctioned as advantageous to society. The invention that he had constructed in isolation on St. Helena and used to visit the people on the moon will now benefit everyone, Gonzalez hopes, as long as its employment will also strengthen the Church to which he looks for support and approbation. Because he has no witness to corroborate his story, Gonzalez validates his narrative and his work as a scientist by invoking the endorsement of the Church and demonstrating that his actions will support rather than detract from it.

Just as Gonzalez uses the Church to justify his actions, natural historians of the seventeenth and eighteenth centuries were preoccupied with absolving the new science of any suspicion of promoting atheism. Bacon, who formalized and popularized empirical natural history in England with the publication of *Novum Organum* (1620), refutes any possible doubt of his Christian faith when he writes in his essay "Of Atheism": "God never wrought miracle [sic] to convince atheism, because his ordinary works convince it" (371). Because God's "ordinary works" are the natural world, when scientists understand it, they "must needs fly to Providence and Deity" (Bacon, "Of Atheism" 371). Studying creation, therefore, does not turn a person away, but toward God, the Creator. Another scientist, Robert Boyle, argues extensively in defense of science's promotion of Christianity. He writes that natural history leads the mind "to the acknowledgement and adoration of a most intelligent, powerful, and benign Author of things, to whom alone such excellent productions may and with the greatest congruity, be ascribed" ("Virtuoso" 514). He continues, "if any of the cultivators of real philosophy pervert it to countenance atheism, it is certainly the fault of the persons, not the doctrine; which is to be judged by its own natural tendency" (514). Because Bacon and Boyle, and many other writers, were vehement in their defense of the Christianity of experimental science, there must have been concern in the seventeenth and eighteenth centuries that studying nature would turn people away from God and the Bible. Boyle, however, reassures his readers that natural history, although it leads the explorer to a renewed faith in God, will never replace the Bible. He writes, "The book of scripture discloses to us much more of the attitude of God, than the book of nature" ("Theology" 7). Science, then, Boyle and Bacon aver, does not threaten faith, but reaffirms the tenets of Christianity.

When the Royal Society was instituted in 1660, it represented another potential challenge to Christianity—especially to the Church as a community. Hunter writes, "The

Royal Society represented a new type of institution, a public body devoted to the corporate pursuit of scientific research, something unprecedented" (*Establishing* 1). Because the Society was a new organization, a novel way of grouping society, it could be a threat to the institution of the Church. In order to refute such a criticism, Thomas Sprat writes in his *History of the Royal Society of London* (1667), "the weightiest, and most solemn part of my whole *undertaking* [is] to make a defense of the *Royal Society*, and this new *Experimental Learning*, in respect of the *Christian Faith*" (345). Giving similar reasons to Bacon's and Boyle's, Sprat states that science promotes religion, but he also proudly mentions the support the Anglican clergy had given the Royal Society: "By the perpetual *Patronage*, and *assistance*, they have afforded the *Royal Society*, they have confuted the false opinions of those men, who believe that *Philosophers* must needs be *irreligious*" (132). Although Sprat details the championing the Society had received from the Church of England and names it the most superior of all denominations, he does not limit membership in the Royal Society to Anglicans; instead he states that the Society professes "not to lay the Foundation of an *English, Scotch, Irish, Popish,* or *Protestant* Philosophy, but a Philosophy of *Mankind*" (63).[1] According to Sprat, the Royal Society will not damage Christianity or challenge the authority of the Church, but will focus instead on using natural history to benefit society as a whole.

Sprat, however, complicates his own assertion of egalitarianism when he boasts of the superiority of the Royal Society of London over other European academies. More difficulties arise in the *History* when Sprat asserts that science, performed by individuals doing experiments in their laboratories, should not be trusted to a single researcher, but to a company of like-minded men (43). This means that experiments are performed by a single person and yet belong to a democratic group. This contradiction of ownership was somewhat assuaged by the practice of publicly performed experiments, but the bulk of the Society's scientific research was done privately. There is a disconnect, therefore, between Sprat's definition of the ideal method of performing science and the reality of experimentation; Sprat wants public performances, but many scientific procedures were done in private, and what Sprat hoped would be discovered socially was researched in solitude. If Sprat's argument is applied theologically, his valuation of public over private experiments does not imply that he correspondingly esteems religious communion over individual prayer and understanding as the means of salvation. Rather, Sprat promotes the Protestant notion that each person is responsible for his or her own knowledge. He asks "whether this way of *Teaching* by *Practise* and *Experiments*, would not at least be as beneficial, as the other by *Universal Rules*?" (329). According to Sprat, a person should learn by seeing and doing, not by blindly believing another person's ideas. If, as Sprat hopes, research will be done publicly, each person in the audience partakes in the

[1] For a debate considering whether or not experimental science should be classified as 'latitudinarian,' see Michael Hunter's *Establishing the New Science: The Experience of the Early Royal Society*, chapter 2, and John Hedley Brooke's *Science and Religion: Some Historical Perspectives*, pp. 115-6.

experiment by witnessing and evaluation its validity, therefore gaining knowledge by participating individually in natural history.

In *Travels into Several Remote Nations of the World*, published in 1726, Jonathan Swift addresses the position of the scientist in relation to the Church and society. Swift, "a fierce defender of church doctrine and church prerogatives" (73), DePorte writes, was a conservative in matters of natural philosophy. Although he counted many scientists as his friends (Patey 814), Swift objected to what he considered the irrelevance and immorality of the new science. In the *Travels*, especially in Book III when Gulliver visits the flying island of Laputa and tours the Academy of Lagado, Swift ridicules the pious, socially conscious rhetoric of the Royal Society and questions natural historians' ability to form a community, benefit society, or praise God. Because the people Gulliver meets in Laputa are so preoccupied with mathematics, they cannot form a church because they cannot establish a community of any kind. Gulliver writes, "It seems, the Minds of these People are so taken up with intense Speculations, that they can neither speak, or attend to the Discourses of others" (132). When Gulliver leaves Laputa and visits the Academy of Lagado, he still does not find an effectual community of scientists, but instead discovers a group of haughty virtuosos convinced of their brilliance and proud of their innovation. The projectors do not work together, however, but instead work alone in separate rooms, not unlike the closets that Sprat proclaims are not as conducive to learning as are assemblies (51). In Laputa, the citizen's preoccupation with spiritual and intellectual matters prevents them from effectively interacting with each other, and in Lagado, the projectors' investment in the material world works a similar isolation. There is a small collaborative group of professors in the Lagado's School of Languages, but their endeavours are no more successful than those of the individual scientists, for groups of scientists, when they exist, are still incapable of advancing knowledge, Swift implies. Even Gulliver himself is ultimately divorced from society, writing at the end of his narrative, "I could not endure my Wife or Children in my Presence, the very Smell of them was intolerable; much less could I suffer them to eat in the same Room" (254). At the text's conclusion, Gulliver has become, like the projectors at Lagado, focused solely on the material, and he can therefore only see other people's physically repellent, excremental natures. Although he cites his experiences among the Houyhmhms as the reason for his distaste for other humans, Gulliver has always been restless and distant from society, loving to travel (Nichols 1160). Montag writes, "By the conclusion of the narrative it is quite clear that Gulliver's antipathy to his fellow human beings [...] has been present in him from the outset, even if initially in a latent form which escaped Gulliver's conscious awareness. He practices a violent rejection of communal ties of any kind" (14-15). However, while he journeys and explores, which the Royal Society encouraged,[2] Gulliver is neither strengthened in his Christian faith nor beneficial to society.

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[2] The Royal Society published two directives: one entitled "Directions for Sea-men, bound for far Voyages," *Philosophical Transactions* (1665-1978), 1 (1665-6), pp. 140-3; and the other, by Robert Boyle,

In Lagado, when the reclusive scientists at the Academy do interact with the surrounding community, they detract from, rather than aid, society. Gulliver writes, "I did not discover any good Effects [the projectors] produced; but on the contrary, I never knew a Soil so unhappily cultivated, Houses so ill contrived and so ruinous, or a People whose Countenances and habit expressed so much Misery and Want" (149). The work of the scientists also does not inspire them or Gulliver to admire God and become better Christians. In fact, Gulliver is revolted by the scientist who separates human excrement (153) and by the projector who inflates a dog (155). Because they are invested only in the material world, the experiments of the scientists are characterized by filth and violence, and surely are not conducive to communion with God. Moreover, the scientists are inordinately proud of their work, boasting of their skill and creativity. One projector, describing his invention to Gulliver, "flattered himself, that a more noble exalted Thought never sprang in any other Man's Head" (156). The scientists' pride in themselves and in the possibilities of natural history isolates them from God and from each other. It is also the reason for Gulliver's eventual solitude: "His pride, which makes him a fitting character in a comedy, isolates him from others and renders him unfit to be part of a community" (Nichols 1169). To Swift, natural history and individual reasoning do not lead a person to God; they focus the person's attention on him or herself rather than on God's revealed truth, damaging his or her ability to benefit society or participate in the Church.

While Swift accentuates the tension between the role of the scientist in solitude and in society and questions the power of natural history to promote Christianity, other authors of fiction were also unpacking the problems and possibilities of experimental science. Some, like Swift, ridiculed the pretensions of scientists, but others praised the aspirations of Bacon, Boyle and Sprat, using their fiction to reconcile the private and public personae of the natural historian. In this study, I perform close readings of three fictional travel narratives—*Man in the Moon* by Francis Godwin (1638), *The Life and Adventures of Peter Wilkins* by Robert Paltock (1750), and *The Life and Astonishing Adventures of John Daniel* by Ralph Morris (1751)—in order to discuss how seventeenth and eighteenth-century English authors address the problem presented by Swift: can the experimental scientist praise God and benefit his community? These texts are proto-science fiction because they use imaginary tales to discuss the possibilities and implications of science, although I will focus solely on the implications to the Church as the scientists move from solitude to society.

The texts themselves are akin to experiments, investigating the implications of science—both technology and methodology—in a narrative laboratory. Each text features a plot similar to that of Defoe's *Robinson Crusoe*: a man is isolated in a land abundant with natural resources and must use his ingenuity and creativity to survive.

"General Heads for a Natural History of a Countrey, Great or Small, Imparted Likewise by Mr. Boyle," Philosophical Transactions (1665-1978), 1 (1665-6), pp. 186-9.

However, in *Man in the Moon*, *Peter Wilkins*, and *John Daniel*, the protagonists then construct a flying machine that carries them back to society and allows them to explore and learn more about the world. Although each text contains some element of utopian literature, they are all primarily fictional travel narratives—fantastic voyages. In the works, technology and travel are celebrated, technology as a means for people to improve their lives, and travel as a means for the narrators to better understand themselves and others. Patey writes, "Travel can serve as metaphor for fundamental principles of how the mind operates and how education proceeds" (824), and Deane comments, "The survey of a society from a detached point of view is one of the standard rhetorical resources of travel literature" (20). Travel writing is therefore an excellent venue for the investigation of the position of the scientist in the Church because not only did the Royal Society emphasize the importance of going abroad and gathering knowledge, but also the genre provides an opportunity for the traveler to ponder other cultures and his or her own position in the world.

Godwin's *Man in the Moon* is one of the first English texts that deals with the implications of science in fiction.[3] Its release early in the seventeenth century indicates that the possibilities and implications of experimental science were being considered even prior to the institution of the Royal Society and the publication of *Gulliver's Travels*. *Man in the Moon* is frequently cited as a forerunner of science fiction,[4] but it has not received much recent scholarly attention, although John Butler writes an extensive introduction to a 1995 edition of the text. Although the book was published posthumously, Godwin wrote *Man in the Moon* while still a student. Later, he became a historian and a Bishop in the Anglican Church (Woolf), which explains his interest in the religious implications of science, but problematizes his use of a Spanish, Catholic protagonist. In the narrative, Domingo Gonzalez, recuperating alone on the Isle of St. Helena, harnesses a group of birds together to create a flying machine. With the contraption, which he calls the "gansas," Gonzalez flies to the moon, where he discovers a utopian society of lunar inhabitants with technology superior to his own. Butler writes that because of the text's emphasis on the scientific advancements on the moon, "Godwin's utopia is a practical one, not one concerned with eternal happiness and high moral dreams" (53). However, although Gonzalez is primarily occupied with discovering and describing technology, he still ponders the religious significance of his own work and of the lunar society. Indeed, one of his purposes in the narrative is to reconcile his experiences and his flying machine with the objectives of the Church.

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[3] Much debate has centred around the date of the text's publication. See Grant McColley, "The Date of Godwin's 'Domingo Gonsales," Modern *Philology*, 35.1 (1937), pp. 47-60; H. W. Lawton, "Bishop Godwin's *Man in the Moone," The Review of English Studies*, 7.25 (1931), pp. 23-55; and William Poole, "Francis Godwin, Henry Neville, Margaret Cavendish, H.G. Wells: Some Utopian Debts," *ANQ*, 16.3 (2003), pp. 12-18.

[4] For example, see Paul Baines, " 'Able Mechanik': *The Life and Adventures of Peter Wilkins* and the Eighteenth-Century Fantastic Voyage," *Anticipations: Essays on Early Science Fiction and Its Precursors*, Ed. David Seed, Syracuse, Syracuse UP, 1995, p. 3.

Paltock, the author of *The Life and Adventures of Peter Wilkins*, also ponders the connections of science and religion. His narrative follows the life of Peter Wilkins who, after he flees England and encounters many difficulties at sea, is shipwrecked in a strange, forested land. After living alone for some time, he meets a flying woman named Youwarkee, and eventually returns with her to her homeland of Normbdsgrsutt, which is inhabited solely by winged people. Conveyed in the flying chair he constructs, Wilkins tours the land, subduing rebellions and setting up colonies. Yet, to Wilkins, his most important task is reforming, by an impassioned justification of natural theology, the religion of the Glumms and Gawreys, the aerial men and women. Although *Peter Wilkins* celebrates natural history, like Godwin, Paltock was not specially trained as a scientist, but was an attorney (Sambrook). Since its publication, *Peter Wilkins* has received dramatically varying critical attention. David Fausett writes, "*Peter Wilkins* was little appreciated when it first appeared, although it was translated into French and German about fifteen years later. But with flight as its central theme it became popular after 1783, following the first successful hot-air balloon flights" (*Images of the Antipodes* 73). Recent criticism of the text focuses on the sources of the narrative, and the importance of aviation in fiction in the eighteenth-century.[5]

The Life and Astonishing Adventures of John Daniel, published a year after *Peter Wilkins,* has received almost no critical attention, and is usually mentioned only briefly in anthologies of early science fiction of the eighteenth century. The most common complaint against the narrative is its perceived lack of originality: the story seems only a reworking of elements from *Robinson Crusoe*, *Peter Wilkins*, and Swift's *Travels* (Fausett, *Images of the Antipodes* 86; 89). Like *Gulliver's Travels, Man in the Moon*, and *Peter Wilkins*, *John Daniel* was published anonymously, but critics are unsure who wrote the text, naming Ralph Morris as only the supposed, but most likely, author.[6] The text follows a familiar plot: after a storm at sea, Daniel and another man are shipwrecked on a deserted island and struggle to survive against the threats of wild animals and inclement weather. When he discovers that his companion is actually a woman, Daniel marries her and has many children, one of whom constructs a flying machine. With Jacob, the inventor, Daniel travels to the moon and other parts of the world, exploring other societies and lands. Like Wilkins, Daniel continually invokes Providence for his protection, calling upon God to bless him and his innovations. As in *Man in the Moon* and *Peter Wilkins*, then, *John Daniel* unfailingly couples science with religion as the scientist moves in the narrative from isolation to society.

The Man in the Moon, Peter Wilkins, and *John Daniel*, each one receiving little recent scholarly attention, have certainly not been studied together before, especially in

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[5] See Peter Marchant, "Robert Paltock and the Refashioning of 'Inkle and Yarico'"; Alexander Pettit, "*The Adventures of Peter Wilkins*: Desire, Different, and the Fallacy of Comic Convention"; and Robert Crossley, "Ethereal Ascents: Eighteenth-Century Fantasies of Human Flight."

[6] According to Philip Gove, there is even some evidence, albeit very weak, that Paltock may be the author (133).

tandem with *Gulliver's Travels*. While there has been little or no research into the characterization of the Christian scientist in seventeenth and eighteenth-century works of fiction, excellent work has been done on historical connections and conflicts between natural history and the Church of England.[7] Steven Shapin and Simon Schaffer's study into the social implications of the clash between Robert Boyle and Thomas Hobbes presents me with the critical framework with which I approach each text. To investigate authors' considerations of the social and spiritual role of the scientist, I adopt Shapin and Schaffer's style of inquiry presented in their book *Leviathan and the Air Pump* and "play the stranger" (6). "Playing the stranger," I do not attempt to justify the current dominant views on the relationship of science and religion, or attempt to explain why certain views of the Christian scientist became widely accepted. As a "stranger," I situate myself in the culture and time period of the narratives, and discuss each text within its historical context, identifying and evaluating arguments about the conjunction of natural history and the Church.

In order to promote a dialogue between the texts, I incorporate each one into all four of my chapters. The first two chapters examine the role of the scientist as he lives in solitude, and the last two study him as he interacts with society, always keeping in focus, of course, the natural historian's relationship with the Church. The chapters, therefore, reflect the structure of the narratives, beginning with the isolation of the protagonist and ending with his reunion with English society. In chapter one I discuss the importance and implications of the setting of the natural historian's solitude: a new Eden. Chapter two focuses on aviation and explores the religious and social significance of flight in the texts and generally in the seventeenth and eighteenth centuries. In chapter three I consider the scientist as he rejoins a community, but an indigenous one, and focus on the missionary work of the natural historian. Chapter four highlights the status of the narratives as fiction and explores the ways in which the authors invoke the Church in order to create a society of readers.

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[7] For example: John Hedley Brooke, *Science and Religion: Some Historical Perspectives*, Cambridge, Cambridge UP, 1996; Michael Hunter, *Establishing the New Science: The Experience of the Early Royal Society*, Woodbridge, The Boydell Press, 1989; Margaret Jacob, *The Cultural Meaning of the Scientific Revolution*, New York, Alfred A. Knopf, 1988; Steven Shapin and Simon Schaffer, *Leviathan and the Air Pump: Hobbes, Boyle, and Experimental Life*, Princeton, Princeton University Press, 1985.

1. Edenic enterprises: The traveling scientist's imaginary reconstruction of a technological Paradise

Alone on their Edenic island in *The Life and Astonishing Adventures of John Daniel,* Daniel reasons with his wife Ruth, trying to convince her that they should marry their sons to their daughters. To persuade his understandably hesitant wife to agree to his incestuous plan, Daniel says to her, "we must suppose ourselves Adam and Eve and act as they did, upon the same emergencies" (125). Ruth is won over by Daniel's loquacity, allowing him to carry out his fantasy reenactment of the role of Adam—the sole ruler of the island and the first father of all of the inhabitants of his personal paradise.

Daniel's desire to replay the Biblical story of Eden reflects the metaphors seventeenth- and eighteenth-century natural historians were composing to describe their aspirations. When Bacon expounds his philosophy of experimental science in *Novum Organum*, he identifies the ultimate aim of observation-- to restore to humans their "God-given authority over nature" (197). How can the human race regain its "God-given authority"? Bacon answers, "discoveries are also like new Creations repeated, and imitations of God's handiwork" (193). According to Bacon, when the scientist mimics God's work, he extols him. Also, if discoveries are new Creations, and Creation belongs to God, then discoveries must be under God's control, giving power and praise to him, rather than to the natural historian. But, when he created the world, God subjected Creation to human authority, which Adam and Eve subsequently corrupted and lost. Bacon says about the Fall:

> For by his fall man lost both his state of innocence and command over created things. However, both of these losses can to some extent be made good even in this life, the former by religion and faith, the latter by the arts and sciences. For the curse did not quite put creation into the state of unremitting rebellion, but by virtue of that injunction *In the sweat of thy face shalt thou eat thy bread,* it is now by various labours (not for sure by disputations and the idle ceremonies of magic) at length and to some degree mitigated to allow man his bread or, in other words, for the use of human life. (447)

By working in the arts and sciences humans can recoup the losses incurred by Adam and Eve during the Fall, Bacon argues. Sprat also discusses the importance of Eden to experimental science, writing, "This was the first service, that *Adam* performed to his *Creator*, when he obey'd him in mustring, and naming, and looking into the *Nature* of all the *Creatures"* (349-50). In the same year Sprat's *History* was published, John Milton produced *Paradise Lost*, in which he describes an Adam and Eve who toiled at caring for the physical needs—especially the plants—of the Garden of Eden.[8] Experimenters, Sprat

[8] Whether of not Milton supported experimental science is still being debated among critics. One of the most recent thinkers to address the argument, Karen Edwards, opines that *Paradise Lost* contains many

states, can attain a pre-fallen state by imitating Adam's task in Paradise. The goal and justification of experimental science is to recreate Eden, but it is a new Eden that is suitable "for the present *Temper*" (Sprat 362) of seventeenth-century England. The Eden that Bacon and Sprat promote is one that is not based solely upon personal communion with God, but on toil, observation, and the production of technology.[9]

Correlating the traveling scientist to Adam gave European thinkers a number of advantages. By narrating the scientist as a new Adam, writers emphasize the solitary status of the natural historian, thereby portraying a world empty of other inhabitants, ready for European colonization, justifying the annexing of native land. Pratt writes, "The activity of describing geography and identifying flora and fauna structures an asocial narrative in which the human presence, European or African, is absolutely marginal. [...] In the writing, people seem to disappear from the garden as Adam approaches" (51-2). However, while comparing the scientist to Adam therefore propels a political agenda, it also conveys a philosophical purpose, for "Adam" himself does not disappear from Eden, but rather becomes the subject of observation and analysis. His solitude gives readers a chance to evaluate humans who do not have any society with which to interact. Maximillian Novak writes that *Robinson Crusoe*, because it describes a man living alone for many years, is seen as the first depiction of a 'natural' man, separate from the influence of other people (238). The study of man in isolation, then, is an experiment to discover the true nature of humans, but equating the solitary person to Adam means that the natural man is always defined and given significance by Christianity. Milton did this in *Paradise Lost*, seeking to explain human nature by examining the isolated lives of Adam and Eve. In *The Man in the Moon, Peter Wilkins*, and *John Daniel*, the authors perform a literary experiment akin to Milton's, but they place Adam clearly as an agent of the new science, building an Eden with technology and observation. Employing the Christian myth of Eden therefore gives the political, philosophical, and social work of the scientist both religious justification and direction. Indeed, what could be more of an "excellent [Foundation] of so much good to *Mankind*" (Sprat 2) than a return to paradise, this time one made possible by science and an understanding of human nature?

The Man in the Moon was published shortly after Bacon's and prior to Sprat's and Milton's works describing the scientist as Adam, but Godwin's narrative still struggles

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elements characteristic of the new science. She writes, "Milton's depiction of Edenic plants and animals is cognizant of the century's new experience of the natural world, experience which derived from Europeans' travel in Asia, Africa, and the Americas, from observations of natural historians, from the accessibility of creatures alive or dried, and from the circulation of illustrated books" (4).

[9] Philip Edwards and Christopher Flynn identify the Edenic aims, and their implications, of eighteenth-century scientists, noting, "humanity's control over nature, lost by Adam, was to be restored by the systematic investigation, description and classification of the entire phenomenal world" (Edwards 99). Flynn writes about *Robinson Crusoe*, "[Defoe's] Puritan Eden depends upon man for its proper functioning" (18).

with issues of solitude and society as they affect the natural historian. When Godwin creates his flying machine, he is living on the island of St. Helena, alone except for his servant Diego who lives separate from him. Gonzalez calls his surroundings the "blessed isle of St. Helena, the only paradise, I think, that the earth yieldeth" (76) and describes the rich plant and animal life of the "blessed island" (77). Like Robinson Crusoe, Gonzalez is confined and alone on an island abundant with resources, akin to a well-stocked laboratory. In the tropical Garden, surrounded only by the natural world, Gonzalez is free from societal cares and has the time and clarity of thought to create his flying machine, an invention that he can make only with the resources of his Eden. Although Gonzalez's goal is to reenter society, his experiences on St. Helena influence his assessment of other civilizations, affecting and effecting his esteem of the lunar people. On the moon, Gonzalez is again surrounded by society, the lunar civilization he considers superior to his own. Physically, the moon has some characteristics that might qualify it as Edenic, for it is always covered in some sort of light, however weak, signifying its moral calibre (101), and the language of the lunar people sounds like music, for they have perfected the harmony that the philosophers of Laputa cannot attain (103). Gonzalez ignores, however, the peoples' discrimination against short people and their practice of exposing their unwanted children on terrestrial hillsides. While he enjoys being in society, Gonzalez is not a trustworthy evaluator of civilization for he assumes that the lunar society is morally advanced because its technology is beyond his comprehension. On the Eden of St. Helena, Gonzalez had been equipped to create great technology, and he assumes that the inverse is true as well: if the lunar people can create advanced technology, they must also be living in paradise.

Gonzalez can only craft his marvel of technology when he is separate from society on St. Helena, and only his yearning for the company of his family stops him from gathering more technology while on the moon. Society and its absence, therefore, impacts his ability and desire to work as a scientist and inventor. On the moon, although he is surrounded by people, Gonzalez is not part of the lunar civilization, forging no friendships, perhaps because the lunar people consider him an inferior person because of his shortness. Lonely, Gonzalez begins to pine for his wife and children and eventually resolves to return to them. He rails, "O my wife and children, what wrong have you done me, to bereave me of the happiness of that place!" (108). He blames his family for his departure, even though he admits that he wants to leave the moon also because he was "far removed with a desire of that deserved glory that [he] might purchase upon [his] return" (109). In his quest for glory, Gonzalez uses similar rhetoric to that of Doctor Faustus, who proclaims, "Oh, what a world of profit and delight, / Of power, of honor, of omnipotence / Is promised the studious artisan!" (Marlowe I. I. 52-4). However, Faustus rejects natural history as a means of garnering fame, and chooses to study conjuring instead. While Gonzalez is able to use science to reach the same goal to which Faustus aspires, he needs to disseminate his technology in order to be recognized, although he first requires the solitude and creativity of Eden to create the flying machine. The scientist therefore has two roles: one as the solitary inventor, and the other as the

promoter of his inventions. He cannot be just one or the other, for in order to benefit other people, he must first create, which he can only do alone, as evinced by *Man in the Moon*, and then he must rejoin society so that others can use his technology. An invocation of Eden, then, justifies the initial antisocial behaviour of the scientist, emphasizes the value of his inventions, which are akin to a new creation, and highlights the humility of the natural historian, who aligns his work to the Christian myth of Paradise, and thus to God's approval.

In *The Life and Adventures of Peter Wilkins*, even before he reaches his Eden, which the Glumms and Gawreys call the Arkoe, "water surrounded with a wood" (Paltock 119), Wilkins has a personal relationship with God that is mediated by nature. Wilkins establishes early in his narrative that he is a Christian, for after he feels compelled to leave his family, he relates, "Tho' there is something so unaccountable, to human Wisdom, in such Events of Things, yet there is something therein so reasonable and just withal, that by a Prying Eye, the Supreme Hand may very visibly be seen in them" (29-30). Throughout the narrative, Wilkins is the "Prying Eye," trying to discover the hand of God. The problem is, Wilkins can only see clearly after he is saved from the brink of disaster. He has a religious epiphany in England when he runs away from the academy (31-3) and another in Africa when he escapes from the lioness (52). Succeeding his brief moments of shocked relief after surviving, Wilkins does not mention God again until he is again in danger. Following the shipwreck, he follows the same pattern, a model of on and off again conversion also present in Daniel Defoe's *Robinson Crusoe*. In the beginning of that narrative, Crusoe praises God only on certain occasions: after he survives the shipwreck (55) and after the grain grows miraculously, as he first believes, outside of his dwelling (87-88). Wilkins' voyage through the subterranean passage represents his uneasy negotiation between faith in God and in his own abilities as an educated, innovative man. One critic, Paul Baines, writes that Wilkins in the tunnel is "saved by his lamp, the flame of his technology" (15). However, even if the lamp represents Wilkins' trust in technology, he is not saved by it. He realizes later than if he had allowed his boat to travel where it willed, he would not have been in the passage for such a long period. On the other hand, if he had not navigated by the light of his lamp, he might have struck and destroyed his boat on the rocky walls of the passage. Wilkins has to negotiate his environment by two different 'lights': one his trust in technology and the other his trust in God. As he travels through the passage and emerges on the other side, he is metaphorically reborn of both science and religion, and his life on the Arkoe and among the flying people reflects the uneasy balance between his inventions and his faith.

Wilkins' life after being reborn on the Arkoe parallels Milton's conception of Adam's existence in Eden. In *Paradise Lost*, when Adam is created, he awakens, looks around Eden, praises God, goes to his dwelling place, names the flora and fauna of the garden, desires a mate, then sleeps and dreams of Eve as God creates her, and soon after Adam marries her (VIII. 250-559). Wilkins, after he lands on the shore of the Arkoe, immediately praises God, writing, "I got on the Land as soon as possible, after my Dismission from the Cavern, and kneeling on the Ground, returned hearty Thanks to God

for my Deliverance" (76). After a brief tour of the Arkoe, Wilkins fixes his dwelling in the grotto he discovers and establishes the cave as the base of his explorations, wandering his dominions and naming the plants and animals he finds (96). He is a technological Adam, however, for he does not just name the plants he finds, he also experiments with them, discovers and records their properties, and uses them to make technological artefacts. Wilkins' project of naming the objects he finds has political as well as religious implications, for by giving a European name to an indigenous plant or animal, he organizes it into a European classification system and therefore claims it for his own. As Pratt explains,

> Natural history's naming [...] extracts all the things of the world and redeploys them into a new knowledge formation whose value lies precisely in its difference from the chaotic original. [...] The naming, the representing, and the claiming are all one; the naming brings the reality of order into being. (33)

Wilkins' reenactment of the life of Adam also justifies his bigamous marriage to Youwarkee. One night, Wilkins imagines that his first wife Patty is dead, and immediately after his dream, Youwarkee lands on his roof (104-5). Youwarkee, whom Wilkins calls "the Gift of Heaven" (122), is the Eve to his Adam, God's gift to Wilkins after he establishes himself on the Arkoe and begins to feel lonely. Wilkins' subsequent marriage to Youwarkee, although he cannot be sure that Patty is dead and he and his new bride are not married by an ordained minister, is sanctioned and provided by God. Her arrival, however, like Eve's, comes after Wilkins has already displayed his technological mastery and ownership over the land. She is not necessary to his scientific advancement, but rather a reward for his ability to survive in, subdue, and create technology in Eden.

On the Arkoe, Wilkins works diligently to ensure his survival and comfort, for although he praises God's providence and protection, he must still trust his own ingenuity to preserve his life. Because he had taken only a limited quantity of supplies from the ship, he has to craft commodities ubiquitous in Europe, objects that in England Wilkins could buy rather than make, such as a bench and a door. Because he lives apart from society, Wilkins cannot rely on others to make things for him, so he is forced to depend like Crusoe upon his own inventiveness and craftsmanship. Wilkins' reinventing the materials he would take for granted in Europe, the things that he could inherit or buy from others, is a manifestation of the basic axiom of experimental science as put forward by Bacon and Sprat. In *Novum Organum*, Bacon urges his readers not to rely on received knowledge, but to investigate the truth and utility of knowledge passed down from ancient authorities. He writes, "It is useless to expect new growth in the sciences from the superinduction and grafting of new things on old; instead the instauration must be built up from the deepest foundations, unless we want to go round in circles forever, with progress little or pitiable" (77). Sprat echoes Bacon's sentiments when he writes that the Royal Society intends to make a "fresh survey" (50) of ancient philosophy, basing its

evaluation on "new Observations upon Nature" (50). Swift derides reinvention in *Gulliver's Travels,* for Balnibarbi is impoverished by scientists who "fell into schemes of putting all Arts, Sciences, Languages, and Mechanics upon a new foot" (150). Although in *Gulliver's Travels* houses are ill-constructed, the fields are empty of crops, and the people are dressed in rags, Wilkins' creations improve his life and understanding of the Arkoe. His Edenic surroundings and his solitude validate his re-creation of technology. Alone, Wilkins is himself an experiment, exploring the capacity of humans to survive by scientific reasoning rather than relying on an established social structure. Because he is isolated in a garden paradise, Wilkins' rejection of ancient authorities does not threaten the position of the Church, for Wilkins' very survival comes from his reenactment of the life of Adam. Moreover, the resounding success of his experiments displays the power of natural history to re-create Eden, regaining the bliss Adam had forfeited.

Wilkins' scientific agenda in Eden complicates his religious experience in the Arkoe. Baines calls *Peter Wilkins* a text about the hybridization of technology and magic (18), but the narrative is rather concerned with the relationship between technology and religion, a relationship mediated by nature. Alexander Pettit says of Wilkins' island, "This is a version of Eden, when sex is not yet sin and where man and woman work together, harmoniously" (102). Yet, although Wilkins and Youwarkee work together and use the island to its full natural potential, Wilkins is not satisfied and wants more. To assuage his desires, Youwarkee frequently travels to the ship and sends back goods, revealing that Wilkins' Eden is not complete without commodities and their movement. Because of the Fall, the experimental scientist will never be able to truly recover Eden; instead, he or she can only understand Nature, and therefore God, by naming, discovering, experimenting, recording, and owning. However, Wilkins believes that he will be able to become a new Adam, trusting the words of his African companion Glanlepze, who had told him, "there is nothing but a man may compass by Resolution, if he takes both Ends of a Thing in his view at once, and fairly deliberates on both Sides, what may be given and taken from End to End" (50). The two "Ends of a Thing" that Wilkins deliberates in the narrative are technology and religion, but he never actually understands the connection between the two, as is signified by the light on the Arkoe. While Nora Crook writes that Wilkins' inability to see the sun on his island is "an emblem of his own imperfect understanding of the ultimate value of his work" (90), I would argue that his blindness is related to his assertion at the beginning of the narrative, that a "Prying Eye" may discern the works of God in nature. While Wilkins is living in a new Eden, he cannot truly be a new Adam because he does not have clear insight into the works of God. Rather, he operates by the light of reason, which in *Religio Laici*, Dryden calls "Dim, as the borrow'd beams of Moon and Stars" (1), and adds that "Reason's glimmering Ray / Was lent, not to *assure* our *doubtful* way, / But *guide* us upward to a *better Day*" (1). Inversely, in *Paradise Lost*, when Adam awakes, he immediately notices the sun, which he calls "fair light" (VIII. 273). Like Wilkins, Adam looks to nature to discover the Maker of paradise, but God directly answers Adam's inquiries. Adam's knowledge of Creation is given to him by God, but when Wilkins tries to

understand God by examining nature, his comprehension is obscured by his concerns with technology and possessions, so metaphorically, he can only partially discern the light in the Arkoe, his Eden.

In *The Life and Astonishing Adventures of John Daniel*, Daniel's experience of Eden is similar to Wilkins', for he too lands on an island paradise and recreates technology using only the few tools he has with him and the varied resources of his environment. Daniel is not alone in Eden, however, for his Eve is shipwrecked along with him, although Daniel lives with her for a year before he realizes she is Ruth rather than Thomas. When he finally penetrates Ruth's deception, Daniel immediately equates his position with Adam's, alone in a fruitful Paradise with only Eve as a companion. His comparison inflates his sense of his own worth for, on the island, he thinks that God has especially chosen him and Ruth, predestining them to control and settle the island. Rather than despair because of their isolation and danger, Daniel and Ruth view their situation in a Calvinistic manner: they have been chosen. Daniel continues to explain and support his hypotheses by Biblical arguments, evident when Ruth resists marrying Daniel because she does not want their children to be in want, and Daniel tells her that her protests

> [...] were no other than our first parents might with equal probability have made against their cohabiting together; and I could not see, why we should so far reject the hopes of the Almighty's regard for us and ours, as to imagine He was less active, or capable to assist us and ours, than He was to assist them and their progeny. (82)

Daniel's words also betray his trust in God's providence, further evident in the name he gives his new home: "The Island of Providence" (144). Indeed, Daniel and Ruth need divine assistance for they live on the island for a year before they find any tools other than the knives they were carrying when they were shipwrecked, and can therefore only refer themselves to "providence for protection" (32). Daniel desperately wants security because he, more so than Wilkins, is terrified of his environment. His emotion is evidenced more by his rhetoric than his actions, however, because although he and Ruth are petrified by nature, especially wild animals, storms, and their bodily needs, they are still able to use their surroundings to their advantage by digging a pit to catch game and by taming wild cows for meat and milk, for example. Daniel's interaction with nature is more fraught with ambiguities than is Wilkins' because the former's experiences on his island paradise are reminiscent of the lives of Adam and Eve after the Fall rather than before it. The postlapsarian quality of the narrative is indicated by Daniel's preoccupation with the reproductive lives of Adam and Eve who, while still in paradise, had produced no children. Like Adam and Eve after God ejected them from Eden, Daniel and Ruth must both struggle against nature for survival and throw themselves on God's mercy, depending on "Providence their guide" (Milton XII. 647), as Adam and Eve must do at the conclusion of *Paradise Lost*. Rather than presenting a tale of two

people who are metaphorically replaying the history of humanity from the beginning of the world, Morris portrays Daniel and Ruth at the beginning of the world that needs technology to subdue a suddenly hostile environment.

Between his declarations praising God for his care and protection, Daniel describes some of his actions, such as leaving his children unattended on a beach, adding the disclaimer "necessity having no law" (101). He utters this phrase almost as an afterthought and it seems unimportant until it reemerges when Daniel and his son Jacob travel to the island of the half-human, half-sea-creature family. The original inhabitant of the island, Miles Anderson, who, like Daniel, had been stranded in a strange, empty land, repeated the proverb, "necessity had no law" (205). The phrase is fraught with difficulties, for seventeenth- and eighteenth-century philosophers and scientists hotly debated "necessity." Some posited that nature functioned without God, as Marjara explains: "Aristotelian science was based on the assumption that nature was an autonomous and self-regulating system, which functioned by the 'necessary' or inalienable laws of internal causation, and that nature was bound by the necessity to obey its own laws, needing no supernatural intervention of any kind" (249). On the other side of the debate, "some natural philosophers reacted to the denial of the absolute omnipotence of God and expressly denied nature's autonomy and necessity" (Marjara 251). Morris' statement, "necessity has no law," could suggest that nature is not governed by physical rules, but in the context of Daniel's utterance, such a suggestion is absurd. "Law" also cannot mean the law of God, for Daniel repeatedly speaks of providence, his similarity to Adam and Eve and later to Abraham and Sarah (151), and would do or say nothing to compromise his image as a devout Christian. Rather, Daniel applies the phrase to his own life, describing how nature, which generates the need, is not subject to the civil law of England. Living alone in Eden, Daniel and Ruth are bound by natural rather than civil law because their necessity demands that they rely on God and what they can form from their environment, for they cannot turn to other people for assistance. Their isolation exempts them from social standards and codes of polite conduct and their narrative is therefore an experiment in human beings' ability to survive alone with only God and nature, and of what people can learn and create in such a situation. "Necessity has no law" is therefore a potentially dangerous, anarchist statement that could give the solitary scientist autonomy. However, because Daniel and Ruth live on an Edenic island, they are always subject to the Christian principles that metaphorically surround them. Although they may live away from society and its regulations, they are never separate from God.

Daniel's most pressing concern on the island is learning how to survive and creating a living arrangement best suited to him and his family. His plans are not flawless, for although he intends his family to form a Church that praises God, after he leaves the island with Jacob on Jacob's flying machine, he discovers that his children are fighting and his wife dying (235). The only one of his offspring who is attempting to praise God is Jacob, who states that he works for "the glory of [his] Maker and the benefit of mankind" (241). His employment is the construction of the flying machine on

which he and his father leave the island, a technological artefact he builds in complete isolation at the top of a mountain (144). Jacob refuses to marry one of his sisters or nieces because, "if he was married, it would rob him of more time than he chose to part with from his business" (126), and he wants to have enough time to fulfill any demands his family might make of him for iron work. In the interests of his work and inquisitiveness, benefiting the rest of the island's society, Jacob needs complete solitude and will not fall in with the incestuous plans of his father. To support society, then, the scientist must separate him or herself from it. Moreover, nature supports his seclusion because Jacob finds a leaf that, when chewed, gives complete nourishment, allowing him to work unabated until he has completed the eagle, a task John Daniel would never have been able to finish because of his preoccupation with the affairs of his family. While both Jacob and Daniel attempt to benefit society, Jacob by living alone and building technology and Daniel by residing with his family and assigning marriages and living arrangements, Morris depicts Jacob as the more admirable person. During their flight on the eagle, Jacob takes on the role of moral leader in the text, challenging Daniel's uncritical admiration of all things European (240). Jacob, who deliberately isolates himself, is the most human and humane character of the narrative.

One of the implications of situating the scientist in an Edenic setting is the narrated superiority of male over female, of Adam over Eve. In travel narratives, both fictional and non-fictional, women are depicted as a distraction and a temptation, taking the scientist away from his important work. Pratt writes, "the naturalist-heroes are not [...] women—no world is more androcentric than that of natural history" (56). The scientist himself is not an overtly masculine figure, for "the naturalist-hero often has a certain impotence or androgeny about him" (Pratt 56). The desexualization of the male scientist emphasizes his separation from society and its gender roles, and from the society of women, but in the works of Godwin, Paltock, and Morris, the replication of the story of Eden must include women because of the companionate marriage of Adam and Eve in *Paradise Lost*. In *Peter Wilkins*, for example, the "Miltonic echoes [...] hint at a broader companionship" (Pettit 102) between Wilkins and Youwarkee. However, in the texts, women disrupt the work of the scientist, as is the case in *Man in the Moon*, in which Gonzalez leaves the moon and all its technological advancement because he pines for his wife and family. Even the thought of women interferes with the progress and education of the natural historian.

In *Peter Wilkins*, Wilkins only yearns for a wife following his establishment on the island. Like Robinson Crusoe, he desires society after he has ensured his own survival and done the work of a natural historian—exploring and documenting the geography, flora, and fauna of his environment. Although Wilkins and Youwarkee work together and Youwarkee is an asset to Wilkins' existence in the Arkoe, she brings society to Wilkins because she bears him children, problematically neither completely of his race or hers,[10] which distracts him from his task of categorizing the plants and animals around

[10] Crossley notes that "Peter Wilkins' intermarriage [...] produces [...] offspring which would roughly satisfy Mendelian genetics" (58). While the characteristics of his children further illustrate the

the Arkoe as he worries about the needs of his family. After Wilkins marries Youwarkee, he is no longer the sole inhabitant of the Edenic Arkoe, concentrating only on using his ingenuity to secure his survival and his comfort. As his family increases and his stockpile of goods correspondingly enlarges, he desires more possessions, compelling him to invent this maxim: "strange is the Temper of Mankind, who, the more they enjoy, the more they covet" (147). Wilkins also comes to expect more and more of God's providence, changing from a man who, in the earlier part of the text, had only cried out to God after narrowly avoiding death, to someone who, by the time he reaches his island home, is "used to God's Providence" (78). God's Providence, to Wilkins, is equated to the goods that he covets from the ship. He grows to depend on the new possessions he receives from the vessel, he relies upon and expects God's providence, and he transmits his desires to the Glumms and Gawreys, who had lived quite happily with fewer possessions and desires before Wilkins came and exposed them to new ideas and objects (372). Wilkins' yearning for more possessions and new technologies overcomes all of his other concerns, including religion, a priority revealed when he describes his family's worship of God only after his obsession with the goods from the ship is satisfied. When he outlines his religious practices, he begins by saying "Youwarkee and I having fixed ourselves by degrees into a settled Rota of Action, began to live like Christians" (154). The change from humble supplicant of God to a man who covets more possessions and treats Providence as a commodity occurs only after he marries Youwarkee because she, as Eve did to Adam, inspires Wilkins to seek more knowledge and power obsessively, although he desires those things to increase her comfort in the grotto.

The presence of women in *John Daniel* is complicated by Daniel's ignorance of Ruth's true gender at the beginning of their sojourn on the island. For the first year of their cohabitation, Daniel believes that Ruth is a man named Thomas, allowing the narrative to proceed along a similar line to *Peter Wilkins*, in which the task of exploring and building is reserved for men. Even when Ruth is Thomas, Daniel describes her as being "very slack of invention, yet no body could be more ready at the execution of any project [Daniel] put him upon" (50). Ruth never challenges Daniel's superior ingenuity, even when she is masquerading as a man, and when she reveals herself as a woman, she continues to praise Daniel's intelligence and craftsmanship (77), boosting his masculine ego. The accident that exposes Ruth as a woman is marked by violence and sexuality, for she stumbles and falls onto a sharp piece of wood that pierces her belly near her groin, forcing Daniel to pull out the sliver, "thick as a truncheon" (70), with his knife (69-71). This act, ripe with images of masculine violence and penetration, identifies Ruth immediately as Daniel's responsibility to master and protect. The drama of the scene also diverts the reader from Daniel's gullibility, for in the midst of the emergency and

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importance of science in the text, only Wilkins' sons are born without the graundee, built-in wings, and therefore, while the females of the family can fully integrate into the society of Gawreys (females), most of the males cannot pass for Glumms (males). The males of Wilkins' family, therefore, are genetically disposed to some level of isolation.

following, Daniel does not reproach himself for his obtuseness in not realizing that Ruth is a woman even after he had spent a whole year constantly in her company, sleeping beside her and bathing together. Furthermore, after Jacob builds his flying machine, thoughts of Ruth keep Daniel from truly enjoying and focussing completely on his journey of discovery, just as in *Peter Wilkins*, after Youwarkee dies, Wilkins is melancholy and his genius becomes "phlegmatick and unactive" (375). While alive, the wives distract their husbands from their important work, even casting doubt on the men's competence, and also in death women affect the men and their craft, stunting their ability to create and imagine.

Describing a new Eden as the setting for scientists in fictional travel narratives allows the texts' authors to experiment with the aspirations of seventeenth- and eighteenth-century natural historians. Placing the scientist in paradise and metaphorically equating him with Adam, drawing on images from *Paradise Lost*, justifies the solitude of exploration and discovery for it is done in a religious context, designed to recreate a new world built on the tenets of experimental science and filled with technological artefacts. Isolation is therefore a positive state; one in which the scientist can work, not bothered by women or the rules of societal interaction, to produce knowledge or machines that will benefit all of society, whether that society be Spain, as Gonzalez hopes; the Glumms and Gawreys, in Wilkins' case; or his ever increasing family, Daniel's joy.

2. Flights of fancy: The traveling scientist's metaphoric rise to communion with science and God

In *Paradise Lost,* Milton describes the glorious flight of the winged angels in describing Raphael, who "speeds, and through the vast ethereal sky / Sails between worlds and worlds, with steady wing" (V 267-8). In his depiction of Heaven, Milton says that those "who after came from Earth" (III. 520) would fly over the lake separating Heaven and Earth, "rapt in a chariot drawn by fiery steeds" (III. 522). Flight in *Paradise Lost*, however, is in God's established order of the world to be employed only by spiritual beings on their way to or from Heaven's gate. When Milton depicts Satan's passage through the Limbo of Vanity, he is contemptuous of human attempts at flight, writing,

> Here walked the fiend at large in spacious field
> [...]
> But in his way lights on the barren plain,
> Of Sericana, where Chineses drive
> With sails and wind their cany waggons light;
> So, in this windy sea of land, the Fiend
> Walked up and down alone. (III. 430, 438-41).[11]

To Milton, human aviation will only occur, as Raphael tells Adam, "if ye be found obedient," (V. 501), at which time humans' "bodies may at last turn all to spirit, / Improved by tract of time, and winged ascend / Ethereal" (V. 497-9). In contrast to the beauty and grace of the angel's flight, to which humans may aspire, the "cany waggons" driven by the foolish are unnatural, blown about haphazardly on the wind.

While Milton may have disdained flying ships in *Paradise Lost*, many other seventeenth- and eighteenth-century thinkers were enthralled by the possibility of human flight. One of these is John Wilkins, from whose publications on aviation Milton partially draws his allusion to the "cany wagons."[12] Wilkins, well known for his role in establishing the Royal Society and for attempting to reform the English language, was optimistic about human flight. He writes about aviation in *Mathematical Magick* and *Discovery of a New World in the Moon*, in the latter identifying three possible methods of flight: like angels or spirits with wings attached to the body, by the help of birds, and by a

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[11] For detailed analysis of these lines, see Sidney Gottlieb, "Milton's Land-Ships and John Wilkins" and Frank Huntley's "Vultures, Land-Ships, and Milton's 'Paradise of Fools.'"

[12] Gottlieb, building on the research of Huntley, identifies the cane ship as the creation of the Dutch mathematician, Simon Stevin, and writes that many sixteenth-century authors discussed the machine in their texts (60).

flying chariot (127-8).[13] Wilkins' ideas, while they were not directly translated into a viable flying machine, were essential to the tenor of the sentiments of seventeenth- and eighteenth-century thinkers towards aviation, for Wilkins "was less a practising scientist than a popularizer of the experimental method" (Vickers 30). Transmitted through his writing, his excitement about human flight sparked public fascination, stirring the imaginations of authors such as Paltock and Swift to craft narratives featuring aviation. Nicolson writes that "In the history of wings Wilkins was [...] a pioneer, not only in stimulating popular interest but in communicating his own enthusiasm to associates in the Philosophical Society of Oxford and to members of the Royal Society" (*Voyages to the Moon* 113), although Shapiro limits Nicolson's statement by commenting, "it was in literary rather than scientific circles that Wilkins's ideas had their more lasting vogue" (*Wilkins* 42). Through Wilkins' popular texts, the aspirations of scientists were conveyed to the imaginations of authors of fiction who incorporated flight—particularly flight accomplished by human scientific understanding, ingenuity, and craftsmanship—into their narratives.

Although Wilkins mentions angels as the first possible means of flight, he was much more concerned with aviation technologies created by humans (Shapiro, *Wilkins* 40-1).[14] Wilkins' priorities were mirrored in seventeenth- and eighteenth-century fiction, for as Nicolson posits: "The growing scientific interest of the age and increasing belief in the possibility of human flight were leading authors to natural rather than supernatural devices for their fictional voyages" (*Voyages to the Moon* 56). However, the increased focus on scientifically rather than divinely powered aviation did not diminish the allegorical importance of flight, even though the new science advanced a less

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[13] Nicolson notes that "John Wilkins in the seventeenth century was stirred less by [...] literary legends than by travelers' tales of 'authorities' in natural history" (*Voyages to the Moon* 69). Wilkins, who influenced many writers of fictional voyages, was himself inspired by travel narratives.

[14] Robert West points out that in the century after Wilkins, angels were not considered worthy of serious scientific consideration. However, while "most men of intellect viewed [angelology] with complete indifference, with amusement, or which contemptuous hostility [,] they were not necessarily inimical to angels as a biblical usage and as metaphor for a kind of man without man's defects, but they did not permit any metaphysical conviction of angels to disturb the controlling frames of their thought" (West 17). However, eighteenth-century thinkers were still concerned with angels. Addison writes in *Spectator* No. 12, "for my own part, I am apt to join in the opinion with those who believe that all the regions of nature swarm with spirits; and that we have multitudes of Spectators on all our actions, when we think ourselves most alone; but instead of terrifying myself with such a notion, I am wonderfully pleased to think that I am always engaged with such an innumerable society in searching our the wonders of creation, and joining in the same concert of praise and adoration" (50-1). To Addison, then, angels and humans are employed in the same tasks: considering nature and thereby praising God. Moreover, angels are not merely a metaphor, for their omnipresence complicates the solitude of the scientist. Even alone in his or her laboratory, the natural historian is never truly alone, but is surrounded by angels that validate and support the work of experimentation and exploration.

metaphorical interpretation of the world.[15] Crossley notes, "the image of human flight may be an emblem of human aspiration as well as folly, the stuff of both romance and satire, the residue of old myths and the promise of developing technologies, an impetus to wonder or horror or laughter" (56). Metaphors of flight also carry religious significance, as Marjara identifies when he writes about *Paradise Lost*, "rise and fall, as well as up and down, are inseparable from their moral meaning in relation to Heaven on the one hand and Hell on the other. The fall of the angels is a physical as well as a moral fall, since it takes place in the direction of Hell" (151). Stories of flight, therefore, while depicting the possibilities of technology, emphasize the godliness of the scientist, for as he rises by means of his ingenuity, he also metaphorically moves closer to heaven.

Because the possibility of human flight was widely considered and debated, it became a locus in Restoration England for discussions of ethics, human nature, and the importance of science. "By the middle of the eighteenth century a whole cluster of ideas related to human flight, ethical, scientific, religious, and social, had crystallized and been assimilated into the thinking of interested and informed contemporaries" (174), Landa writes. Landa outlines the controversies between scientists and moral philosophers, identifying flight, because of its popular appeal, as a contentious issue. Although published later than *John Daniel* and *Peter Wilkins*, Samuel Johnson's *The History of Rasselas Prince of Abissinia* (1759), in the chapter, "A Dissertation on the art of flying," describing Rasselas' conversations with a scientist constructing a sailing chariot, reflects leery eighteenth-century attitudes towards human flight. Johnson's narrative illustrates his conservatism and his skepticism of the claims of natural historians, just as Swift's *Gulliver's Travels* outlines his distrust of science. In *Rasselas*, when the artist first tells Rasselas about his project, the prince replies, "I am afraid that your imagination prevails over your skill, and that you now tell me rather what you wish than what you know. Every animal has his element assigned him; the birds have the air, and man and beasts the earth" (15). Rasselas' objections summarize the concerns of moral philosophers who objected to what they labeled the unnaturalness and arrogance of flight, for people who wanted to fly were attempting to overturn the created order by mastering a skill that was not given to them by God (Landa 178). When in *Essay on Man,* Pope describes human's place in "Nature's chain" (I. 245), he warns, "The bliss of man (could pride that blessing find) / Is not to act or think beyond mankind" (I. 189-90). Pope identifies both humans' status and dissatisfaction in the great chain of being when he writes, "What would this man? Now upward will he soar, / And little less than angel, would be more" (I. 173-4). Pope and Johnson, through Rasselas, caution that, through pride and disregard for God's created order, scientists who attempt to fly will, like Icarus, destroy themselves. As well as worrying about the moral and spiritual implications of flight, thinkers also feared the destructive powers of aviation, a fear the artist of *Rasselas* identifies when he says,

[15] Fausett writes that experimental science opposed metaphor, defining the "rhetorical tension" of Restoration England as "a desire to embrace the new empiricism and to retain older certitudes of an allegorical order" (*Writing the New World* 76).

"Against an army sailing through the clouds neither walls, nor mountains, nor seas, could afford any security" (17). To those such as Johnson who objected to human flight, it represented the pride of humans, who would only use flight for deadly purposes.

In *Gulliver's Travels*, Swift, like Johnson, disputes the usefulness and viability of human flight, for not only are the inhabitants of Laputa antisocial, but the flying island is ineffectual and morally suspect. At his first encounter with Laputa, Gulliver cannot be sure whether the inhabitants of the island will help or hinder him, but he assumes that they will assist him, inferring from their superior altitude and their clothing that they are "Persons of Distinction" (131). On Laputa, Gulliver is curious to discover the means of the islands' movement, so he goes to the cave of the astronomers, which is ironically one hundred yards beneath the ground (140), rather than on the vast, sunlit surface of the island. The astronomers' laboratory is far removed from the rest of the Laputians, for the flight of the island is controlled secretly, just as the artist in *Rasselas* works in isolation, concealing his project. After Swift records the satiric detail of the location of the astronomers' lab, Gulliver depicts the mechanism of the islands' flight control in great detail, parodying the language of scientific description. The lodestone that causes the island's levitation is located at the centre of Laputa and "acts upon the Stone in the Bowels of the Earth" (143), so although the island ascends, which should metaphorically correspond to the moral superiority of the Laputians, the mechanism for its flight lies beneath the centre of the earth, far from the heaven to which aviation metaphorically aspires. Also, while flight could represent freedom from the physical constraints of the earth, such as gravity, the movement of Laputa is still limited by material rules, for as Gulliver notes, the "Island cannot move beyond the Extent of the Dominions below; nor can it rise above the Height of four Miles" (142-3). Because of the ambiguity of the signification of altitude, Swift utilizes flight both to mock the aspirations of science and to satirize the metaphoric connection between elevation and morality.

When Gulliver discusses the destructive power of Laputa, Swift cautions, as does Johnson in *Rasselas*, that flight could be used for destruction. However, Nicolson notes that Swift's "distrust for the temper of his age gleams through the scientific and political parable of the Lindalinian insurrection, with its implications of the limitations rather than the greatness of man's supposed conquest of nature" (*Voyages to the Moon* 194). The King of Laputa punishes any rebellious towns by hovering above them, blocking the sun, and pelting them with stones, but he rarely dares to lower the island directly onto a town for fear of breaking the adamantine bottom. The island, although a marvel of science, is fragile and ineffectual, for when the citizens of Lindalino revolt, they almost destroy Laputa by putting lodestone into their towers, hoping to pull down the floating island (145-6). The King and his scientists cannot devise a way to thwart the Lindalinians and are forced to give into the demands of the town. Through the record of this incident, Swift identifies both the danger of flight and the futility of fearing it because, in his estimation, human aviation is another grandiose claim of science, absurd and fruitless. Laputa is little more effective than the wings of *Rasselas*' artist, for when they were completed, "the maker appeared furnished for flight on a little promontory: he waved his

pinions a while to gather air, then leaped from his stand, and in an instant dropped into the lake" (18). In *Gulliver's Travels* and *Rasselas,* knowledge of nature and technological skill do not give people more power and importance; they just highlight human ignorance and weakness.

Although Johnson and Swift ridicule and doubt the efficacy of human flight, many other scientists and authors in the seventeenth and eighteenth centuries were excited by the possibility of aviation. According to Nicolson and Gove, who have compiled extensive, although dated, studies of imaginary voyages, Godwin's *Man in the Moon* is one of the first fictional tales of a trip to the moon. Wilkins read and admired Godwin's narrative, published slightly prior to *Discovery of a New World in the Moon,* finding it amusing and inspiring (Nicolson, *Voyages to the Moon* 94; Shapiro, *Wilkins* 40-1). One element of Gonzalez's flight duplicated by many subsequent authors is his "strange sensation of becoming an apparently disembodied spirit" (*Voyages to the Moon* 77) as he ascends to the moon. This legacy not only exhibits the influence of *Man in the Moon,* but also displays the association between flight and a disconnect between body and spirit. In Godwin's text and others based on aviation using flying machines, the translation of body into soul, albeit brief, is accomplished by technological means, but in religious texts such as *Paradise Lost,* the body becomes spirit and rises to Heaven only as a result of a godly life. "Mankind may become a tenth order of angels. [...] Through virtuous effort, he may still ascend. The refinement of flesh into spirit, if it has been earned, will occur after the Second Coming of the Son and the Last Judgement" (44), Babb writes in a summary of *Paradise Lost.* However, in *Man in the Moon* and many imaginary voyages that follow it, technology has replaced virtue as the means of ascension and transformation from body to spirit.

Man in the Moon is not simply a text exalting the power and possibilities inherent in science rather than religion, for throughout the narrative, Godwin negotiates between the two, emphasizing the tension and the cooperation between natural history and the Church. The Church's role as the support of science is especially apparent in Gonzalez's life on St. Helena and his ascension to the moon on his flying machine. Gonzalez the scientist is an agent of the Church and is constantly under the implied protection of Catholic authority. On the island, Gonzalez lives at the small chapel that had been built there (77), so while he is inventing, he is literally under the protection and implicit approval of the church. Although Gonzalez is isolated on his Edenic island, he is always surrounded by the social structure of his Church and country, systems he knows well and in which he is comfortably established. However, when his gansas take him to the moon, he is completely alone during the flight that will eventually lead him to another society, and for the first time in his life, he is separate from any sort of social structure and is in a situation of which he has no experience and which is not mediated by the Church.

His isolation is bewildering and terrifying to him, for during his flight Gonzalez is besieged by "illusions of devils and wicked spirits" who speak to him and promise to return him safely to earth if he agrees to join their horde (87-8). The devils and spirits can play on his fears because he is alone, unprotected by his religious community. His

situation is not unlike Christ's when he was tempted by the devil before he begins his ministry on earth. Although Satan tries to divert Christ from his task by enticing him with food and power over all the earth, Christ does not waver but banishes the devil from his presence (Matthew 4: 1-11). Likewise, the spirits in the air offer Gonzalez food and drink and, says Gonzalez, they "told me that if I would follow their directions I would not only be brought safely to my home, but also be assured to have the command of all pleasures of that place at all times" (88). Because the devils seek to dissuade Gonzalez from his course, using similar temptations to the ones Satan uses with Christ, Godwin connects the journey of Gonzalez to Christ's ministry, but he is careful to emphasize Gonzalez's inferiority to Jesus. In Milton's *Paradise Regained*, the angel choirs sing to Christ after he resists the devil's enticements: "now thou has avenged / Supplanted Adam, and, by vanquishing / Temptation, has regained lost Paradise" (IV. 606-8). Gonzalez is unable to recreate Paradise, although he lived on the Edenic St. Helena, because he cannot completely refuse temptation. While Christ unequivocally resisted the devil's enticements, Gonzalez asks the spirits for time to consider their offers, and he accepts some of the victuals they offer (88), thinking that he has cleverly both resisted and appeased the devils. When he reaches the moon, however, he empties his pockets and finds that the spirits' 'food' is actually rubbish and urine (94). In *Gulliver's Travels*, Swift satirizes the scientists at Lagado by describing their experiments in human excrement (153) and inflating dogs (155), but in *Man in the Moon*, the empty promises of the devils are filth, tempting the scientist away from his pure and laudable journey of discovery.

Gonzalez's frightening and solitary voyage to the moon also recalls images of Faustus, the scholar who enters into a contract with Satan in order to discover "unnatural" knowledge. Indeed, Marlowe equates Faustus' search for knowledge with the death of Icarus, writing, "His waxen wings did mount above his reach / And melting, heaven's conspired his overthrow" (Prologue 21-2). At the end of the story, the Chorus exclaims over Faustus' gruesome death:

> Faustus is gone: regard his hellish fall,
> Whose fiendful fortune may exhort the wise
> Only to wonder at unlawful things,
> Whose deepness doth entice such forwards wits
> To practice more than heavenly power permits. (Epilogue 4-8)

Faustus makes an agreement with Satan, but Gonzalez, although similarly tempted, does not succumb. While the similarities and differences between Gonzalez and Faustus emphasize the moral superiority of Gonzalez, they also demonstrate the worthiness of Gonzalez's goals. The devils entice Faustus away from proper studies to unnatural knowledge, and they try to persuade Gonzalez away from his trip to the moon, back to fame and fortune on Earth. Faustus also flies, but his journey is lauded by the devils because his purpose is to uncover the secrets of astronomy and cosmology, to his own

glory (III. Chorus). Gonalez, although he too desires fame, hopes that his discoveries will also praise God and "[enrich his] country with the knowledge of hidden mysteries" (114). Because his solitary journey will aid others as well as himself, the devils seek to stop it, and therefore, his lunar flight is not evil, unnatural, or "more than heavenly power permits." Besides, by means of his technology, Gonzalez can gather all of the things the devils offer him: on the moon he finds a leaf that satisfies his appetite (perhaps the inspiration for the leaf Jacob Daniel chews in *John Daniel*) and he believes that when he returns to Spain he will gain glory because of his amazing flying machine (95; 114). Although Gonzalez is vulnerable to devils when the Church community does not surround him, he is safe from temptations because the spirits cannot offer him anything that he cannot achieve with his flying machine.

In *The Life and Adventures of Peter Wilkins*,[16] Wilkins crafts his flying machine not to be better or more famous than other people, but to conform to the abilities of the Glumms and Gawreys. Crossley writes about the narrative, "There is a firm connection between virtue and flight, between ethical principals and the natural power of ascent" (60). Johnson agrees, for in *Rasselas* he argues that flight is more than just a metaphor for nobility, for only a person of integrity should be permitted to fly. When Rasselas asks the artist why he does not want Rasselas to speak of the prototype flying machine, the artist replies, "If men were all virtuous [...] I should with great alacrity teach them all to fly. But what would be the security of the good, if the bad could at pleasure invade them from the sky?" (17). Therefore, in *Peter Wilkins*, Paltock demonstrates Wilkins' worthiness before he has Wilkins construct the flying machine, and the narrative describes Wilkins' flight only after Wilkins has reenacted the role of Adam, professed his faith in Providence, and realized that flight equals moral superiority, saying when the Glumms praise him, "[I was] pleased they should think me excellent for something, as I really thought they were on account of the *Graundee*" (195). Wilkins also needs time to discover that Youwarkee's graundee is not an artificial technology, but is natural to her species, for as Crossley observes, Wilkins is "stuck in his habitual categories of classification" (58) and therefore does not recognize the possibility of a flying woman. Wilkins' time on the Arkoe is spent in gaining the virtue and the knowledge he needs before he is qualified to fly. His flight is the culmination and climax of his spiritual development, but it is made possible by his technological achievement. To Wilkins, then, his scientific ingenuity confirms his morality, and the flight in turn validates the piety of his work as a natural historian.

While Wilkins had been unsatisfied in his Eden without being surrounded by material objects, he becomes even more disgruntled when he learns about Normbdsgrsutt, inhabited by superb flying people. Because he and some of his children do not have graundees, Wilkins feels isolated from the Glumms and Gawreys, who look different than

[16] The similarity of name and subject matter between *Peter Wilkins* and the works of John Wilkins is too great to be a coincidence. Shapiro says that *Peter Wilkins* "is indebted to Wilkins for both its title and much of its content" (*Wilkins* 42), and Nicolson calls Peter Wilkins a "worthy descendant of John Wilkins" (*Voyages to the Moon* 142).

him and have superior natural abilities. Wilkins grumbles, "to be a Creature of the least Significancy of the whole Race about one, is a melancholy Circumstance" (136). After he makes his complaint about his separation from his companions, Wilkins embarks upon a course of action that will establish him again in society, and in a position of power. He can overcome his natural deficiencies and social isolation by means of his scientific prowess, and indeed, because of his technology and spirit of acquisition, he becomes the most important and indispensable member of Normbdsgrsutt, making the Glumms and Gawreys dependent upon his inventions and the new colonies and system of commerce he creates. His flying machine, a chair carried by Glumms, is reminiscent of the chair that draws Gulliver up to Laputa (*Gulliver's Travels* 131), but while Gulliver reaches an antisocial civilization of preoccupied scientists, Wilkins the natural historian flies into a welcoming community of people with little mechanical knowledge, ready to learn from his experience. Moreover, because *Peter Wilkins*, unlike *John Daniel*, describes a society already composed of winged people, Wilkins' flight does not upset Pope's great chain of being. Because a set of humans in the narrative can fly, Wilkins is not overreaching what it means to be human, and his aerial journeys are therefore religiously sound.

Once Wilkins devises a way to be carried through the air, immediately he is again self-confident and full of plans to reform the Normbdsgrsutt society. After intense deliberation, he decides to attempt to travel so that he can "reduce a State from the Misery and Bondage of Idolatry, to a true Sense of the Supreme Being" (247). Wilkins is anticipating a position of power over the religion and the politics of the land of flight, emphasized by his royal position on his flying chair. He sits enthroned with his goods following behind, directing his bearers, promising them freedom when they safely alight at Normbdsgrsutt, saying to Nasgig "I will not stir a Step further" (252) if his demands are not met, and appropriating the power of a king. Wilkins gains military might because of his flying machine when he battles Harlokin, recognizing the potential of flight in war, saying "truly, had my Countrymen but the Graundee to convey their Cannon at so easy an Expence from place to place, the whole World would not stand before us" (293). The wings of the Glumms and Gawreys had not been sufficient to defeat Harlokin in combat, but the combination of aviation and Wilkins' cannon is deadly. Although Paltock represents flight as a natural endowment of the Glumms and Gawreys, its full potential is only realized with Peter Wilkins, who links flight to his technology and gains the power to defeat enemies, establish colonies for Normbdsgrsutt, and reform the religious establishment.

John Daniel, like Peter Wilkins, only ascends to the moon when he has proven his religious worthiness. Morris' narrative is already quite advanced by the time Jacob creates the Eagle, and Daniel has already set up his Isle of Providence as a second Eden, satisfactorily settling his children into their homes. The only child who is not content is Jacob who, enthralled by his father's stories of England, builds a flying machine to realize his dreams of rejoining society (126-7). Although Jacob crafts the Eagle in complete isolation, the machine's purpose is to end his solitude and allow him to unite with a society of like-minded people interested in science and technology. To Jacob, who

has lived with only his family on an island for his entire life, the flying machine is not as unusual as it is to Daniel, who knows that no other such device exists in Europe. Therefore, while the two are flying, Daniel cannot fit his experiences into what he knows of the natural laws of the world, so, for example, when he cannot see the moon, he "imagined, that by some accident among the planets, the course of the heavens was altered" (167). On the Eagle, Daniel cannot decipher what is real or not, and he does not appear as a saintly or even a particularly moral person while flying, for as he and Jacob approach civilization, Jacob can establish the veracity of Daniel's stories, discovering that Daniel had misrepresented the value of European society. Jacob rants to Daniel,

> Instead of the knowing creature you have always mentioned mankind to be, and the delight of his Maker; I have yet seen none of them, whose way of life seems to me a whit more rational in its station than a brute, not one of them with whom I would change condition; *for they all seem to have acted to the height of their satisfaction and aims.* (240, my italics)

Jacob's evaluation of humanity reflects the symbolic importance of altitude: Jacob, who imagines, constructs, and operates the flying machine, is a moral person, but those whose goals and expectations are lower, literally, are ignorant and brutish. Indeed, Jacob protests that humans are brutish not because it is their natural position, but because they do not realize their potential. Jacob does not agree with Pope, who writes, "One truth is clear, What is, is right" (I. 294); rather he believes that humans could be more rational, and thereby more pleasing to God, if only they aspire to be so. His ascent on the Eagle, therefore, is not unnatural or arrogant presumption of a role humans are not given by God, but the culmination of curiosity, reason, and ambition that praises God.

Although the flight on the Eagle casts doubts on Daniel's wisdom and on the integrity of human civilization, the Eagle itself is not devalued. Because the flying machine gives Jacob and the reader a new perspective on the world, it exposes truth, even if that truth is painful. The artists tells the prince in *Rasselas*, "You, Sir, whose curiosity is so extensive, will easily conceive with what pleasure a philosopher, furnished with wings, and hovering in the sky, would see the earth, and all its inhabitants, rolling beneath him" (16), but there is little pleasure in the flight of the Eagle in *John Daniel* because it brings the two man farther from their family and home, and Jacob sees the problems in human society. Jacob's death, then, signifies his incompatibility with the flawed civilization he discovers after he leaves the island (255), and it also removes him as a disquieting voice in the text, questioning the veracity of his father. Without Jacob's presence, Daniel's declarations of his wisdom and purity are again unchallenged at the end of his life as Daniel uses the Eagle as Jacob could not, to establish a place for himself in English society.

John and Jacob Daniel experience the aerial perspective of flight, which the artist praises in *Rasselas*. Before they leave the moon, they skim across its surface, viewing the land and searching for inhabitants (181). Flight affords the scientist a large and

comprehensive amount of knowledge of the world, the inverse of the small detail shown by the microscope. However, *Doctor Faustus* and *Paradise Regained* display the religious problems of such a perspective. Faustus' view of the world is given him by the devil Mephostophilis, and it emphasizes Faustus' preoccupation with the physical world, rejecting God. In *Paradise Regained*, Satan tempts Jesus by showing him from the air what Satan could give him. The aerial perspective is designed to make Jesus covet all that he sees. To Satan and to Faustus, to see more of the world is to want more. *John Daniel*, therefore, attempts to assign only scientific advancement, rather than dangerous covetousness, to the aerial perspective.

Aerial ascension, traditionally associated with morality and virtue, is the shorthand by which authors link science and religious purity, because the metaphors and mobility allied to aviation highlight issues important to natural history, the Church, and English society. Flight emphasizes the lofty goals of scientists such as John Wilkins and facilitates discussions of the natural attributes and limitations of humans, debating the possibility and morality of humans overstepping their God-given roles. Flying machines are also examples of the power and potential of mechanical ingenuity, hard work, and the potentiality of the middle class and tradespeople to craft important technologies and improve their position in life, for Peter Wilkins and John and Jacob Daniel are not upper class or wealthy people, yet they construct empowering flying machines. The movement of the flying machine also gives the scientist new powers of observation as he or she can view large tracts of earth and can even travel to and explore the moon. With the flying machine, constructed in isolation and resulting from labour in Eden, the narrative and the scientist, whether Gulliver, Gonzalez, Wilkins, or Daniel, move from solitude to society, taking their technology with them.

3. Social Scientists: The traveling scientist's evaluation of the technology and religion of indigenous societies

After Peter Wilkins completes his grotto home, stocks his larder, marries Youwarkee, and organizes the goods she retrieves from the shipwreck, he turns his attention to his family's religion, arranging their spiritual education with the same systematic attention to detail he displays when he investigates and experiments with the natural environment of the Arkoe. He begins with Youwarkee, for although he assumes from her pious behaviour that she is a Christian, he finds when he questions her that she worships an Image named Collwarr. Rather than being dismayed by his discovery, Wilkins views her different religious creed as a chance to exercise his reasoning to convince her of the error of her beliefs:

> Tho' I was sorry for the Oddity of her Conceptions, I was almost glad to find her so ignorant; and pleased myself with thinking, that as she had already a confused Notion of a supreme Power, I should soon have the Satisfaction of bringing her to a more rational Knowledge of him. (156)

To Wilkins, a proper understanding of God is based on reason, a "rational Knowledge," for he agrees with Joseph Butler, who writes, "the moral system of Nature, or natural religion, which Christianity lays before us, approves itself, almost intuitively, to a reasonable Mind, upon seeing it proposed" (434). As a natural historian who has already demonstrated his ability to comprehend and employ nature, Wilkins is therefore ideally suited to explicate a logical theology to Youwarkee and the Normbdsgrsutt society.

Wilkins' confidence in a rational doctrine reflects the words of Bacon who, after he rails in *Novum Organum* against the "ignorance and reckless zeal" (147) of religion, writes, "Natural philosophy after the Word of God is the best medicine for superstition and most highly recommended food for faith. And so to religion natural philosophy is given as her most faithful servant, the former manifesting God's will, the latter His power" (145). To Bacon, studying nature both demonstrates the truth of God's existence and reveals his characteristics, a sentiment echoed by Robert Boyle, who writes in "The Christian Virtuoso" that "nature will be found very loyal to her Author, and instead of alienating [the natural philosopher's] mind from making religious acknowledgements, will furnish him with weighty and uncommon motives, to conclude such sentiments to be highly rational and just" (541), although he is careful to also write that "the book of scripture discloses to us much more of the attributes of God" ("Theology" 7). While the Bible is not discounted, scientific investigations of the natural world not only exhibit God's works, but also reveal the rationality of God, and the scientist becomes a priest of nature, a phrase Boyle uses in his essays.[17] The Church that worships such a rational God

[17] For example, see Boyle, "Proëmial Essay." Shapin and Schaffer write, "The presentation of experimenters as the 'priests of nature' was extremely influential: their work was held to have direct effects in the establishment of religion and their laboratories acquired a sacred status" (319). Fisch comments,

must also be based upon Reason and knowledge of the natural world for, as Sprat argues, "*Religion* may properly be styl'd the best and noblest part, the perfection and the crown of the Law of *Nature*" (368).[18] Religion and science are not separate, but while they depend upon each other, science demonstrates the veracity of Christian dogma, Sprat writes, because "the universal Disposition of this *Age* is bent upon a *rational Religion*" (374). Therefore, natural historians such as Gonzalez, Wilkins, and Daniel, who have proven their scientific ingenuity and elevated themselves above a metaphoric Eden, are eminently suitable for the proclamation of Christianity and the establishment of the Church amongst the indigenous societies they encounter.

If the scientist has the power to command the Church, what exactly is the Church? As colonialism continued, the Church was becoming increasingly fragmented among the settlers, for as Schlenther writes, "Growing colonial impulses intent on celebrating the blessings of free trade in goods were accompanied by equally potent forces expounding free trade in religious ideas and practices" (128). The Church was fracturing in an increasingly individualistic society liberated by the ability to make money and transport goods, countering what Gascoigne calls "the older concept of a united Christendom which transcended national and regional boundaries by maintaining a common faith and civilisation in the face of dynastic conflict" (148). However, the ideal of a unified Church was not simply a forgotten or "older concept," but a notion espoused by natural historians. Sprat writes that the Royal Society surpassed religious and national boundaries, composing instead a "Philosophy of *Mankind*" (63). This does not mean that the Royal Society planned to do away with religion or national consciousness, for Sprat and especially Boyle repeatedly assert the importance of the Church of England; rather, it implies that scientists believed that their pursuit of knowledge would transcend established Church and State barriers, uniting people in a new way. Indeed, some critics have connected experimental science to latitudinarianism, moderate Anglicanism known for its religious tolerance, espoused also by John Wilkins (Brooke 115). Science would reform the Church into an establishment based upon natural theology, Bacon and Boyle hoped, uniting the faithful, because the schisms in the Church were the result of different human-invented philosophies which would be abolished by a better understanding of God through nature, scientists believed. Therefore, through experimental science, the Church could become unified into a rational group of believers.

Because of his technological superiority and his natural understanding of God, the scientist had the means to convert a non-Christian indigenous society, but before he could do so, he had to determine how the people fit into a scriptural interpretation of the world. John Wilkins, contemplating the probability of the moon being inhabited, ponders

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"The inventions, discoveries, and observations of the naturalist, could thus all be seen as having a religious object and as enabling him to achieve a more exalted form of worship than the vulgar" (255).

[18] See also Thomas Browne, *Religio Medici*. He writes, "the World was made to be inhabited by Beasts, but studied and contemplated by Man" (15). Therefore, he directs his readers to "suck Divinity from the flowers of Nature" (18).

"whether [lunar people] are the seed of Adam; whether they are there in a blessed estate, or else what means there may be for their salvation?" (100). Citing proofs from classical authors and using what he considers scientific speculation, Wilkins debates the religious significance of other unknown societies, albeit with some caution: "I dare not jest with divine truths, or apply these places according as fancy directs" (102). However, for most authors of fiction, considering other societies was a serious endeavour to understand the religious implications of travel and exploration. Indeed, Nicolson states that imaginary voyages "made even simple minds grapple with the theological problems of 'other worlds,' and other men and women in those worlds" ("Cosmic Voyages" 105-6). Therefore, the scientist explorer had to place indigenous people in a religious category in the same manner as he catalogued the flora and fauna he found. Correspondingly, Boyle instructs travelers to make a careful account of any inhabitants of the places to which they travel, noting in particular "their Stature, Shape, Colour, Features, Strength, Agility, Beauty (or the want of it) Complexions, Hair, Dyet, Inclinations, and Customs that seem not due to Education" ("General Heads" 188). As well as having them record the physical characteristics of indigenous people, Boyle directs travelers to investigate the customs, which includes religious ceremonies and beliefs, of the people, but he equates those customs with nature. Although European scientists promoted natural theology, they did not reject the Bible, and what they knew about nature they placed in a Christian framework. Therefore, while their religion incorporated science, it did not depend upon it. However, whatever religion indigenous people have is part of the natural world and is inherent and essential to them, explorers considered, so understanding the religion of a people will also demonstrate some truth about the natural characteristics of the environment. Therefore, as Rubiés points out, "The description of people, their nature, customs, religion, forms of government, and language, is [...] embedded in the travel writing produced in Europe after the sixteenth century" (242). The impetus to describe people and their actions comes from natural history and contributes to imperialism, for when explorers investigate the religion of indigenous societies and place them in the natural world rather than the spiritual, they devalue and dehumanize those societies, narrating spiritual superiority to the Europeans who have the implicit right to own and control the lands and religion of native people.

European travelers took their authority over indigenous people for granted because of their technological advancement. To Europeans, their perceived technological supremacy made their culture and religion better than others'. To establish their technological, and therefore religious, preeminence, European explorers devalued indigenous artefacts by collecting them. The practice of collecting and exporting material possessions from the "new world," apparently for the advancement of science, increased the power of the center, Western Europe, over the periphery, colonized non-European lands. Philip Edwards writes in his book *The Story of the Voyage,* "The domestication of the exotic was achieved not only by inscribing it in writings and drawings but by bringing home specimens of creatures to be put in museum cases and plants to be put in botanical gardens" (100). Amassing and displaying plants and animals from other lands made

them European property, and incorporated into the European world view. Not only did explorers carry home the flora and fauna of the lands they visited, they also brought back cultural and technological artefacts from the natives of those lands.[19] Collecting was in accordance with directions from the Royal Society, for scientists wanted indigenous artefacts, or at least a description of them, to add to their banks of data and therefore be merged into a British view of natural history and of the world. In his book *Curiosity and the Aesthetics of Travel Writing, 1700-1840,* Nigel Leask, investigating the implications of collecting curiosities, posits that "The power of the centre to act at a distance upon unfamiliar events, places, and peoples lies in its prior ability to bring them back home. Distant places, events, and objects must be rendered *mobile, stable* [...] and *combinable.*" (20), concluding that the gathering and arranging of curiosities allows the collector to construct a representation of the distant world, thus both understanding and possessing the periphery (21). Collecting and curiosity are therefore extremely fraught and influence social, imperial and power relations, giving mastery to the one who possesses and gazes upon the marvelous object. Gathering technological artefacts is therefore not an innocent, scientific task, but a means to control and devalue indigenous people. Because *Man in the Moon, Peter Wilkins,* and *John Daniel* are fictional travel narratives, the journeys recounted in the texts do not yield any physical artefacts, whether cultural or biological. However, the authors attempt to do the next best thing: they name and describe in great detail the natural environment and the material objects of the people they meet, essentially narrating curiosities which the European reader can picture and compare with other Western artefacts, incorporating the fictional objects into European knowledge systems, granting the Western protagonists of the narratives the power to manipulate and control the indigenous societies, and therefore also their religion, that produce and are equated with the artefacts. Religious superiority, therefore, is connected to technological advancement.

In Godwin's *Man in the Moon,* Gonazalez's experiences on the moon portray his attempts to imagine the spiritual significance of other societies. He addresses the questions raised by Wilkins' *Discovery,* describing the Christian knowledge of the lunar people and essaying some possible connections between the people of the earth and of the moon. Immediately upon seeing the lunar people for the first time, Gonzalez calls out in fear, "Jesus" (96). When they hear the name, the inhabitants of the moon all bow down and repeat it, which Gonzalez takes as evidence that the people know and need Jesus, implying that the moon is not a perfect, innocent Eden, but a fallen civilization in as much need of a saviour as is earth society. However, their worship of the name of Jesus is suspect, although Gonzalez does not realize it, because the moon people do not speak

[19] For example, Cook and Johann Reinhold Forster, the man who accompanied Cook on his second voyage, donated a huge collection of indigenous artefacts to the Ashmolean and British Museums, a collection comprised of such objects as "clothing of all kinds; manufactured cloths; domestic furniture and utensils; tools and weapons in great variety; hunting and fishing equipment; musical instruments; and a comprehensive selection of other artifacts" (Ovenell 168).

the same language as Gonzalez, and as he later discovers, in the lunar tongue, "Martin" means "God." However, Gonzalez does not question this linguistic inconsistency, accepting it uncritically along with every facet of lunar society, choosing to equate the religious life of the moon people with the Roman Catholic Church. Of a man named Imozes, Gonzalez writes, "He commandeth in all things throughout the whole globe of the moon concerning matters of religion and the service of God, as absolutely as our Holy Father the Pope doth in any part of Italy" (102). Although he wants to meet Imozes, Gonzalez is forbidden, just as he is refused answers to many of the questions he asks. One consequence of this refusal, although it highlights the indifference and near contempt the lunar people have for him, is Gonzalez's forced reliance on his senses. His skills of observation and invention, which enabled him to create his flying machine while on St Helena, are also necessary on the moon for Gonzalez to understand the religious implications of the things he sees there. Gonzalez's power as a scientist to watch and hypothesize permits him to mediate between the lunar inhabitants and the people of Earth, drawing parallels to the Roman Catholic Church of which he is a member. His interpretive skills, therefore, depend upon both his training as a natural historian and his education in the Church.

Gonzalez not only draws conclusions about the religious piety of the lunar people, he discovers the origin of certain earth societies. John Adams argues that "the Lunarians, so devoid of human traits, are not simply ourselves nurtured in a better society" (13) and I would agree, equating them instead with angels because of their ability to fly (98); their giant stature, awe inspiring rather than grotesque in a Brodingnagian way; and their musical language, reminiscent of the music of the spheres that the residents of Laputa try and fail to duplicate (Swift 136). However, the lunar people can discern at childbirth whether or not infants will become criminals, and they "change them for other children before they shall have either ability or opportunity to do amiss amongst them" (107). They send the degenerate children to "a certain high hill in the north of America" (107), taking back from earth morally superior children who will enhance their society. Adams writes, "In this imaginative literary conception, then, cultural differences between Europeans and ethnicities they had recently encountered were perhaps more understandable when the nonhuman origins of the latter were taken into account" (13). His encounters on the moon teach Gonzalez about the religious significance of non-European people; they may be descendants of angelic beings, but they are not human and are inherently inclined to crime, which is demonstrated before he flies to the moon, when he is threatened by a group of these lunar outcasts, a "savage kind of people" (85) who live on the side of a hill on the Isle of Teneriffe and who try to kill Gonzalez as he soars above them.[20] Non-Europeans, therefore, are religiously suspect because they are cast out of the utopian moon, and their moral inferiority is reflected in their attempts to hinder the progress of science. Spiritual degeneracy and the distrust of natural history go hand in hand, and vice versa.

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[20] See John Adams, "Outer Space and the New World in the Imagination of Eighteenth-Century Europeans," p. 13.

When Gonzalez leaves the moon and alights in China, he demonstrates that he will only share his scientific knowledge with a European, Christian society. Fearing theft, Gonzalez hides his treasured gems and does not tell the mandarin his whole story (111-3), for Gonzalez seeks recognition only from other Europeans. Although Gonzalez calls the mandarin a "man of quick apprehension and withal studious of novelties" (112), he narrates that the Chinese arrest him because they believe he is a magician, and the mandarin confers with him, hoping to learn more about magic (113). Their interest in magic displays their lack of interest both in rational experimentation and in God's providence. Accordingly, the Chinese can produce no technology of their own, relying instead on "European trifles [such] as clocks, watches, dials, and the like, which with [them] passed for exquisite rarities" (114), mechanical devices that, moreover, are given to the Chinese by the Jesuits. Science and technology, therefore, are in the hands of the Church; not controlled by the outcasts of the moon who form indigenous societies outside of Europe.

Rather than only describing the religion of another culture, *John Daniel* is a narrative depicting the beginning of a new Church, progressing from Adam and Eve alone in Eden to a large Christian family, as Daniel says to Ruth: "I thought it our duty to propagate our species, that we might raise people for our great creator, to exercise his benevolence upon, and who might be capable of returning Him praise for it" (82). Daniel is both the progenitor and the spiritual leader of his family, which forms the society of the Island of Providence, and he delights in his role. However, after he and Jacob fly away on the Eagle and meet other societies, Daniel strangely abandons his role as Christian advisor and becomes an observer rather than a performer. On the Eagle, he gains a broad and inclusive perspective on the world, but he loses much of his personal involvement in the workings of his surroundings and the people he meets. Although Daniel emphasizes the strangeness and exoticism of the other societies he encounters in the strange lands he reaches, Morris depicts Daniel as the alien. Daniel's inability to relate to indigenous people is especially pronounced on the moon, a part of the narrative in which, Baines writes, Morris "makes an attempt to imagine non-allegorical Selenites of an extreme difference" (3). John Adams disagrees, arguing instead that the moon "apparently is roughly interchangeable with New Mexico in the mind of the author" (14).[21] Whether or not the lunar inhabitants are allegorical or not, Daniel cannot communicate with them, is not satisfied by their food, and learns very little of their habits. However, he does give a lengthy recitation of his experience of their religious practices, especially their complicated ritual apparently in worship of the sun. Unlike Wilkins, Daniel does not reform the lunar Church, saying only this about his conversion efforts:

> I pitied their ignorance, and attempted to shew them, that the sun which they had been making supplications to, was so far from being the giver of life of itself, that it was but a creature (as we were) of the great Giver of

[21] To connect the moon dwellers to the inhabitants of New Mexico, Adams points out the copper coloured skin, long hair, and tortilla diet of Morris' lunar people (14).

> life, and Maker of the world; and would have demonstrated to them, that he was only to be beheld by the understanding, not by the bodily eye; but I fear, that all my endeavours for their information was abortive, for I could not discern them a whit wiser for them. (177-8).

Adams attributes Daniel's lack of success to Morris' analogy between the lunar people and the inhabitants of New Mexico, writing, "Like the Indians of New Spain so often represented in the tracts of missionaries and conquerors, they are sun worshippers resistant to entreaties urging conversion to Christianity" (14), but Daniel's inability to reform the lunar religion is instead connected to his role as a natural historian. Daniel does not "urgently entreat" the people of the moon because his role is not to teach but to learn, following Boyle's directives for travellers. Indeed, when he and Jacob reach Lapland, Daniel uncritically records the ritual by which the men invoke their deity, and he believes their prophecies (235-6). While Daniel's faith in God is strengthened by his sojourn on the island, and he communicates Christianity to his children, he does not have the ability nor does he feel he has the duty to convert other people.

Daniel does not feel obliged to transmit his knowledge to indigenous people because his technological advancement makes him consider himself superior to them. On the moon, he describes the lunar inhabitants as if they are unintelligible animals, children, or servants who cannot match his and Jacob's physical size or scientific knowledge, and even seem uninterested in the Eagle. While Godwin's moon dwellers are large, dynamic, and powerful, Morris' people are pale, colourless, and stationary, confined to a single valley, lacking the liberating mobility of Daniel and Jacob. The sea creatures that the men meet on another island, although they are intelligent and thoughtful, are also limited by the boundaries of the island and the surrounding waters. When Daniel meets them, he tries, as Gonzalez does on the moon, to determine their possible salvation, wondering, as Jacob does at first, if the sea creature is a devil (191). Daniel soon discovers that the man, like him, knows God by "contemplat[ing] on the works of the great Creator in the deeps" (208), understanding God by nature rather than by only the Bible, but Daniel is still uneasy because of the grotesque appearance of the man and his family. Intrigued by a locked cabinet he discovers, Daniel opens it, reads Joanna Anderson's journal, and is repulsed to find that the man and his sister are the progeny of a sea creature, causing Daniel to dislike the man, who he now thinks of as a monster. He does not tell the man about his discovery, however, for as Daniel writes, "Now he took himself for a true descendant of the human species, depraved only by accident" (225). It seems that Daniel, because he seeks for and finds a rational, scientific explanation for the unexplained, miraculous birth, promotes science over a blind faith in providence, rather than Wilkins, who unquestioningly accepts the old Ragam's prophecy. However, Sprat would not agree that Daniel is being sacrilegious, arguing instead that experimenters are quick to suspect new miracles because they know the natural causes of events. Their suspicions support the Church because they are protecting the number and veracity of Biblical miracles (Sprat 360). Daniel's mistrust and distance from the sea

creatures thereby enables him to discover what they really are, and his scientific curiosity and observational skills guide him to a better understanding of the religious significance of the family.

In *Peter Wilkins*, Wilkins takes a much more authoritative role in the Church than do Gonzalez and Daniel. When he first discovers that the flying people worship an idol, Wilkins decides to reform their Church because he believes that religion should be rational; therefore the scientist is the logical leader of the Church. To Wilkins, every mention of the God Collwarr is an opportunity for rational debate, first with his wife (158) and then with the Ragams, the priests of Collwarr (276 ff). Wilkins even describes when and how to debate effectively, and his narrative thereby becomes an apology for the existence and proper worship of God, and a handbook for converting native societies.[22] He does not attempt to teach his protégés about God, Christ, and the Bible, but instead about the "Supreme Being" (247), a God that Wilkins can explain logically, appealing only to the rationality of the Glumms and Gawreys rather than citing proof from the Bible. Wilkins' approach to religious instruction is controversial because he does not begin with Scripture but with Reason, only finding a Bible and instructing the Ragams, the priests of Collwarr, in it in the penultimate chapter of the narrative, thereby grounding their religious conversion in natural theology rather than revelation. Paltock, to assure his readers he is not denying the value of Scripture, has Wilkins write about the Ragam's response to the Bible, "they, from the Novelty of the Story, at first grew so exceeding fond of it, that upon the proper Expositions of it, I taught the Ragams afterwards to make, they began to apply it seriously to religious Purposes" (371). The religion Wilkins espouses, however, is based first upon what Boyle calls "the book of nature" ("Excellency of Theology" 7) rather than Scripture, because Wilkins converts the Glumms and Gawreys by appealing to sense and logic rather than faith.

Not only are science and reason the bases of the new religion Wilkins establishes in Normbdsgrsutt, but science also fulfills the prophecy made by the old Ragam who had rejected the Idol of Collwarr and who had foretold that a man fitting Wilkins' description would save the country from rebellion (243). This prophecy complicates Wilkins' advancement of natural theology, for as much as he promotes a rational religion, his arrival in Normbdsgrsutt is in response to a new revelation. However, Wilkins fulfills the prophecy by using his ingenuity and technology, while inversely, the religious imperative of the prediction drives the invention of his flying machine, which is a requirement of the prophecy. While the Church is the impetus for action in this case, when he reaches Normbdsgrsutt Wilkins works to curtail the power of the corrupt Ragams who have, Wilkins discovers, withheld the full prophecy of the old Ragam from the Glumms and Gawreys, omitting to tell them that the old Ragam had called for the abolition of idol worship (278). Even King Georgetti is afraid of the Ragams, nervous that they will turn the people against him if he does not fall in with their wishes (269). After Wilkins meets Georgetti and discusses with him the power of the Ragams, he remarks, "I could not help

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22 See Paltock, *Peter Wilkins*, p. 225.

reflecting with myself, how nearly this distant Prince, and his State, copied some of my Neighbours in *Europe*" (269). The Ragams are thinly veiled representatives of Catholicism, worshiping idols, misleading the people, and resenting Wilkins who teaches them how to lead a church service without the idol of Collwarr. While they continually oppose the Church reformation efforts of Wilkins, who states, "in every Project I had my View to advance Religion" (305), the Ragams also challenge the supremacy of science and reason. When they try to sabotage Wilkins' plan for colonizing Mount Alkoe by reinforcing the people's superstitious dread of the place (347), the Ragams are clear examples of what Bacon warns against in *Novum Organum*: "Nor should we forget that in all ages natural history has come up against a vexatious and awkward adversary: namely superstition and blind, immoderate religious zeal" (143). While Wilkins wants to advance religion, he must first reform the church from Catholicism, which hinders the advancement of natural history, to Protestantism, which appeals to an individual's intellect and experience of the world. *Peter Wilkins* therefore espouses what Bacon and Sprat imply—natural theology is Protestantism.

After Wilkins' emphasis on rational debate and his quiet arguments with his wife and with Georgetti, convincing them of the error of worshiping the idol Collwarr, his public denunciation of the Ragams and Collwarr is a dramatic spectacle. Wilkins addresses a large crowd of Glumms and Gawreys, and following his recitation denying the power of the idol and indicting the Ragams of falsehood, he cries out to the populace, "Can any of you believe this stupid Piece of Earth hears me?" (280), decapitating Collwarr with his sword. Before his appeal to the rationality of the people can be effective, Wilkins must provide them with a visual representation of both his argument and his power. His reformation of the Church of Normbdsgrsutt, therefore, is achieved by the methods espoused by experimental science: connecting observed data with rational hypotheses. Indeed, Wilkins' beheading of the image is a public test akin to the communal experiments Sprat promotes, writing, "In *Assemblies*, the *Wits* of most men are *Sharper*, their *Apprehensions readier*, their *Thoughts fuller*, than in their *Closets*" (98). Wilkins argues that if Collwarr's image has power, it will revenge itself on Wilkins if he harms it, and then he tests his conjecture before the entire assembly so that they can witness and confirm the veracity and outcome of the experiment. The methodology of natural history gives Wilkins the tools to reform the Church and perform the spectacle that, Wilkins concludes, "ended the great Affair of Religion" (282).

The disturbing violence of the decapitation scene is repeated after Wilkins defeats the army of Harlokin and then travels through the Western lands, overhauling the government and the Church, perhaps revisiting the English civil war. He commands, "Let Publication be made, for the Destruction of all small Images; and let the Harbourers of them [...] be slit" (307). After he makes the proclamation, he "hacked the new Idol to pieces" (307), ruining the large image constructed in the West, just as he threatens to injure anyone who does not acquiesce to his religious reforms. Richard Drayton writes that "by the late seventeenth century [...] the pursuit of knowledge, commerce and colonies, religious piety, and a nascent patriotism were tightly bound together" (234), and

in the scene of Wilkins' Church reformation in the West, knowledge, colonialism, and religion are united. Part of the colonization of the West, and later of Mt Alkoe, is the introduction of a new, Protestant doctrine, disseminated by Wilkins, the European pursuer of knowledge. Drayton continues, "The new natural philosophy made its own potent ideological contribution to the making of an Imperial Britain. The Scientific Revolution provided a vision of Nature ordered by laws, and subject in turn to those who discovered those rules" (234). The scientist not only controls nature, but he also has power over the indigenous society that is equated with the earth. Wilkins considers himself a man of means who understands and has dominion over his environment, but he views the people of Normbdsgrsutt as, in a sense, part of nature, for their clothes, wings, and "boat" are a part of their physiognomy. Also, the flying people do not rely on the power of fire—they are frightened by Wilkins' gun, they light their compartments with Sweecoes, living creatures (272), and they boil their food in hot springs (319). Wilkins does not consider their tools to be technological, so he is the only person in the land with any scientific expertise. With his knowledge of nature, his superior and powerful artefacts, and his rational mind, Wilkins the scientist regards himself as the proper leader, especially in the Church, of the land of flight. At no time is his authority more apparent than when Wilkins renames Normbdsgrsutt. Stephen Greenblatt reflects about imperial naming:

> The founding action of a Christian imperialism is a christening. Such a christening entails the cancellation of the native name—the erasure of the alien, perhaps demonic, identity—and hence a kind of making new; it is at once an exorcism, an appropriation, and a gift. Christening then is the culminating instance of the marvelous speech act: in the wonder of the proper name, the movement from ignorance to knowledge, the taking of possession, the conferral of identity are fused in a moment of pure linguistic formalism. (83)

The Glumms and Gawreys decide to change the name of their country from Normbdsgrsutt to Sass Doorpt Swangeanti immediately after Wilkins has defeated the Western armies and is about to control the governments and reform the Churches of Georgetti's new territory (304). The renaming of the country is thus the culmination of ownership, religious reform, and technological mastery.

The new title of the land of flight is a result of Wilkins' lack of ability: he cannot pronounce "Normbdsgrsutt." This small detail reflects some of the problems Wilkins has as he interacts with an indigenous society composed of people who are physically very different than him. Wilkins' knows that he has interfered, and not necessarily for the best, in Normbdsgrsutt culture: "I am afraid, I have put them upon another way of thinking, tho' I aimed at what we call civilizing of them" (215). Just as Wilkins had coveted more possessions the more goods Youwarkee brought back from the ship, so the Glumms and Gawreys are not longer content with the simple, idyllic lives they led before

Wilkins came and introduced them to new technologies, colonies, and commerce. Wilkins is both regretful and elated by the change he causes in the country, concluding at the end of the narrative that the flying people are "so fond of [the Conveniences and Superfluities of Life], as rather willingly to part with Life itself, than be reduced to the State [he] found them in" (372). While Wilkins could recreate Eden on the Arkoe, one that he considers more promising than the first Paradise because it is based upon science and technology, he cannot improve the indigenous society he lives among to be superior to Britain; rather, he recreates Europe, not a colony but an imperial power with peaceful relationships with its neighbours and with flourishing trade.

Although Wilkins may not be able to invent a social system that is different or better than the one he was born into, he can create a unified Church. Bacon and Sprat believed that the pursuit of science would cause the unification of religion and the abolition of factions in the Church, although, as Schlenther points out, this was not the case in British colonies. However, in the imaginary world of *Peter Wilkins*, Wilkins the scientist and rational thinker can begin a new Church, just with his family, and he rejoices when, as a result of his careful instruction of his wife and children, he had "a little Christian Church in [his] own House, and in a flourishing way too, without a *Schismatick* or *Heretick* among [them]" (159). Beginning a new spiritual journey in an Edenic environment, after being reborn from the long subterranean passage, Wilkins can unify the Christian faith, beginning with his household and extending to the land of flight. Because he establishes a firm spiritual foundation with his children, they continue in their Christian faith even when they live in Normbdsgrsutt, although Wilkins once has to reprimand them, reflecting: "It is strange how soon young Minds are tainted by bad Company" (271). The religious unification Wilkins creates in his family and in Normbdsgrsutt is a utopian one, for it reflects the hopes and aims of experimental scientists such as Bacon, Sprat, and Boyle, and does not mirror the actual situation in Britain's colonies.

Just as Wilkins' church unification is fictional, Daniel's benign research into indigenous societies and their religion is a narrated innocence, for travellers did not abstain from teaching Christianity to native people.[23] His apparent refrain from Church reformation is what Pratt calls "anti-conquest." Anti-conquest is, as defined by Pratt, a "utopian, innocent vision of European global authority" (39) in which explorers disguise their imperialist agenda, consciously or unconsciously, behind the veil of an apparently non-partisan, non-political, and non-violent investigation of the physical world. While scientific studies, then called "natural history," undertaken for laudable goals such as the composition of a "solid and useful philosophy" ("Directions" 141), seem harmless, Pratt argues that "natural history provided means for narrating inland travel and exploration aimed not at the discovery of trade routes, but at territorial surveillance, appropriation of

[23] Greenblatt and Schlenther both comment on the missionary work of Britain in its colonies, Schlenther writing that "religious competition, sparked by aggressive Anglicanism, marked the early years of the eighteenth century in the mainland colonies" (135), and Greenblatt noting that colonizers argued about the "process of conversion" (8) of indigenous people.

resources, and administrative control" (39). Voyages of scientific exploration served the dual purpose of making the traveler feel innocent of violent aggression against indigenous people while also advancing a European colonial program. This is especially apparent in fictional travel narratives, in which the travelling scientist and his interactions with indigenous technologies and the Church is an ideal representation of the doubts and aspirations of philosophers engaged in thinking about natural science and its implications for the Church and the rest of the world.

The tension between imagined and actual experience of scientists and their role in the Christian conversion of indigenous cultures accounts for the vast differences in the adventures of Gonzalez, Wilkins, and Daniel. Each man lives alone in an Edenic environment and constructs a marvelous means of flight, but once they travel and meet other people, their stories diverge. Gonzalez is awed by the moral superiority of the lunar people, he records their religious practices, and he equates them with Roman Catholicism, correlating their high Christian ethics with their technological skill, a principle he inversely applies to the residents of China. Wilkins becomes a leader in the Church, reforming it by means of rational argument and colonial violence, and while he unites religious factions, he is uneasy that some of his reforms may have corrupted rather than enhanced the land of flight. Daniel is neither awed by the people he meets nor inspired to achieve power over them because he believes he is already superior by virtue of his technology, and he chooses instead to observe and record religious practices. For each scientist, however, technology and rational thinking allows him to survey and perhaps influence the Church because his time alone in Eden and his new perspective during flight, looking down over indigenous societies, gives him the moral and intellectual high ground.

4. Wa/ondering Witnesses: The traveling scientist's literary relationship with the community of readership

While he is narrating the events that lead to his flight to the moon, Gonzalez in *Man in the Moon* describes a captain who returned to Spain, "boasting and sending out his declarations in print of a greater victory he had obtained against the English near the Isle of Pines" (75). After he denounces the captain's claims as lies, Gonzalez proceeds to announce his own triumph: his ability to fly to the moon, the recounting thereof he says, "hath proved a means of eternising [sic] my name forever with all posterity" (75). However, simply printing his story is not enough to establish his veracity, as the case of the lying captain demonstrates. Gonzalez needs to convince his readers of his truthfulness by establishing himself as a reliable witness, both as a scientist and a Christian, thereby using his text to establish a community of like-minded readers.

Godwin is concerned to represent Gonzalez as a real rather than a fictional person, because one of the objectives of *Man in the Moon* is to proclaim the powers and possibilities of science. Early fictional narratives, Shevlin writes, "presented their plots, often by way of prefatorial or titular claims, as a means by which readers could gain instructions about life and lessons in self-improvement while simultaneously being diverted" (386). In order for fiction to function as a guidebook, authors had to convince their readers that their characters were real and trustworthy narrators, so that readers could imagine themselves able to act as the characters do. For authors such as Godwin, Paltock, and Morris, the task of verisimilitude is especially difficult because of the outlandish plots of their texts, but they still attempt to construct their characters as Christian natural historians whose accounts can be trusted because of their actions, their autobiographical style, and the testimonies of their peers. To create recognizable and believable characters, authors assign them to certain worldviews and systems of thought, so that they will think and act consistently. Michael McKeon writes, "To recount the individual life 'traditionally' entails the location of it within a controlling pattern" (90). One of the patterns available to authors was the spiritual autobiography, for "the spiritual autobiographer disclaims responsibility for his own structuring power, attributing to God the meaningful form that he describes in his life" (Spacks 38). However, natural history provided another social structure, for experimental science needed "the production and protection of a special form of social organization" (Shapin and Schaffer 22), one that was promoted by the Royal Society. Sprat, in *The History of the Royal Society*, describes the importance of entrusting experiments to a large number of people from different religions, countries, and professions (63-7), although he adds that the Society is rightly composed mostly of gentlemen (67). Indeed, the Society was numerous, having 228 members by 1669 (M. Hunter, *The Royal Society* 8), but the group was exclusive, for a person could only join if elected, and he had to pay a high entrance fee.[24] Sprat, however,

[24] On admission, a Fellow of the Royal Society contributed a fee that was already raised to forty shillings by 1662. A nobleman was required to pay five pounds, and all Fellows then advanced one shilling a week in subscriptions (M Hunter, *The Royal Society* 18). Women were forbidden to join the Royal

hopes that the public, especially the mercantile class, will participate in the endeavours of experimental science, for he notes, "the *Artificers* should reap the common crop of their *Arts*: but the *publick* should still have *Title* to the miraculous productions" (75).[25] The Society wanted the assistance of others to gather information and increase the popular appeal of science for, for as Pratt writes, "Journalism and narrative travel accounts [...] were essential mediators between the scientific network and a larger European public" (29).[26] The Royal Society wanted every opportunity to promote experimental science because it had to contend with both the unsavoury image of alchemists and with anti-science satires such as *Gulliver's Travels* and Shadwell's *The Virtuoso.* Indeed, Sprat's *History* was commissioned by the Society as an apology and a defense against critics (Hunter, *Establishing* 48). Attempting to inspire and educate the public, the Royal Society set up a social framework of natural historians, a community in which authors could situate their fictional characters and make them recognizable and reliable.

Although the protagonists of *Man in the Moon*, *Peter Wilkins*, and *John Daniel* live for many years alone or surrounded by non-European cultures, the community in which they consider themselves to belong is that of Christian Europe, although only Daniel reaches England at the conclusion of his narrative. Their experiences on their journeys may be private and individual, but their recounting of them is a testimony intended for a widespread European audience. However, they also delimit the group they address, for the construction of community is not necessary only for fictional travel narratives, but is a reflection of a requirement of experimental science. While discussing Boyle's air pump, Shapin and Schaffer point out,

> The establishment of a set of accepted matters of fact about pneumatics required the establishment and definition of a community of experimenters who worked with shared social conventions: that is to say, the effective solution to the problem of knowledge was predicated upon a solution to the problem of social order. (282)

While the Royal Society formed a part of the society of like-minded scientists, authors of scientific texts extended the influence of natural history by what Shapin and Schaffer call

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Society, although some wealthy nobles such as Margaret Cavendish contributed their patronage to the Society. Cavendish also famously visited the Royal Society on May 30, 1667 (Bowerbank and Mendelson 24-5).

[25] In order to disseminate knowledge to the public, although how widely the books were read is a contested issue, the Royal Society was granted its own *imprimatur* (Shapin and Schaffer 292).

[26] See also Jacobs, who writes that within one generation of the formation of the Royal Society, "mechanically based science had left the hands of its first crusaders and visionaries and gone into the everyday language of journalists, learned societies, coffeehouse lectures, and church sermons" (*Cultural Meaning* 105).

"the literary technology of virtual witnessing" (61), by which authors disseminate their knowledge by describing it, causing their readers to watch an experiment or visualize an object by means of literary, rather than actual, participation in a shared validation of natural history.

The community which Godwin, Paltock, and Morris identify and address is one both preoccupied with science and deeply grounded in Protestantism. In order to identify himself with that community, the narrator first has to portray himself as a reliable narrator of scientific fact, becoming what Leask calls a "mobile recording machine" (70), but one whose integrity as a scientist is unquestioned. A credible man, according to Shapin and Schaffer, is a modest person (65) — Sprat, for example, clears himself of any suspicion of arrogance by declaring he wrote the *History* with "weak hands" (5). The narrator must also be virtuous, as McKeon describes:

> Although equipped only with the basic physical accessories of universal, unheroic humanity, [the travel narrator] is distinguished by those private virtues of honesty, sincerity, naturalness, and integrity that guarantee the perspicuous observation and documentation of truth. For the travel narrator, the great task of introspection is first to disclose and to activate these private virtues in himself, and then to communicate them to his reader. (104)

McKeon adds that in order to appear truthful, narrators must divest themselves of any hint that they might be personally advantaged by reporting falsehoods (108). He suggests that a narrator's claim of a humble social standing and lack of interest in advancement strengthens verisimilitude, but I would add that writers highlight their lowliness to emphasize the potential of science and the scientist. If a socially insignificant person can travel, record, further knowledge, and in the case of fictional texts, explore the moon, surely the reader is also capable of such feats. Therefore, as much as the virtues and humility of the narrator underscore his reliability, they also increase the inspirational and instructional value of the text.

As well as presenting their characters as reporters reliable because of their scientific skill and disinterest; authors also portray them as good Christians. The religious conviction of narrators reflects the way the Royal Society represented itself, for experimenters "consistently displayed themselves as a godly community" (Shapin and Schaffer 318) and Boyle, J. Hunter writes, tried to "make the forwarding of science and pious everyday religious practice seem one and the same thing" (286). The combination of science and religion in popular texts also indicates the reading tastes of eighteenth-century England, for on the one hand, "by far the greatest single category of books published in the eighteenth century, as in previous centuries, was that composed of religious works" (Watt 51), and on the other, "the tendency was for literary success (if not necessarily literary merit) to be guaranteed by the presumed 'scientific' and utilitarian importance of the information garnered" (Bridges 57). To connect Christianity and

science, authors relate the plots and characters of their narratives using the form of spiritual autobiography. Kate Frost's description of the genre is worth citing at length because her portrayal of the structure of spiritual autobiography is clearly evident in *Man in the Moon, Peter Wilkins*, and *John Daniel*:

> For the Christian, the painful process of self-scrutiny led to a perception of himself as the image of fallen Adam and of redeeming Christ, an identification best perceived in times of adversity. The spiritual autobiography is concerned with the movement between these two poles; that is, conversion—sudden or progressive—as a point in the soul's turning from love of creatures to contemplation of divine wisdom, with the crux of conversion often occupying a central position, both thematically and structurally. At its heart is the movement from prostration, often the literal prostration of illness, to an ascendancy of divine love, where the death to carnal affection is followed by a putting-on of Christ. The movement of the whole reflects the downward path from God to man and the upward and returning path of love from man to God—a Jacob's ladder complete with rocky pillow. (35-6)

The movement of spiritual autobiography, a descent followed by ascension to communion with God, is replicated in the fear and loneliness Wilkins and Daniel feel when they are first shipwrecked and in their subsequent triumphant rise as they, and Gonzalez, climb from their isolation and obscurity to be reunited with society. Because technological advancement is connected to Christian piety, as I discussed in Chapter 3, science replaces self-scrutiny as the means to spiritual growth, and technology becomes the putting-on of Christ. Furthermore, as McKeon connects spiritual autobiography and travel narratives, he argues, "If the end of atonement in spiritual autobiography is attained through the saint's justification by divine grace, in the theory of travel narrative its radical secularization would seem to consist in the traveler-protagonist's personal validation through the attainment of the reader's conviction" (104). Although I would suggest 'radical secularization' is an overstatement, especially in light of Godwin's, Paltock's, and Morris' texts, the community that the characters reach by their flight and by their narratives is the one they forge with their readership. The narratives therefore employ the form of spiritual autobiography, and God is certainly present in the texts, but the focus of the plot is not on the characters' changing relationship with God, but on their metamorphosing connection to society, mediated by science and technology rather than penitence.

Although authors use the form of spiritual autobiography to depict their piety, the aims of science and religion, when united in a single person, still seem to chafe. Spacks identifies a general problem with the genre, writing, "the spiritual autobiographer almost invariable presents aspects of the unreliable narrator, because of the necessary discrepancy between willed submissiveness to God and the elements of personality not

contained by that submissiveness" (40). The humility of the Christian narrator, although necessary to demonstrate his or her reliability as a reporter, sits uneasily with Sprat's assertion that "desire for glory, and to be counted *Authors*; prevails on all" (74). However, the idea of providence allows the characters to claim and display humility as a Christian and a scientist. Jacob argues that Restoration scientists could unite natural history and God "only because the providential deity supervised every operation of nature. He did so through rules that expressed his will, and the task of science was to discover and explicate the rules that govern nature, in effect to explain to man the operations of providence in creation" (*Newtonians* 23). Scientists, therefore, could gain glory as the discoverer, but God received the ultimate praise as the creator. Boyle expresses the centrality of providence to science when he proclaims, "experimental philosophy [gives] us a more clear discovery, than strangers to it have, of the divine excellencies displayed in the fabric and conduct of the universe, and of the creatures it consists of" ("Christian Virtuoso" 514). Therefore, by disclosing God's providence, the characters of fictional travel narratives display their membership in and promote the formation of a literary community of readers who participate in the Christian beliefs and scientific aspirations of the authors.[27]

In *Man in the Moon*, Gonzalez, a nobleman, portrays himself as both a figure to be emulated and a mirror showing God's goodness. As he introduces his narrative, he writes, "those things that have happened unto me may be an example that great and wonderful things may be performed by most unlikely bodies if the mind be good and the blessing of Our Lord do second and follow the endeavours of the same" (74). Although Gonzalez praises God, he places the deity second in his formula for success, focussing instead on the importance of the mind. To Gonzalez, great things are accomplished first by human ingenuity, and his story is therefore intended as an edifying tool, teaching his readers that the potentialities of science and human intellect are astounding. In the relationship he creates with his readers, whom he addresses directly, Gonzalez is the teacher, imparting his technology—especially his methodology—for "the unspeakable good of all mortal men that in succeeding ages the world shall have" (75). While he is apparently concerned only for the benefit of his fellow humans, his hope that his story will affect "succeeding ages" reflects his most pressing interest, using his story to establish his fame "forever with all posterity" (75). *Man in the Moon*, therefore, published decades before the establishment of the Royal Society, pays little attention to

[27] The community of readers of these fictional travel narratives is also distinctly English, for Godwin's, Paltock's, and Morris' texts, like other early novels in England, are concerned with defining what is 'English.' In their studies of the early novel, Elizabeth Bohls and Eleanor Shevlin discuss English identity, Bohls commenting that travel literature and novels "sought means of representing encounters with peoples, cultures, and ways of life that were different—subtly or dramatically—from English life, and of defining an English self in relation or opposition to these" (113), while Shevlin notes, "encased with a linguistic layer of 'Englishness' that reverberates in the legal realm, the plots of early novels perform a cartography of everyday relations" (386).

the rhetoric modesty of the scientist, but is instead an unabashed celebration of the possibilities of natural history both for technological and social advancement.

Gonzalez does not merely hope for recognition when he returns to Spain, but he receives it already in the course of his narrative. In the first instance, Alphonso de Xima, the captain of the ship that carries Gonzalez away from St Helena, gives him "a very convenient cabin" for the birds and the flying machines, demonstrating his acceptance of the value and usefulness of a machine that takes up so much room on his ship. De Xima admires the flying machine when he sees it, but physical sight is not necessary for Gonzalez's fame. In China, when he tells the mandarin his story, Gonzalez says, "he began to admire the excellence of my wit, applauding me for the happiest man that this world had ever produced" (113). The mandarin is a virtual witness, for he does not see the gansas or the inhabitants of the moon, and yet he believes and honours Gonzalez, just as the reader, another witness who only reads about Gonzalez's exploits, is intended to do. Gonzalez's interaction with the mandarin is a demonstration of the relationship he hopes to have with his audience, an open and prolonged discussion of science. Gonzalez likewise designs his narrative as a discussion, telling some parts of his story, reserving some for another discourse "hereafter" (79), and setting himself up as an object of awe, but in turn asking his audience to be delighted, enthused, and inspired.

Although Gonzalez continually underscores the glory that is due him, he does report that he has the approval of the Church, or is hoping to receive it. In his first spate of self-congratulations, Gonzalez restrains himself from giving details of his aerial adventure, for he must first confer "with the Fathers of the Church, how the publication of them may not prove prejudicial to the affairs of the Catholic faith and religion" (75). Of course, after he writes that disclaimer, Gonzalez proceeds to recount much of his story, but the impetus for Church approval is still present in his narrative. At the end of his story, Gonzalez does receive the implicit approbation of the Church, for the Jesuits in China welcome him and Gonzalez meets with them often. To the Jesuits, Gonzalez gives the written account of his flight, which they send to Spain "as a forerunner of [his] return" (114). Gonzalez's membership in and interaction with the Roman Catholic Church is troubling, however, for Godwin was not only Protestant, he was a bishop in the Church of England. John Butler conjectures that Godwin makes Gonzalez Catholic because "the scientific eminence of the Jesuits was an acknowledged fact" (33). As well, Gonzalez's care to win the approbation of the Church may be a satire on the censorship practiced by Catholic Church leaders. "Godwin may have been emphasizing the spirit of toleration in Anglicanism as opposed to the attitude of the Catholic Church, which did not separate a person's religious from his scientific beliefs" (35), Butler writes. Indeed, Gonzalez explicitly seeks what is implied in *Peter Wilkins* and *John Daniel*—the approval of the Church—although in none of the texts are a person's religious beliefs separate from his or her scientific ones. In *Man in the Moon*, the Church not only validates Gonzalez, but also his text, which he can send ahead to Spain as a messenger to proclaim the glory of its author to the community of its readers.

In *Peter Wilkins*, Wilkins characterizes himself as an ingenious natural historian, interested to know the causes of things, and skilled in the scientific method. He takes pleasure in describing his tools with which he gathers plants and animals and builds shelters and conveyances, listing them when he leaves the ship (72) and at intervals when Youwarkee brings him more goods. Wilkins also records his experiments with the gourds, the fishing net, and his beard in detail, mentioning his failures as well as his successes. Including a recitation of his mistakes does not weaken, but rather reinforces his authority as a creditable scientist, for "a man who recounted unsuccessful experiments was such a man whose objectivity was not distorted by his interests" (Shapin and Schaffer 65). Because he tells of his miscarried endeavours, Wilkins emphasizes his modesty and his lack of interest in social advancement, unlike Gonzalez, instead viewing failure as an opportunity to learn, for he writes after he cannot find an edible gourd, "what if I have lost my Gourds, I have gained Experience" (90). Wilkins therefore, through his narration, describes himself as a careful, humble scientist equipped with the tools and the intelligence to be a trustworthy reporter.

Even though Wilkins employs the rhetoric of humility while recounting his unsuccessful experiments, he does not spare the reader a recitation of his skill, highlighting it especially when he recounts the high regard the flying people have for him, treating him as a messiah. However, to refrain from boasting as Gonzalez does, Wilkins carefully mentions his subservience to Providence, making such statements as: "I found myself grow serious: reflecting upon the Vigilance of Providence over us poor Creatures, and the various Instances wherein it interposes to save or relieve us, in Cases of the deepest Distress, where our own Foresight, Wisdom, and Power have utterly failed" (75). His confession of faith outlines his meekness, and it identifies his readers, the community he is addressing, for he writes, "us poor Creatures," those who share his Christian convictions, and who also use their "Foresight, Wisdom, and Power" to their full extent. Moreover, instead of relying on his own abilities, Wilkins' schoolmaster instructs him to be a "prying Eye," looking for evidence of God's "Supreme Hand" (30). Wilkins therefore establishes himself as a priest of nature who discovers rather than invents, evident in his flight, which is an imitation and utilization of the winged Glumms and Gawreys, and not Wilkins' original idea. Yet, Wilkins' religious triumph is his reformation of the Church of Normbdsgrsutt, for not only is his piety emphasized by the contrast between himself and the pagan flying people, but also his willingness to sacrifice his glory for the promotion of God's truth announces his disregard for personal gain. Wilkins hopes that the modesty he shows in the indigenous society of Normbdsgrsutt when he refuses to embark on the suppression of the West will cause the literary community Wilkins creates by his text to acclaim him, for he portrays himself as a admirable Christian scientist, saving other cultures by means of his reason and religion.

In the text, Wilkins is conscious of the value of literacy, and his instruction of the Glumms and Gawreys reflects his ideas about the place of writing and reading. When a Glumm asks Wilkins what writing is, as there is no such thing in Normbdsgrsutt, Wilkins says to him, "we had a Method in my Country, of conveying to a Man at a great Distance

whatever we have a mind to say to him; and in such a manner, that no Body but himself would know, what we would have him know" (233). Again Wilkins identifies himself with England, and he emphasizes the distances that texts can bridge, creating a virtual, literary community rather than a physical one. The society of readership that Wilkins describes is private, in which the writer communicates directly and solely with the reader. Although his text is intended for a wide audience, Wilkins wants each reader to immerse him or herself in the narration, identifying individually with the writer as well as socially with the literary community. Reading and writing are both public and private: the reader peruses the text privately, but while he or she does so, the reader can imagine him or herself as a part of a group of people that have also read the narrative, in which the writer records his private experiences for public scrutiny. Writing and reading are therefore similar to the life of the scientist, who both works in solitude and interacts with society. Then, at the end of the narrative, when Wilkins finally finds a Bible and teaches the Ragams to read and write, he imparts new purposes for literacy. His first undertaking while instructing the Ragams is the translation and dissemination of the Bible in the language of the flying people, so writing is thereby primarily a religious aid, although it is telling that Wilkins only finds the Book of Scriptures at the very end of his story, having been spiritually fulfilled by the book of nature for most of his life. After describing the significance of literacy to the church, Wilkins points out its importance to trade and knowledge, stating: "My writing Ragams were very fond of their Knowledge of Letters; and Trade and Commerce now increasing, which put every one more or less in want of the same Knowledge; they made a great Profit of it, by instructing all who applied to them" (371-2). Therefore, the literary community can be a source of income for a writer and instructor such as Wilkins.

Wilkins does intend his text to be considered currency, for he uses it to pay for his passage back to England. He wants to return to his native country after the death of his wife, but also after his "Genius, without any visible natural Decay, in so short a time, from the most sprightly and enterprizing [sic], become the most phlegmatick and unactive" (375). When Wilkins can no longer impress the Glumms and Gawreys with his intelligence, he leaves the country to go to a place where he can again receive fame because of his abilities as a scientist and a Christian. His story has commercial worth because, as Paltock writes, "there was something so uncommon in [it], he was sure the World would be glad to know" (7), equating Wilkins' text with the curiosities collected by scientists and explorers. His narrative, however, is a virtual curiosity, for the story only exists in the minds of the writer and readers. Moreover, Pettit states that Wilkins' story is akin to his family and says, "his last act of reproduction is his purest, [...] not vitiated, as his first and second families were, by shortcomings of class or race" (109). Because Wilkins has complete control over his story, he can narratively construct an English society that he identifies by referring to "we" and "us," which will admire and desire his story. Whether or not such an awestruck readership exists, Wilkins evokes it in his text, for although his "own closure is a lonel[y] affair" (Pettit 109), almost Gulliverian because he is separated from his family, at the end of his life Wilkins creates a new,

virtual society for himself, one in which he, while a humble Christian and scientist, is the star character.

While *Peter Wilkins* uses rhetorical devices and elements of plot to construct Wilkins as a trustworthy narrator, *John Daniel* is a model for the production of a literary community. Already at the beginning of the text, Daniel characterizes himself as a person knowledgeable about mechanical devices: "my greatest delight centr[ed], in bestowing my whole surplus time, in studying the powers and operations of mechanism, or in devising, or practising upon some mechanical contrivance or other; and I had by me divers little models of great curiosity" (3-4). Later, Daniel explains the operations of springs, pulleys, and levers to a group of arguing tradesmen, displaying his power both to understand and to teach the possibilities of natural history (14). His practical knowledge is a result of his curiosity and his profession, for Daniel is a house-smith, a representative of the artisans Boyle and his associates wanted to emulate by their language and personae (Shapin and Schaffer 130) because identifying themselves as craftsmen highlighted their humility, disregard for social advancement, and willingness to be servants or priests of creation. Daniel, because he is a middle class labourer, thereby is a trustworthy narrator: his delight in mechanism, lowly social position, and ability to logically explain science make him a credible reporter of fact.

Although Daniel is confident in his technological skills, he is terrified by his environment after he and Ruth are shipwrecked on the island. As a weak and modest human, he has no special powers that allow him to be confident and assured, so he represents human potential, for as a frightened man he can still overcome difficulties, just as the short Gonzalez could. Daniel assuages his fear by two means, one by "referring [himself] to providence for protection" (32), and the other by "mak[ing] experiments" (29). His life on the island is marked by a trust in God's control and in his own ability to build structures, find food, and ward off wild animals. Providence and technology are united when Ruth and Daniel find the beached ship, for they locate a supply of tools that Daniel, and later Jacob, use to explore and control their environment and create technologies, and Daniel ascribes the discovery to God. He asks Ruth when he finds the ship, "Am not I in the right to rely on providence?" (90). While Wilkins invokes providence in some circumstances and revels in his technological prowess and material objects at separate occasions, Daniel does both simultaneously, praising God while gathering goods. In his narration, therefore, he reconciles his modesty as a Protestant and his accomplishments as a scientist.

When Daniel leaves the Isle of Providence and interacts with other cultures, he maintains the supremacy of his relationship with his community of readers rather than participating in indigenous societies. Daniel defines his interaction with other people by his ability to communicate with them, something equally important in *Man in the Moon*, for Gonzalez constructs a means of conversing with Diego over far distances (79), and in *Peter Wilkins*, for Wilkins quickly learns Youwarkee's language and teaches her English and the Ragams to read and write (111). Daniel only creates a language community with his family and with his readers, for he never learns the speech of the lunar people, and

although he speaks with the sea monster, he does not tell him what he discovers in the locked cabinet (225). Daniel does share the secret of the sea monster's birth with his reader, demonstrating that, while he may tell falsehoods to others, he discloses every truth to his reader. The reader can therefore trust that Daniel is constructing a transparent literary community, marked by its exclusion of other cultures.

Because Daniel has no hope of returning to the Isle of Providence, he longs to reach England where the conclusion of his story seems, as does *Gulliver's Travels*, to end with his loneliness and estrangement from his family. However, his return to England strengthens his voice as a trustworthy narrator because he receives validation from the very society he is addressing. To assure his readers that he is a good Christian, he returns to the bosom of the Church, literally, ending his days in the home of his old parson and the parson's nephew. When Daniel returns to the Church at the end of the narrative, he proclaims his own piety and scientific ability, casting the approval of the Church upon his whole life experience. Parson Williams represents Anglicanism, but he is also a man of science, one of the clergy that Sprat praises for "taking off the unjust scandal from *Natural* knowledge" (132). Daniel admires his "contemplative genius" (266) and writes that "his remarks and queries, were all made and demanded with solidity and judgement" (267). When Daniel tells the parson about his flight, he understands and explains to Daniel the parts of his experience that Daniel had not understood, such as landing on the moon: "His opinion upon my flight, and the consequences were so convictive, that they left me no uncertainty of the conclusions he drew from my particular facts" (267). Like Williams, Daniel's audience is called upon to participate in his story by interpreting the experiences that he relates. Indeed, the very fact that Williams can come to a conclusion after analyzing Daniel's facts confirms Daniel as a skilled and trustworthy observer, a prized quality in scientists and mechanics. Daniel's narration therefore gives him the approbation of the Church, for the parson, a man of God, admires and trusts him. Finally, Daniel's last words explicate his entire purpose in the text: "Having now conducted my readers through a series of uncommon adventures, let him remember that life is but a journey, and the grave is home" (273). "Uncommon" replicates Wilkins' consideration of his work as a curiosity with monetary value, while "my readers" addresses the literary community Daniel creates, composed of men such as Williams, godly people interested and informed in natural history. His description of life as a journey reflects the status of his text as a fictional travel narrative and a spiritual autobiography, ending not with solitude, but with a reunion with his community, both actual and virtual, and with God in death.

Unlike *Gulliver's Travels*, *Man in the Moon*, *Peter Wilkins*, and *John Daniel* end in an affirmation of community, with the Christian scientist at its focus. These narratives do not conform to McKeon's claims that "the imaginary voyage's [...] didactic aim, customarily satiric to some degree, is likely to entail [...], among other things, the pointed parody of naïve empiricism itself" (106). Rather than satirizing experimental science, these narratives use it to express the possibilities of humanity, encouraging its created community of readers to become excited and informed about natural history.

Jacob writes that at the beginning of the seventeenth century, the scientific elite were uneasy about the social role of science: "they wanted to divorce science from popular beliefs while simultaneously recognizing that mechanical knowledge of a practical kind occasionally resided among artisans" (*Cultural Meaning* 37). This concern is reflected in the earliest narrative, *Man in the Moon*, for Gonzalez gives no details of his technology, but he does describe its power and potential. In *Peter Wilkins* and *John Daniel*, the narrators give exhaustive descriptions of their technologies, displaying the progression of science from the elite into popular literature. This movement did not curtail the exclusiveness of the Royal Society, however, which was still a closed, elitist group, but it created a virtual community of people who could admire and perhaps aspire to become proficient in the scientific method and the production of technology.

Conclusion

Godwin's *Man in the Moon*, Paltock's *Peter Wilkins*, and Morris' *John Daniel* attempt to clear away the problems of experimental science and its relationship to the Church as Swift describes them in his *Travels*. Have they succeeded? In his narrative, Swift protests that scientists, preoccupied with their individual experiments, cannot form a community, and even if they do, it is ineffectual. Moreover, natural historians, when they do attempt to influence the society around them, only cause more damage than good. The experiments scientists undertake do not bring them closer to God or explicate his power, as Bacon, Boyle, and Sprat argue, but instead are dirty and dangerous, focusing the inventor on the material rather than the spiritual world. To make matters worse, the scientists at Lagado, as Swift describes them, are even proud of their work, convinced that they, not God, deserve honour. Experimental science, Swift concludes, neither praises God nor benefits society.

Although Godwin, Paltock, and Morris may not challenge Swift specifically or directly, they disagree with his arguments, each using similar grounds to explain the compatibility of natural history and the Church community. They start at the beginning—Eden, placing the scientist alone in a lush garden in which he or she can recreate and reinvent Paradise using ingenuity and technology. The natural historian thereby becomes a new Adam, and experimental science takes on the role of correcting the fallen state of the world. Placing the scientist in Paradise emphasizes the importance of natural history to the world and the Church because the scientist's work is a kind of atonement for the sins of Adam, and its participation in the Christian myth of Eden also reaffirms the piety of science. The solitude of the scientist is therefore a useful one, for in Eden he or she can concentrate, create, and commune with God, surrounded by abundant natural resources and separate from the distractions of the sinful world.

In *Man in the Moon, Peter Wilkins*, and *John Daniel*, in Paradise the scientist creates a flying machine with which he can leave Eden, explore the world, and rejoin society. Although authors such as Swift, Johnson, and Pope question the possibility and the morality of human flight, Godwin, Paltock, and Morris focus on the metaphorical significance of aviation, linking the accomplishment of their characters to the flight of the angels in Milton's *Paradise Lost*. Flight also advances the knowledge of the scientist, for from the sky he can observe huge tracts of land, becoming a telescope, learning more of creation and therefore having more reason to praise God, Boyle would argue. In order to suppress any suggestion that in flight, scientists may become proud and fall like Icarus, Godwin, Paltock, and Morris emphasize the fear, wonder, and awe that the travelers experience as they ascend. Daniel, for example, is too terrified on the Eagle to feel pride in his son's invention. Indeed, he writes, "I could not move a joint, every moment expecting my neck to be broken in a fall" (159). When Daniel and Jacob finally reach land, Daniel narrates, "immediately falling upon our knees, [we] returned hearty thanks for our preservation" (165). He acknowledges that his flight, although accomplished on Jacob's flying machine, is only possible when blessed by God. The very act of aviation,

and surviving it, is therefore an indication of God's approval of the undertaking, and the Christian morality of the humble scientist. Furthermore, *Man in the Moon*, *Peter Wilkins*, and *John Daniel* feature aviation not only because John Wilkins' description of human flight in his *Discovery of a New World* had inspired the imaginations of authors of fiction, but also because the prevalence of stories of flight served a certain purpose beyond being fantasies about the possibilities of technology. By their very ubiquity, fictional tales of aviation made ideas of flight more prevalent and therefore hopefully less suspicious or threatening. Pope writes in *Essay on Man*, describing humans' position in the great chain of being, "whatever is, is right" (I. 294). By making ideas of human flight common, authors hoped to make aviation "be" in the imaginations of their readers, causing flight to be "right."

As well as demonstrating their morality and creativity, flight moves the natural historian from solitude to society. In *Man in the Moon*, *Peter Wilkins*, and *John Daniel*, the protagonists first encounter a society indigenous to the land they reach, allowing Godwin, Paltock, and Morris to explore the relationship between the scientist and the Other. At this point, the texts diverge, with Gonzalez as the awestruck pupil of the Selenites, Daniel as the objective observer of the moon people, and Wilkins as the powerful reformer of the Glumms and Gawreys. The authors disagree on the role of the scientist among native peoples and debate whether he should merely be a witness of other cultures, or whether he is also obliged to be a missionary. The question of whether to watch or reform reflects the discrepancy between the rhetoric and actual practice of traveling scientists, for while natural historians were reported to be, and portrayed themselves as, completely non-partisan, they in fact advanced the colonial power of Britain over native peoples. The power over indigenous society to observe, control, and convert to Christianity was seen as the natural right of the scientist, both in reality and in the texts, because technological advancement was equated with the valuation or devaluation of a society. Because a culture is less technologically developed than the visiting natural historian, the scientist assumes that he or she has authority over the indigenous society, as *Peter Wilkins* especially demonstrates.

Although the texts differ over the interaction between the scientist and the native peoples he visits, they all use similar rhetorical devices to communicate with society in England. In order to create a literary community of readers, Godwin, Paltock, and Morris present their narrators as good Christians and reliable scientists. They do this by combining the genres of spiritual autobiography and travel writing, emphasizing the modesty of the narrator. A humble scientist is a trustworthy reporter because he or she is apparently not motivated by social advancement, and a modest Christian is one who praises God rather than him or herself. The importance of humility for the pious natural historian explains, for example, why flight is not overtly connected to upward social mobility in the texts. Social advancement as a result of aviation is present in the narratives, for Gonzalez hopes to win fame because of his flying machine, Wilkins becomes a favourite at the royal court after flying to Normbdsgrsutt, and Captain Nevil suggests to Daniel that he tour England and demonstrate the Eagle in order to earn a

living. However, except for in *Man in the Moon*, the personal advantages the scientist gains from his technology are downplayed, unlike *Gulliver's Travels,* in which the projectors are confident their experiments will make them rich and famous.

At the endings of the texts, are *Man in the Moon*, *Peter Wilkins*, and *John Daniel* any different than *Gulliver's Travels?* Each man is ultimately separated from his family and English society, but while Gulliver lives in prideful superiority to other people, even stuffing his nose with herbs to block out their stench, Gonzalez, Wilkins, and Daniel end their narratives satisfied to think that they have benefited society and the Church by their stories and inventions. The technology they craft in solitude aids the people they later encounter, and eventually, by their literary transmission through the texts, their inventions advantage English society. Robert Boyle writes that, by practicing experimental science, the natural historian will discover that "nature will be found very loyal to her Author, and instead of alienating his mind from making religious acknowledgements, will furnish him with weighty and uncommon motives, to conclude such sentiments to be highly rational and just" ("Virtuoso" 514). However, in their texts, Godwin, Paltock, and Morris not only praise the Author, but also the author—the narrator of the story—because the narrator links his technology with his autobiography. His flying machine will always be associated with him, and he, therefore, as well as his technology, benefits society and the Church. The individual is very important, but that does not necessarily mean, as Swift implies in *Gulliver's Travels*, that the scientist is always an insufferable egomaniac, in his pride denying his need for God's Providence. In fact, the emphasis on the individual in *Man in the Moon*, *Peter Wilkins*, and *John Daniel*, coupled as it is with a reconstruction of Eden, metaphorically significant ascension by aviation, and faith in God's providence, reinforces the Protestant nature of the texts. The importance of the natural historian, Godwin, Paltock, and Morris argue, does not make the person proud or aloof, but makes him a good Anglican. Just as a Protestant, although part of a church community, seeks salvation by individual prayer and personal communion with God, so a capable natural historian aids society by his or her work. While science can bolster the Church, the individual Christian scientist, in private and in public, effects that support.

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