

## Writing the Scientific Self: Samuel Butler and Charles Hoy Fort

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### Introduction

Samuel Butler's autobiographical novel *The Way of All Flesh* has long been well-regarded as a devastating commentary on Victorian family morals. Until recently his other well-known work, *Erewhon*, was rather uncertainly placed alongside it; to many scholars this latter text has seemed a somewhat clunky work of science fiction in comparison. Meanwhile, Butler's numerous works of science writing, which did not find success in their own day, have been treated as completely beyond the pale – an embarrassing footnote in the career of one who otherwise had the potential to be a respectable writer. With the publication of James Paradis's critical collection of essays on Butler (2007), however, there is now an effort to understand the continuities within Butler's oeuvre. Paradis's subtitle, *Victorian against the Grain*, begins to give some sense of how Butler's generic and lifestyle choices constituted a connected and deliberate needling of nineteenth-century norms and expectations, science included.

Butler's life (Paradis 8-17; Raby) enables us to identify him as a scientific outsider (cf. Ruse). Butler was geographically an outsider when he had his epiphanic contact with Darwinian transmutation, having emigrated to New Zealand to try his hand at farming. He sent some of his adulatory writings to the author of the *Origin*, which were warmly received. Butler returned to London in 1864, and after a decade spent painting and writing (including *Erewhon*) he began to struggle financially – a feature of his life that would continue until the death of his father in 1886. Nevertheless, he managed to continue writing, including his first book-length evolutionary non-fiction, *Life and Habit*. In 1879 a public spat with Darwin (Amigoni 98-99; Turbil 121-29) opened, in which Butler accused Darwin of side-lining the work of Erasmus Darwin, about whom Butler had published only the previous year. Henceforward, the non-selectionist elements of Butler's evolutionary writings were foregrounded, highlighting their difference from the Darwinian account. Rejected by his adopted father-figure, Butler also lost the friendship that he had established with Darwin's son, Francis.

Charles Fort's extraordinary writing, by contrast to Butler's, is almost completely unknown to literary scholars. So, also, is his life, which is best narrated by Steinmeyer. Having abandoned childhood plans to become a naturalist (Fort, *Many Parts* 47-51), Fort began his adult life in 1891, moving to New York City at the age of seventeen (Steinmeyer 42). Here, he scratched a living as a reporter for a local newspaper, supplementing this activity from 1905 by writing short stories for *Smith's Magazine*. In the period c. 1899-1904, Fort composed an autobiography, *Many Parts*, which has remained unpublished. During this early phase he also wrote an unknown number of novels, of which one was published in 1909. In the mid-nineteen-teens Fort underwent a dramatic change of focus. Working in the New York Public Library, he began systematically combing through scientific journals and newspapers from the past one hundred years and making notes on phenomena that were not easily accounted for within standard disciplinary frameworks. He was also interested in the history and epistemology of science, paying keen attention to debates that had occurred, attributions that had altered, and proofs that were contested. Astronomy was his special area of focus. He collected 60,000 notes under 1,300 categories in New

York, which he destroyed. Fort went on to spend extended periods in London, where he did similar work in the Reading Room of the British Museum. A second collection of 40,000 notes was begun here, and is still extant in the New York Public Library.

Fort's earliest findings were written up as two manuscripts that have since been lost – *X* and *Y* – which were then cannibalized and added to, producing the four published books that survive: *The Book of the Damned* (1919), *New Lands* (1923), *Lo!* (1931), and *Wild Talents* (1932). This extraordinary, uncategorizable tetralogy blends a critique of scientific epistemology (see: Sleigh, "An Outcry of Silences") with ad hominem attacks, and alternative cosmologies with open-ended data. Essentially, Fort attempted to sketch out a space in which science could be done differently and was less exclusive. His data were deliberately outrageous trial-runs of this scheme, provocations of the scientific status quo. Fort's books are frequently comic, and are composed in a strange, cumulative series of statements that break all usual rules of grammar and form – unidentifiable as assertion, or proposition, or poetry. As a result of the reception of these books, Fort participated in a small literary coterie during his periods in New York. Its existence was largely due to the animating efforts of his friend and editor since *Smith's* days, the novelist Theodore Dreiser (who was incidentally also a fan of Butler. See: Paradis 5). Fort died in New York, still fully engaged in his researches until the last few months of illness slowed him down. Fort did not find – or more likely did not seek – a scientific network akin to his literary one. Something in his personality made him shy away from overt conflict with scientists. Nevertheless, his obituary in the *New York Times* did not hesitate to identify him as a "foe of science": outside the flock. His engagement with science, his adversarial approach, and his location in literary circles combined to make him a scientific outsider.

The term "scientific outsider" is used here in a sense that distinguishes it from "outsider scientist" (see: Harman and Dietrich), since it does not carry the implication that the person was, despite their inauspicious position, a contributor to or "innovator" in (ibid.) the discipline of science. Such an account is normative in that it leaves untroubled the notion of science itself. A scientific outsider does not attain to such a contribution, although there may sometimes be a subconscious underlying desire to do so, or even to be an insider. A scientific outsider may, for example, exist irrevocably within the wrong social circles, or may use methods unconscionable to the mainstream. Indeed, he or she may not *wish* to be part of insider science, or may attempt to challenge its nature. Nevertheless, he or she maintains an insistent engagement with science. As this article explains, the narrated lives of both Butler and Fort place them as scientific outsiders. Both found initial escape from rigid familial orthodoxies in science, before rejecting conventional science too as overly constricted. They moved from being would-be scientists to scientific outsiders. Their contexts, of course, were different. Butler was part of the British generation that saw the core set of science professionalize and tighten its grip on British institutions (see: Barton). In early twentieth-century New York, unlike London, there was no metropolitan scientific elite. Yet, American scientists were flexing their muscles (Walters 3-7) and finding increasingly authoritative voices thanks to governmental, university and philanthropically-funded platforms.

What did it mean to pursue autobiography as one's choice of scientific-outsider activity? For one thing, (auto)biography was a suitable tool for the scientific outsider to reflect on the nature of science as instantiated in its history, for as Michael Shortland and Richard Yeo point out (4), the history of science was largely biographical until the mid-twentieth century. Richard Westfall, the celebrated

biographer of Newton, confessed that all texts write the author ("a kind of self-display") as much as they narrate the life of their subject (Shortland and Yeo 34). If we follow this notion through for the case of autobiography, we find a splitting of the self, but not, as one might suppose, in the sense that the written self reflects the writer's (idealized) persona. Rather, the written self comes, secondarily, to shape the authorial self. When readers encounter the narrator in the "marketplace" (see: Fyfe and Lightman) of written science, they naturally extend what they have learned about this figure to the extra-textual author-as-scientist, and perhaps to other scientists too. The author, anticipating the reaction of the reader – perhaps having it modelled through friends and reviewers – may also come to make this projection. Scientists, in short, are textually constituted entities; Butler and Fort participated in and critically engaged with this phenomenon through their autobiographies.

Recent works of history and literary criticism have explored the modes in which late-nineteenth-century scientists were able to produce themselves textually. This period saw a strong emphasis on the effacement of the scientific subject, as necessary counterpart to the embrace of mechanical objectivity (see: Daston and Galison; Levine). In order to act as a reliable conduit for the information recorded by cameras, thermometers, and so on, the scientist had to crush every wilful urge towards subjectivity in him(*sic*)self. Autobiography of the self-as-scientist constituted a rejection of this mode of science. It insisted on putting the subject at the centre – it was registered by, and written by the subject. Darwin's rather painful and contorted modesty in his brief *Recollections of the Development of my Mind and Character* (1876) perhaps betrays the bind in which supposedly "objective" scientists found themselves when trying to tell their own stories. There was a variety of responses to the challenge of self-abnegation; Porter (297-314) recounts Galton's reinvention of autobiography as *Bildungsroman*, and White (see: "Acquired Character") describes the complex mix of heredity and acquired character in tales of the self-made man. The most dutifully self-abnegating response – a refusal to commit the self to paper – yields no material for scholarship and so tends to go unremarked.

As this article explores, the scientific outsiders Butler and Fort participated in a scientifically heterodox, subject-driven form of autobiography. It argues that they used their autobiographies as a way of defining and proving themselves as participants in science, whilst critically redefining the nature of science itself. Both autobiographies, moreover, were underpinned by a narrative of evolution. As Alexis Harley notes in *Autobiologies*, there was good reason for this at that time:

The inherent connection between a biology, fixated on the nature and origins of the human, and auto/biography, a genre that by the nineteenth century had become dedicated to the analysis and narrativisation of human selves, suggests that autobiography should have been a particularly apt medium for the evolutionist's attempt to make sense of his or her life. (Harley 2)

In fact Butler and Fort shared the same *model* of evolutionary theory; orthogenesis structured their accounts of the world and of the self within it. Orthogenesis, the unfolding of an evolutionary plot laid deep within the bloodline of species, was a directional account of transmutation and as such complemented the essentially teleological nature of autobiography (Harley 9-11). By writing their lives in this mode, in conjunction with an assertion of the scientific outsider as author, they vindicated this teleological science. The orthogenetic narrative is about becoming an

author; because the text has demonstrably been written it vindicates itself, the theory, and its author.

### The Autobiographies of Butler and Fort

Samuel Butler's *The Way of All Flesh* was finished (or abandoned) in 1884 and published posthumously in 1903. It is unclear to what extent Butler considered the manuscript to be finished. It is of course fiction, and critics have varied in their judgements concerning its autobiographicality. It is generally agreed that Butler delayed publication until after his death in order to avoid giving offence to the book's recognizable characters (Mason viii-ix), though Mason considers the novel's "self-depicting aspect" to be "overstated" (Mason xxx; cf. Swann). Leaving aside the question of whether the content of the life narrated resembles Butler's, the issue of autobiographicality also throws up a question concerning the novel's narrative framing. The novel is not narrated by the main protagonist, Ernest Pontifex, supposed alter ego of the author, but by Edward Overton, his godfather. It is a device for commenting on the self; Overton is a narrator who always has Pontifex's/Butler's best interests at heart. Moreover, he is inclined – obliged even, thanks to his duty of benefaction – to think the best of him. Where his judgements are critical, there is scope for humour and reflexive insight. All of these features and more have caused *The Way of All Flesh* to be hailed as "a deeply experimental text" by critics, undercutting the very assumption of a stable central narrator with "playfulness and parody," and constantly disrupting its own narrative trajectory (Shuttleworth 163-64).

Charles Hoy Fort's *Many Parts*, probably written between 1899 and 1904, has an even more uncertain history and nature. A photocopy made in the late 1960s (of a typescript made in the 1930s) is the only remaining archival version of the original text, which has been lost.<sup>1</sup> One hundred and fifty-two of its two hundred and sixty-one manuscript pages are missing. It is even conceivable that the pages in existence are those that Fort rejected, and that the missing pages were removed to collate with other drafts, forming a complete or preferred version of the text which has since disappeared. The genre is straight autobiography, but with several arresting narratorial features. The most immediately striking is the narrative persona, which is first-person plural (with Fort's father third-person plural and his brothers "the other kid" and "the little kid" respectively). Secondly, there is often an erasure of tense; the present participle is frequently used without a main verb to clarify whether the action takes place in the past, present or future. Thirdly, the text is comprised of something like a stream of consciousness, but not always in the usual sense of a single subjectivity. Instead of a sequence of impressions, Fort gives us what might be better described as a sequence of processed events. It is personal and yet oddly detached. Whose mental processing the reader is imbibing is unclear, not least because Fort has destabilized the categories of I, you and him, and between the narrator and reader, through his adoption of a plural persona. In the case of his brothers, the third person works to create an objective or distancing effect. The combined effect of all these features upon the reader is pronounced; the mental work that must be done to penetrate the narrative often heightens the emotional effect when the nature of the events so obliquely described finally emerges:

But they were gentle enough for us. "Why do you do these bad things?"

"Just for fun." Our stiff body was there; we were somewhere else, or had ceased to exist.

But, even though we weren't there, we could feel that they were trying to hold back. Their hand was on our shoulder. We, who had done wrong, should have blubbered, because of their kindness, only, we weren't there.

"Now, tell me; try to think and don't be afraid; why do you do these bad things?"

Our lips formed, "Just for fun." They struck us savagely; blood gushed from our nose. Then we were there.

Said Mrs. Lawson, "Toddy's [Charles's] nose bleeds so readily." (*Many Parts* 43)

Hard work is required with this passage to keep in mind who is who, not least because Mrs Lawson calls Charles by another name altogether. Fort himself is present in narrative form, but insists upon his bodily absence from the scene. The sentence "our lips formed" lacks a subject; its literal meaning is that the lips themselves form in the course of this moment. The bodily self becomes real only in the near-simultaneous production of language, and the co-located blow to the lower face. Thus the distancing effect caused by the experiment with narrative persona is both troubling and affecting. The narrator – who in his plurality makes "me" the reader complicit – is both made by, and punished for, the spoken/written text.

The distancing effect created by the third-person personae of the brothers is, if anything, even more affecting. The scene in which the older two leave home forever (or so they believe), leaving the youngest behind in a state of pitiful abandonment, is particularly upsetting. It is exceeded later on when the youngest is removed from the family home – for reasons unexplained – to an institution. He is secretly visited here by the brothers, who must depart and leave him behind, this time for a real and permanent separation.

There is, therefore, much similarity between the written lives of Butler and Fort. Both recounted a childhood of casual parental cruelty. (By remarkable coincidence, each highlighted this in a set-piece episode where he is beaten for the mispronunciation of a word.) Both narrated the difficult metamorphosis from this childhood to independent selfhood as outsiders, doing so in relation to the world of science. Fort had not yet found his *métier* of outsider-science at the time of his autobiographical writing; it is not known whether he ever intended to publish *Many Parts* and hence expected it to be read through the lens of his later scientific tetralogy. (Nor, indeed, is it known whether or not he considered the latter to be successful, a quality which would substantially affect the reading of his early life.) The text may perhaps be best considered primarily as an act of self-fashioning. In Butler's case, the text was composed during a period of unsuccessful attempts to be considered as a full participant in scientific debates, and as the manuscript lay in a box or a drawer through his latter decades, it acquired a more urgent purpose of posthumous vindication. As James Paradis notes, "Butler's project of preparing a body of self-published and unpublished work for a future readership had become the driving force of his literary life ... [a] metempsychosis ... of the author's literary consciousness, manifested in the bodies of others" (Paradis 361, 353-54). The *OED* in fact gives this future-vindicated sense of autobiography in its exemplary usage quotation from the early twentieth century (1928): "As with most leisured nobodies who do things, and like to foresee the analysis that waits upon fame, [he] had an autobiographic streak." Finally, in pursuing the issue of self-location in relation to science, both Fort and

Butler developed a mode of writing that defies generic categorization. Is it science or generalist? Is it fiction or non-fiction, even? Specifically, it is hard to judge whether it is intended earnestly or ironically by the author. Butler's protagonist is called E(a)rnest but given his fictionality the name is oxymoronic. Fort's text is unusual in several respects, already described, and becomes even harder to assign intentionality when considered in the light of his later outsider-science tetralogy.

### **Inheritance: Blood and Money**

The historian John Cheng (26-28) presents a historical distinction between "authors" and "writers" in the early twentieth century. "Writers" produced words, without embarrassment, for money – whereas "authors" had at least to pretend that their art was above such prosaic concerns. This was the case even if, as it was for most authors, a lack of money was the single most mind-occupying topic of their waking lives (see: James). Butler was arguably able to discuss this unavoidable yet ticklish topic in virtue of the vicarious nature of his autobiography; though it might be unseemly for him to talk about his "own" finances, having another character do so was acceptable. The plot revolves around Ernest's delayed legacy, of which he is unaware through most of the book – presuming on the contrary that he has no money to speak of. There is much discussion of the "shaking of wills" (that is, the threat of disinheritance) as a method used by parents to control their children. In a hint at the biologically-inflected metaphor of inheritance that will come to dominate the text, Butler notes that "poverty is very wearing; it is a quasi-embryonic condition, through which a man had better pass if he is to hold his later developments securely" (363).

Fort too has a tale of indirect inheritance, though in his case it is paratextual. His switch to writing science coincided with his father's death in 1912. Fort received no inheritance from his father; everything went to his stepmother instead, and on her death, a year later, to Fort's younger brother (Steinmeyer 130-32). However, just as Fort was undergoing a crisis of faith and direction in his new field of work, fate came to his aid in 1916 with an unexpected legacy from an early-deceased uncle. A second unsought legacy from an aunt followed swiftly on.

As Fort recorded it, the switch to science was a switch back to his first interests; in *Many Parts* he narrates that his childhood dream had been a scientific one – to be a naturalist:

Our grandfather often asked us what we should like to do when we should grow up. Which annoyed us, for we felt that we could not tell him. Asking, "Fell [*sic*], have you decided yet?" We stupidly answering, "I don't know." But once coming right out with it. Saying that we should like to be a naturalist. Our grandfather looked puzzled; he went away, to his dictionary ... Evidently the definition did not please him; naturalists deal with birds and animals but not in canned form. Our grandfather looked pained, for he had his own dreams, and ours startled him. Which were of a great grocery house founded by him, going down the generations, his eldest grandson some day the head of the family and important among things in barrels, things in bottles, and things in cans. But not things in cases with.... (*Many Parts* 51; page ends; next page lost)

Contemplating this loop in his life narrative, Fort commented: "My first interests had been scientific – realism sent me back" (Steinmeyer 135). This typically ambiguous statement can be read in several ways. Could it be a slip of the pen or a

pun for "realism *set* me back," meaning that his realist novel-writing attempts between-times had been a false alley? Or could it mean that realist writing actually conducted him back to science as its *fons et origo*? The best answer to such Fortean dilemmas is usually "both and neither," which is repeated in tracing the naturalist/scientist and his cans through Fort's recurrent riff of self-as-scientist in later texts.

The first thing to note, perhaps already obvious to the reader, is that the "we" of Fort's childhood narrative connotes the turn-of-the-twentieth-century scientist who was "we" in his [*sic*] writings (see: Bazerman *passim*).<sup>2</sup> The second thing to note is that "we" the scientist is insistently linked with the grandfather grocer's cans throughout Fort's oeuvre. In a key anecdote of *Many Parts* Fort recalled:

They made us work! Sent us up in the loft to scrape old labels off cans and paste on new labels of their own. They made us work!

We were unhappy and the other kid was quite as unhappy. We scraping in resentful carelessness; the other kid scraping as well as he could. We rebelling and grumbling and shirking; the other kid rebelling and grumbling but scraping as well as he could. (*Many Parts* 133)

In this instance, as in the conversation with the grandfather, cans function as the enemy of the would-be naturalist, the enemy of science. Fort would rather have been collecting specimens than doing this work. A similar, or perhaps the same, anecdote recurs throughout *Wild Talents*, but this time the sorting of the cans becomes a scientific, or quasi-scientific, activity:

One time I had pyramids of canned goods, containing a variety of fruits and vegetables. But I had used all except peach labels. I pasted peach labels on peach cans, and then came to apricots. Well, aren't apricots peaches? And there are plums that are virtually apricots. I went on, either mischievously, or scientifically, pasting the peach labels on cans of plums, cherries, string beans, and succotash. I can't quite define my motive, because to this day it has not been decided whether I am a humorist or a scientist. I think that it was mischief, but, as we go along, there will come a more respectful recognition that also it was scientific procedure. (Fort, *Wild Talents* 24)

This is typical Fort. The cans are both the opponent of science – naturalists don't deal with vegetables or animals in cans – and also a kind of science, for they are a mode of taxonomy. And yet, even in their scientific form, they are simultaneously the adversary of science, for they reveal the human contingency of taxonomy; mislabelling being essentially the same thing as labelling, and mischief indistinguishable from science.

From cans of gainful employment to deities of science: in his letters, Fort described his financially-mediated transformation to scientist in 1916 as one effected by "strange orthogenetic gods." Fort's gods variously move him, desert him, and are generally "mixed up in all this."<sup>3</sup> One of Fort's strange orthogenetic gods is "Equalization," who presides over a cosmic law according to which every success will be balanced by an equal and opposite disaster. Thus, Fort jokes that Dreiser will have his authorial success equalized – that is, punished – by failure in his quest to promote Fort's writing. "Brace up," he advised Dreiser, "[t]his is only the beginning. The gods have appointed me, in this life, which is hell, to punish you for something awful that

you once did" (Fort to Dreiser, 31 March 1916). Fort remained hopeful, however, that the projected book *Y* would equalize the Equalization.

A couple of months later, Fort was growing anxious that his euphoric rush of writing *X* had only been permitted by the strange orthogenetic gods because this success was equalized by his poverty-stricken existence. Now that he had received an inheritance, and was contemplating a move to a less insanitary residence, he feared that the gods would desert him, or punish him with an inability to write successfully:

My dear Dreiser, for twenty years, I have lived with strange orthogenetic gods ... who brood over stables and dumps and rear houses. If I desert them, "Z" will never be written, because it was from the great god Syntheticus, himself, that I derived "X" and "Y." But now Amorpha, who, being feminine, scorns dumps and rear houses, has in the past overlooked me, will, in three or four rooms and a bath, have me at her mercy. This matter of a bath room is breaking my heart; my wife insists, but she's playing right into Amorpha's hands. Think of the scorn of strange orthogenetic gods, if they should ever see me in a bath tub. There's only one chance: that the sight may so affect Amorpha that she will not be cruel to me.

No, I'm doomed ... I shall lose my literary soul. (Fort to Dreiser, 3 June 1916)

Of course Fort does not really mean it; in the same letter he declares his intentions to fight for additional monies that he believes are rightfully his. In propitiation, he proposes the surreptitious wearing of old shirts and the taking of bogus baths.

But in what manner are these gods, in one sense a fairly commonplace personification of writerly superstition, "orthogenetic"? Orthogenesis was an account of evolution that took its place in the rich variety of evolutionary models that existed during the "eclipse of Darwinism" (c. 1880-1920), famously described by historian Peter Bowler (268). Fort epitomized the situation thus:

Biology is in chaos: conventional Darwinites [*sic*] mixed up with mutationists and orthogenesisists [*sic*] and followers of Wisemann [*sic*] who take from Darwinism one of its pseudo-bases, and nevertheless try to reconcile their heresies with orthodoxy. (Fort, *Book of the Damned* 237)

Fort was no great supporter of Darwin, claiming that "survival of the fittest" (actually a Spencerian phrase, as is now well-known) was simple tautology. Watching these sects squabble amongst Darwin's remains was pleasure to him, though he would rather they did not attempt reconciliation with mainstream science. The 1911 *Encyclopaedia Britannica*'s discussion of orthogenesis, written by Peter Chalmers Mitchell (Secretary to the Zoological Society of London), put the matter in a remarkably similar light. It treated the topic in relation to an apparent problem of Darwinism, namely that the variations produced by chance, upon which natural selection might act, were simply *too* chancy; they seemed to account rather implausibly for phylogenetic series "which [display] not a sporadic differentiation in every direction, but apparently a steady and progressive march in one direction" (Churchill 362-63). Orthogenesis is often defined as a progressive unfolding of a pattern laid down from the outset (a "Russian doll" theory of evolution) but in this



definition, and in others of the period, the implication was that the unfolding was teleological, towards a particular design. The "designer" was not necessarily God; far from it, in fact. Butler's genius had been to synthesize natural theology and biology in such a way as to annoy both biologists and theologians; there was a "designer" but it was not God – rather, a bootstrapping of "cunning" in the natural world (Lightman 125-26).

*New Lands* offers as a sort of conclusion an "embryonic" picture of the cosmos and as such is the closest thing to an articulation of orthogenesis in Fort's printed oeuvre. It is an outrageously brief and passing sketch of the earth, its organisms and even science itself as items metonymic to one another and to the cosmos as a whole. Like Butler, Fort refuses to call either for Darwin or for God: "Ours is an expression upon Design underlying and manifesting in all things within this one system, with a Final Designer left out, because we know of no designing force that is not itself the product of remoter design" (Fort, *New Lands* 239).

The scholar Jeffrey Kripal (99) picks up on Fort's vision of embryonic development, suggesting that his lost manuscript *X* was premised on negative orthogenesis, a malevolent unfolding of the cosmos for unwholesome purposes. This is probably too settled a judgement; taken in conjunction with the strange gods, Fort's orthogenesis is more playful than this. Fort's general quality of playfulness is perhaps his most direct connection with Butler. There is, moreover, a direct connection between their playfulness concerning evolution in particular. Butler's mischievous engagement with evolution was appropriately recorded in the 1911 *Encyclopaedia Britannica*; here, he was credited with two contradictory achievements – one of them rather surprising – in the field. The surprise in the *Encyclopaedia* article is that it puts Darwin in Butler's shadow; Darwinism, in the sense of adaptationism, is placed in the "Butlerian" tradition. At the same time the article credits Butler with the critique of Darwin that has given rise to non-Darwinian theories of evolution, such as orthogenesis. Thus, Butler both created and uncreated Darwinism; had he read it he would undoubtedly have been delighted with this contradictory achievement.

Butler called his unfolding-account of evolution "organic memory." Like orthogenesis, it was a theory that posited some kind of "design," although in this case there was an element of environmental responsiveness that is not present in Fort's account. He may have been reacting, in part, against hardening ideas of heredity in Galtonian thought, although as Müller-Wille and Rheinberger assert (13) even Galton's heredity was not an "unavoidable fate." There is a fine balance between fatalism and freedom at work in *The Way of All Flesh*. Butler worked out his theory of evolution at the same time as writing his autobiographical novel, to the extent that critics have judged the latter to be a fictional outworking of the scientific theory (Shuttleworth 143-69). The novel is about the connections between the generations; but also, crucially, about the breaking away of "me," the youngest generation:

Obey me, your true self, and things will go tolerably well with you, but only listen to that outward and visible old husk of yours which is called your father, and I will rend you in pieces even unto the third and fourth generation as one who has hated God; for I, Ernest, am the God who made you. (Butler 137)

As it was, the case was hopeless; it would be no use [Ernest's parents] even entering into their mothers' wombs and being born again. They must not only be born again but they must be born again each one of them of a new

father and of a new mother and of a different line of ancestry for many generations before their minds could become supple enough to learn anew. (288)

Doomed by inheritance, Ernest must be remade; yet this remaking can only be done through nature, using the same stuff, and under the same laws, that got him to this pass in the first place.

### **Becoming a Writer: Narrated by an Already-Writer**

Like Fort in his grandfather's shop, Ernest must avoid "going down the generations." This diversion from the path of evolutionary fate, enabled by the orthogenetic gods of bastard inheritance, takes the form of self-writing. The self-proving act of autobiography, for these two writers, occurs in explicit relation with science as topic.

Ernest's metaphor for the change he must undergo is that of a caterpillar, which must recapitulate the whole behavioural pattern of the past before being able to go on:

Of course [Ernest] read Mr Darwin's books as fast as they came out and adopted evolution as an article of faith. "It seems to me," he said once, "that I am like one of those caterpillars which, if they have been interrupted in making their hammock, must begin again from the beginning. So long as I went back a long way down in the social scale I got on all right...; when I try to take up the work at a higher stage I fail completely." (Butler 382)

The trope is not originally Darwin's but appears in the writing of Jean-Henri Fabre. Widely recycled throughout the nineteenth and twentieth centuries, it also preoccupied Dreiser (181-82). It was used as a paradigm of the scientific belief that insects were solely driven by instinct, and as such represented a caricature of the bestial element within human psychology (Sleigh, *Six Legs Better* 49-55). Fabre's caterpillar is a blind automaton, a slave to its instincts, and has no power intelligently to pick up a train of actions where it has been interrupted. But, also like a caterpillar, Ernest is able to effect a final and dramatic change: to become something wholly new. The laws of nature, which appear to condemn the caterpillar, can produce surprising jumps and loops after all. (Hence, as Richards (7) puts it, "larvae have always danced over the several theories of evolution.") Ernest's eventual bachelorhood is an important part of this transformation; even "his" children are not legally his, since the marriage within which they were conceived turns out not to have been valid. They, like him, are a rupture in the pattern of inheritance. Like the insect's transformation to butterfly, Ernest's is both determined by inheritance and yet radically novel. The human factors for him are chance ones: for starters, the fluke release from marriage thanks to the discovery of bigamy. But more importantly there is the question of money, and becoming a writer: in sum, righting himself. Ernest figures himself as Ishmael (405); part of an inherited line and yet stuck out on a limb. His fresh start comes thanks to his outsider status: to rejection and ignominy.

The process of ejection from family life begins with "moments of epiphany ... [that] resolve the antagonism of the self and the world," as Dorinda Outram puts it in her study of French Revolutionary autobiographies (Outram 93). Butler the writer had been ejected from the Darwin family – rejected by his adopted intellectual father-figure – at the time of writing his novel; the merciful severance from his biological father was yet to come. For Butler's narrated self the epiphanic experience is not, as it is for Outram's subjects (and Fort), with nature. Instead, it is with literature; a very

nineteenth-century experience. Still, Outram's discussion of the phenomenon develops in a way that remains germane to the accounts under discussion here:

In many autobiographies the stage of life that makes the transformation from child to adult is marked ... by a moment of "adoption" by an older, usually male patron, as well as moments of supreme absorption in Nature itself. The definition of vocation, in other words, in more male autobiographies, is defined as finding a new "father," becoming a "child" again. (Outram 96)

Once again, the side-stepping of the paternal line is essential. Reading is the start; the reader or collector eventually becomes a writer. It is Ernest's gathering of notes that causes his godfather to realise that he is becoming a writer:

The literary instinct may be known by a man's keeping a small note-book in his waistcoat pocket, into which he jots down anything that strikes him, or any good thing that he hears said, or a reference to any passage which he thinks will come in useful to him. Ernest had such a note-book always with him. Even when he was at Cambridge he had begun the practice without anyone's having suggested it to him. These notes he copied out from time to time into a book, which as they accumulated, he was driven into indexing approximately, as he went along. When I found out this, I knew that he had the literary instinct, and when I saw his notes I began to hope great things of him. (Butler 343)

Butler's friend and biographer Henry Festing Jones quoted his own words back at him in order to praise *The Way of All Flesh*: it is, he stated, the "highest kind of imagination which consists in wise selection and judicious application of material derived from life" (Mason xxxii). Butler had no romantic myth to inform his writing; it was not a matter of inspiration but, like a scientist, of picking up things that happened to be lying around, like natural historical specimens by the wayside (Paradis 355). For Fort too, note-taking was the activity that bloomed as he began to find his *métier* as writer of scientific matters. From what lay at hand, he gathered his vast collections of notes, filed away in his apartments. From these notes the god Syntheticus assembled his tetralogy.

However it is done, it is writing that gives Ernest the means to break away. It is also the *cause* of the rupture from family and society, because he writes what is unwelcome. The process is looped for Butler, because he knew that such was the nature of the text he was writing:

For society indeed of all sorts, except of course that of a few intimate friends, [Ernest] had an unconquerable aversion. "I always did hate those people," he said, "and they always have hated and always will hate me. I am an Ishmael by instinct as much as by accident of circumstances, but if I keep out of society I shall be less vulnerable than Ishmaels generally are. The moment a man goes into society, he becomes vulnerable all round ... If I am to come to the fore at all it must be by writing ... [T]here are a lot of things that want saying which no one dares to say, a lot of shams which want attacking, and yet no one attacks them. It seems to me that I can say things which not another man in England except myself will venture to say, and yet which are crying to be said." (Butler 405-06)

Fort also seemed to relish the withdrawn lifestyle of the author, finding its compatibility with outcast-of-science a congenial and mutually-affirming one. The process of writing was radically self-determining – the writer created the world in which he developed, having abandoned the “outside” world, or been cushioned from its influence by money.

### Righting Science/Writing the Self

*The Way of All Flesh* is frequently compared with Edmund Gosse’s memoir *Father and Son* (1907). However, while Gosse was content to conclude his text with the death of the father and hence of God, Butler and Fort both found the formal telos a trickier matter.<sup>4</sup> For no sooner are their two Fathers out of the way than orthogenesis reasserts itself, and they (capitalized and pluralized for Fort as “They”) are reincarnated in the person of science (Shaffer 83). Even if science were the rupture from Christianity (which it is not for any of these authors), it fails to break the cultural entrainments of the father. Thus in extra-textual life Butler proceeded, famously, from a passionate endorsement of Darwin’s *Origin* to an angry and personal critique of the same. In *The Way of All Flesh* Butler dances nimbly between science and theology, displaying considerable psychological insight about Ernest’s philosophical non-committal to any definitive replacement for God-the-Father. He acknowledges that Ernest’s reason for despising the Simeonites (a dislike that is incarnated in a parodic tract) is that he holds an “unconscious sympathy” for them, which soon draws him into their ranks. “They had a repellent attraction for him,” states Overton; “he disliked them, but he could not bring himself to leave them alone” (218). Similarly Fort’s distaste for science led him to file tens of thousands of scientific observations of his own, and to write a thousand pages that corrected it.

As Ernest develops his writing career, his achievements inevitably invite comparison with Butler’s, in content as well as result. Ernest’s first – and successful – publication is, like Butler’s *Erewhon*, an anonymously published piece. It comprises “semi-theological, semi-social essays, purporting to have been written by six or seven different people, and viewing the same class of subjects from different standpoints” (411). Like *Erewhon*, it defies genre and categorization as support for, or satire upon, the philosophy it discusses. By describing writerly ruses of authorship within a book that is itself a complex performance of authorship, Butler/Overton draws attention to the latter. It creates a case for truth-judgement concerning itself that is *sui generis*, generated within the world of the text.

Chapter 65 of *The Way of All Flesh* is an extended and bravura passage concerning simultaneous belief and unbelief. In it, Ernest proceeds from a quasi-scientific retreat from Christianity, and into – paradoxically – a faith-fuelled belief in science. It is an argument that defines its writer/narrator as an outsider, guaranteed to annoy both churchmen and scientists. It painted both groups as “unbelievers in disguise” who had not exercised original judgement, but simply had – financial inheritance again – “numbers and prosperity on their side.” “‘Lord’, [Ernest] exclaimed inwardly, ‘I don’t believe one word of it. Strengthen Thou and confirm my disbelief’” (Butler 295).

Ernest/Overton/Butler conclude that one can only, in fact, rely on instinct, just as the biological caterpillar was considered to do. “And what is instinct? It is a mode of faith in the evidence of things not actually seen. And so my hero returned almost to the point from which he had started originally, namely that the just shall live by faith” (Butler 296). But now, instead of Abraham, it is Euclid that is given as exemplar for this life, since “he ha[d] no demonstrable first premise” (ibid.).

All this is echoed by Fort, who similarly blurs fact and fiction, concluding with the very same point about Euclid – that he is less “scientific,” in this case, than Dickens:

I am so obviously offering everything in this book, as fiction ... But this book is fiction in the sense that *Pickwick Papers*, and *The Adventures of Sherlock Holmes*, and *Uncle Tom's Cabin*, Newton's *Principia*, Darwin's *Origin of Species*, *Genesis*, *Gulliver's Travels*, and mathematical theorems, and every history of the United States, and all other histories, are fictions.

And yet there is something about the yarns that were told by Dickens that set them apart, as it were, from the yarns that were told by Euclid. There is much in Dickens' grotesqueries that has the correspondence with experience that is called “truth,” whereas such Euclidean characters as “mathematical points” are the vacancies that might be expected from a mind that had had scarcely any experience ... It must be taken on faith. (*Wild Talents* 43-44)

Fort, then, did not stake any truth claims for himself, but hedged his own methods with provisionality:

So our pseudo-standard is Inclusionism ... our difference [from orthodox science] is in underlying Intermediatism, or consciousness that though we're more nearly real, we and our standards are only quasi.... (Fort, *Book of the Damned* 246)

Fort's keenest readers enjoyed the experience of being unsettled vis-à-vis knowledge. One review of *The Book of the Damned* declared: “Henceforth I am a Fortean. If it has pleased Charles Fort to perpetuate a Gargantuan jest upon unsuspecting readers, all the better. If he has in all seriousness heralded forth the innermost truths of his soul, well and good. I offer him this testament. I believe” (Fort, *Lo!* 3). Another, after reading, felt compelled to place belief within the provisionality of quotation marks: “regardless of the absence of anything to believe, I was converted too. I ‘believed’” (*Lo!* 3). It is no surprise that Fort's patron (Dreiser 179) reserved his greatest adulation, amongst the dead, for Poe, that master of simultaneously meaning-and-not-meaning-it.

Overton, by contrast, professed to disapprove of scientific philosophizing on the part of his protégé:

For a long time I was disappointed. He was kept back by the nature of the subjects he chose – which were generally metaphysical. In vain I tried to get him away from these to matters which had a greater interest for the general public. When I begged him to try his hand at some pretty, graceful, little story which should be full of whatever people knew and liked best, he would immediately set to work upon a treatise to show the grounds on which all belief rested. (Butler 343)

Strangely enough, Fort also claimed that metaphysics held him back. It is a surprising assessment, given that his career began with the realist novel *The Outcast Manufacturers* (1909), with autobiography, and with the ostensible factuality of

journalism. Yet, in his self-evaluation, the path towards the strange cosmologies of his four great works was one *away* from philosophy:

the metaphysician had interfered with and held back the story writer. My book *Many Parts* was simply the work of an immature metaphysician psychologist, sociologist, etc. trying to express in a story. Also individualism, or stylism, not only interfered and made me not easily readable, but gave me a satisfaction or elation that held back development.<sup>5</sup>

Fort's realization, in the time of crisis between the two phases of his writing (that is, as he embarked on *X*), was that plot was all:

I am now occupied with style ... What is the novel's reason for being? To entertain? Then the form of a novel cannot express entertainingness, but be the instrument itself. Therefore the form of a novel should all be subservient to its climax.

Troubles. Distracted. Reading the above, I return that philosophy is the reason for being. Climax is the form's reason for being.... (Steinmeyer 133-34)

Fort called his scientific observations "yarns," a word widely used in the 1920s by the writers, publishers and readers of science fiction stories. However, the word backfires on science, since Fort's research was vicarious, and depended upon the prior observations and writings of scientists. If his writing was a yarn, it was braided from science. Fort applied the same judgements to science as he did to fiction; there was above all no requirement for "realism," meaning adherence to conventional ontological frameworks. Moreover there should be no interpolation of necessary but self-serving explanation (something like Duhem's theory-protection), as when an author goes back and retrospectively inserts precursors to a later development in the plot. This is right in Poe's territory, for it was Poe's contention that a story should be completely pre-plotted – an abductive form of logic, alternative to the inductions of science (see: Eco and Sebeok; Sleigh, *Literature and Science* 98-99). Besides being a restatement of orthogenesis, Fort's thought processes, especially concerning climaxes, shed light on *X*. *X* is standard notation for the unknown, the unnamed; in wordplay it is also the clima*X* to the climax. Fort had found his form: the biography of the cosmos would be his autobiography. The forces that he found at work in cosmic plotting were the same as those at work in his life. His writerly yarns, echoing the plots of the universe, captured and made real his self.

Ernest's godfather has to content himself with the assessment that his protégé eventually comes to control his philosophical ambitions:

He still ... stuck to science instead of turning to literature proper as I hoped he would have done, but he confined himself henceforth to enquiries on specific subjects concerning which an increase of our knowledge – as he said – was possible. Having in fact, after infinite vexation of spirit, arrived at a conclusion which cut at the roots of all knowledge, he settled contentedly down to the pursuit of knowledge, and has pursued it ever since in spite of occasional excursions into the regions of literature proper. (Butler 345)

In this moment of discussing Ernest's writing, Butler enjoys the luxury of wry and reflexive self-commentary. As he notes, Ernest goes on to propose writing social commentary, about families in particular – the theme of this very book. Thus, the autobiography the reader holds in her hands is revealed as a scientific text; it is its own vindication.

### Conclusion

The obdurate dyad of Edmund Gosse's title, *Father and Son*, yields a clue to its very different resolution of the autobiographical problems of selfhood and science. There is no Spirit, no third party that can effect a triangulation or inspiration to enable metamorphosis beyond the trammels of inheritance. Gosse has no strange orthogenetic gods, those gods that make, and free, the writer. Instead, the son produces a "document" which, as we see throughout the text, is precisely what his father relies upon. The father's earnest scrutiny of scripture in search of truth is but palely copied in the son's document, proffered for the reader's attention. Although *Father and Son* shares a fade-out ending with *The Way of All Flesh*, the latter revels in its spirit of uncertainty, while the former simply peters out somewhat unsatisfactorily.

In a career echoing that of his creator, Ernest finds success with his first, anonymous book but afterwards tastes only failure. Overton comments:

I could see the publisher, who ought to know, had lost all faith in Ernest's literary position, and looked upon him as a man whose failure was all the more hopeless for the fact of his having once made a coup. "He is in a very solitary position ... He has formed no alliances, and has made enemies not only of the religious world but of the literary and scientific brotherhood as well. This will not do ..."

I replied, "... perhaps, that a younger generation will listen to him more willingly than the present." (Butler 428)

Writing as Overton, the godfather to his fictional self, Butler arrives at the means simultaneously to break the hold of biological inheritance and to metamorphose into another life – even immortality. As Shuttleworth notes (163), in becoming a writer Ernest becomes "Chinese" to his father and grandfather: as evident a rupture in the line of inheritance as one could imagine. Fort, in a similar looping of self, writing and written-self, jokes that his writing is at the whim of the gods whose work his outsider-science describes: "I'd write it myself, only I haven't brains enough to do anything that I'm not ogenetically [*sic*] compelled to do" (Fort to Dreiser, 31 March 1916).

Autobiography, then, was for both Butler and Fort orthogenetic by definition. The scientific outsider of *Many Parts* went on to "live" through his tetralogy; Butler committed himself to posterity in his self-vindicating text. It was through self-fashioning *as a writer* that the scientist was made – or so they hoped – emerging from the cocoon of the scientific outsider.

## Notes

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1. The photocopy has been accurately transcribed and edited and placed online by an anonymous scholar, "Mr. X." The pagination of the online version follows that of the original Xeroxes.

2. Cheng (43) notes how Hugo Gernsback developed the use of an editorial first-person plural to draw readers more tightly into the world of his pulp magazines.

3. Two undated letters to Dreiser; the third one is 29 June 1917. These and all subsequent letters are at <<http://www.resologist.net/corres00.htm>>.

4. Krenis notes that in Victorian autobiography the father often stood in place of God; the argument is not made psychologically but from a social standpoint of class and economics. On Gosse see also: Lee; Goodman.

5. Memorandum, 6 November 1929, quoted in Introduction to Fort, *Many Parts* at <<http://www.resologist.net/parte01.htm>>.



## Works Cited

- Amigoni, David. "'The Written Symbol Extends Infinitely': Samuel Butler and the Writing of Evolutionary Theory." *Samuel Butler, Victorian against the Grain: A Critical Overview*. Ed. James G. Paradis. Toronto: U of Toronto P, 2007. 91-112.
- Barton, Ruth. "'Men of Science': Language, Identity and Professionalization in the Mid-Victorian Scientific Community." *History of Science* 41 (2003): 73-119.
- Bazerman, Charles. *Shaping Written Knowledge: The Genre and Activity of the Experimental Article in Science*. Madison: U of Wisconsin P, 1988.
- Bowler, Peter J. *Evolution: The History of an Idea*. Berkeley: U of California P, 1989.
- Butler, Samuel. *The Way of All Flesh*. Ed. Michael Mason. Oxford: Oxford UP, 1993.
- "C. H. Fort, Author, Foe of Science, Dies." *New York Times* 5 May 1932: 19.
- Cheng, John. *Astounding Wonder: Imagining Science and Science Fiction in Interwar America*. Philadelphia: U of Pennsylvania P, 2012.
- Churchill, Frederick B. "From Heredity Theory to Vererbung: The Transmission Problem, 1850-1915." *Isis* 78.3 (1987): 336-64.
- Daston, Lorraine, and Peter Galison. *Objectivity*. 2007. New York: Zone Books, 2008.
- Dreiser, Theodore. *Notes on Life*. Ed. Marguerite Tjader and John J. McAleer. University, AL: Alabama UP, 1974.
- Eco, Umberto, and Thomas Sebeok. *The Sign of Three: Dupin, Holmes, Peirce*. Bloomington: Indiana UP, 1983.
- Fabre, Jean-Henri Casimir. *The Life of the Caterpillar*. New York: Boni and Liveright, 1925.
- Fort, Charles Hoy. *The Book of the Damned*. New York: Horace Liveright, 1919.
- . Letters to Theodore Dreiser. Web. <<http://www.resologist.net/corres00.htm>>.
- . *Lo!* New York: Claude Kendall, 1931.
- . *Many Parts*. N.d. MS. Ed. and comp. by "Mr. X." Web. <<http://www.resologist.net/parte01.htm>>.
- . *New Lands*. New York: Boni and Liveright, 1923.
- . *Wild Talents*. New York: Claude Kendall, 1932.
- Fyfe, Aileen, and Bernard Lightman, eds. *Science in the Marketplace: Nineteenth-Century Sites and Experiences*. Chicago: U of Chicago P, 2007.
- Goodman, Martin. "Nature Vs Naturalist: Paths Diverging and Converging in Edmund Gosse's Father and Son." *Life Writing* 11.1 (2014): 85-101.
- Harley, Alexis. *Autobiologies: Charles Darwin and the Natural History of the Self*. Lewisburg: Bucknell UP, 2014.
- Harman, Oren, and Michael R. Dietrich, eds. *Outsider Scientists: Routes to Innovation in Biology*. Chicago: U of Chicago P, 2013.
- James, Simon J., ed. *Unsettled Accounts: Money and Narrative in the Novels of George Gissing*. London: Anthem, 2003.
- Knight, Damon. *Charles Fort: Prophet of the Unexplained*. New York: Gollancz, 1971.
- Krenis, Lee. "Authority and Rebellion in Victorian Autobiography." *Journal of British Studies* 18.1 (1978): 107-30.
- Kripal, Jeffrey J. *Authors of the Impossible: The Paranormal and the Sacred*. Chicago: U of Chicago P, 2010.
- Landow, George. *Approaches to Victorian Autobiography*. Athens, OH: Ohio UP, 1979.

- Lee, Hermione. "Writing Victorian Lives and Victorian Life-Writing: Gosse's 'Father and Son' Revisited." *Journal of Victorian Culture* 8.1 (2003): 108-18.
- Levine, George. *Dying to Know: Scientific Epistemology and Narrative in Victorian England*. Chicago: U of Chicago P, 2002.
- Lightman, Bernard. "'A Conspiracy of One': Butler, Natural Theology, and Victorian Popularization." *Samuel Butler, Victorian against the Grain: A Critical Overview*. Ed. James G. Paradis. Toronto: U of Toronto P, 2007. 113-42.
- Mason, Michael. Introduction. *The Way of All Flesh*. By Samuel Butler. Ed. Michael Mason. Oxford: Oxford UP, 1993. vii-xli.
- Mitchell, Peter Chalmers. "Variation and Selection." *The Encyclopaedia Britannica*. 11th ed. Vol. 27. 1911.
- Müller-Wille, Staffan, and Hans-Jörg Rheinberger. *A Cultural History of Heredity*. Chicago: U of Chicago P, 2012.
- Outram, Dorinda. "Life-paths: Autobiography, Science and the French Revolution." *Telling Lives in Science: Essays on Scientific Biography*. Ed. Michael Shortland and Richard Yeo. Cambridge: Cambridge UP, 1996. 85-102.
- Paradis, James. "Butler After Butler: The Man of Letters as Outsider." *Samuel Butler, Victorian against the Grain: A Critical Overview*. Ed. James G. Paradis. Toronto: U of Toronto P, 2007. 343-69.
- Peterson, Linda H. *Victorian Autobiography: The Tradition of Self-Interpretation*. Ed. George Landow. New Haven: Yale UP, 1986. Web.
- Porter, Theodore M. *Karl Pearson: The Scientific Life in a Statistical Age*. Princeton: Princeton UP, 2010.
- Raby, Peter. *Samuel Butler: A Biography*. Iowa City: U of Iowa P, 1991.
- Richards, Robert J. *The Meaning of Evolution: The Morphological Construction and Ideological Reconstruction of Darwin's Theory*. Chicago: U of Chicago P, 2009.
- Ruse, Michael. "The Paradox of Samuel Butler: Insider or Outsider?" *Outsider Scientists: Routes to Innovation in Biology*. Ed. Oren Harman and Michael R. Dietrich. Chicago: U of Chicago P, 2013. 75-92.
- Shaffer, Elinor. "The Ironies of Biblical Criticism: From Samuel Butler's 'Resurrection' Essay and *The Fair Haven* to *Erewhon Revisited*." *Samuel Butler, Victorian against the Grain: A Critical Overview*. Ed. James G. Paradis. Toronto: U of Toronto P, 2007. 58-87.
- Shortland, Michael, and Richard Yeo. Introduction. *Telling Lives in Science: Essays on Scientific Biography*. Ed. Michael Shortland and Richard Yeo. Cambridge: Cambridge UP, 1996. 1-44.
- Shuttleworth, Sally. "Evolutionary Psychology and *The Way of All Flesh*." *Samuel Butler, Victorian against the Grain: A Critical Overview*. Ed. James G. Paradis. Toronto: U of Toronto P, 2007. 143-69.
- Sleigh, Charlotte. *Literature and Science*. Basingstoke, Hants: Palgrave, 2010.
- . "'An Outcry of Silences': Charles Hoy Fort and the Uncanny Voices of Science." *Silence and Science Communication* (title tbc). Ed. Felicity Mellor and Stephen Webster. Farnham: Ashgate, forthcoming 2016.
- . *Six Legs Better: A Cultural History of Myrmecology*. Baltimore: Johns Hopkins UP, 2007.
- Steinmeyer, Jim. *Charles Fort: The Man Who Invented the Supernatural*. London: Heinemann, 2008.

- Swann, Charles. "‘Autobiografiction’: Problems with Autobiographical Fictions and Fictional Autobiographies. Mark Rutherford’s ‘Autobiography’ and ‘Deliverance,’ and Others." *The Modern Language Review* 96.1 (2001): 21-37.
- Turbil, Cristiano. "The Missing Link, Samuel Butler and the Theory of Evolution: Design, Physiology and Psychology of the Unconscious in Victorian Britain." PhD Thesis. U of Kent, 2013.
- Walters, Ronald G. "Uncertainty, Science, and Reform in Twentieth-Century America." Introduction. *Scientific Authority and Twentieth-Century America*. Ed. Ronald G. Walters. Baltimore: Johns Hopkins UP, 1997. 1-10.
- White, Paul. "Acquired Character: The Hereditary Material of the ‘Self-Made Man.’" *Heredity Produced: At the Crossroads of Biology, Politics, and Culture, 1500-1870*. Ed. Staffan Müller-Wille and Hans-Jörg Rheinberger. Cambridge, MA: MIT Press, 2007. 375-98.