Science and Magic: Experimental Work

In 1818, Dr. Frankenstein’s lab was opened to readers, and by the end of the century several other texts portrayed laboratory experiments. *The Strange Case of Dr. Jekyll and Mr. Hyde* (Robert Louis Stevenson, 1886) and *The Beetle* (Richard Marsh, 1897) are often categorized as gothic, drama, thriller, or horror, but I think the label “science fiction” is appropriate and, in fact, illuminates my main assertion that the work of “science” is inextricable from the “fiction.”

Arthur C. Clarke’s Third Law famously claims that “any sufficiently advanced technology is indistinguishable from magic,” and it is readily apparent that for science fiction to be read when the realistic novel was so popular, the science portrayed needed to be logical or understandable to audiences. Though both *Dr. Jekyll and Mr. Hyde* and *The Beetle* portray unexplainable phenomena, they also attempt to aid the reader’s ability to suspend disbelief by providing scientific explanations or by portraying active scientific work alongside more fantastic elements.

Farah Mendelsohn says that one of the basic requirements of science fiction is having a sense of cognitive estrangement which reinforces the understanding that action is not taking place in our world (*CC* Intro 3-5). While readers must be estranged from their mundane lives, they must also understand the fictional world in order to follow the narrative. Kathryn Cramer emphasizes this negotiation of estrangement and plausibility, saying “hard scifi feels authentic to the experienced reader when the way things work in the story is scientifically plausible” (*CC* 188). One way of establishing scientific plausibility is the depiction of actual scientific work.
For *Jekyll and Hyde*, hard science and metaphysics are combined as the doctor pursues and eventually creates an elixir that, while entirely reliant on the properties of chemical interactions, has a supernatural effect. Indeed, it could be argued that science fiction itself has such a “dual nature”: on the one side science, and on the other, fiction. Balancing invention and plausibility is achieved in *Jekyll and Hyde* in a number of ways:

First, the form of *Jekyll and Hyde* puts readers in mind of a scientific casebook or study; the full title of the novella, *The Strange Case of Dr. Jekyll and Mr. Hyde*, makes us think of some record or account of a true story or science experiment. The first part sets the stage for a mystery, and the second and third parts, as told by Dr. Lanyon and Dr. Jekyll, provide different testimonies about the same *Strange Case*, thereby filling in gaps of knowledge and lending an air of objectivity.

The audience is subtly led to believe the veracity of the tale because of this structure, and is offered more plausibility in the form of Jekyll’s titles and degrees. His ethos is well-established in the first paragraph: he is a Doctor of Medicine, Doctor of Civil Law, a Doctor of Laws, and a Fellow of the Royal Society. We are meant to understand that a story told by or about this man, no matter how fantastic or magical, should be taken seriously.

The lab is described as “a large room fitted round with glass presses, furnished, among other things, with a cheval-glass and a business table” (29). One of the most detailed descriptions of Jekyll’s lab work supplies and equipment comes when Dr. Lanyon goes to retrieve the drawer for Jekyll to enable him to escape the form of Hyde. In the drawer, there are “powders […] of Jekyll’s private manufacture,” “what seemed to [be] a simple crystalline salt of a white color” and a “phial […] about half full of a blood-red liquor” which Lanyon guesses includes phosphorous and something else “volatile” (55-6). When combined, we see that a series
of spectacular chemical reactions occurs. The inclusion of realistic ingredients, records, and tools lends plausibility to the unexpected and spectacular results.

Even readers who are not chemists can understand that the potion must be finicky and difficult to compose: it is entirely realistic, then, that Jekyll (or Hyde) would run out of one of the particular ingredients and lose his ability to exactly duplicate his results. This tragic conclusion also emphasizes the reality that the world does not create happy endings on demand, a feature of hard science fiction.

While *Jekyll and Hyde* is the “big idea” type of scifi, *The Beetle* is more of a “problem-solving” story (Cramer 190). These two main types of scifi proposed by Cramer are illustrated nicely by each: the “big idea” of Stevenson’s novella is the splitting concoction, while the “problem solving” provided by Marsh centers on how best to wage war (with other nations or, more immediately, with ancient and powerful magical bugs of the occult). The scientist of *The Beetle* is Sydny Atherton, who, unlike Dr. Jekyll, does not have a string of honorifics and degrees adorning his name. Nonetheless, he has his own laboratory and does important and dangerous experiments which have resulted, by the time of the story, in a powerful poisonous gas. Allow me to briefly set the stage for those unfamiliar with *The Beetle*:

The novel opens with a strange account of a man being mesmerized by a creepy figure and threatened into submission by a giant beetle. We later learn that the creepy figure, though often referred to as “he,” is a female follower of the Cult of Isis and can turn, at will, into the giant beetle. We also learn that she has something against Paul Lessingham, a well-respected rising political star, and she hints that she seeks vengeance for abandonment and/or murder. The narrative moves into Atherton’s first-person account, he confesses his love for his childhood friend Marjorie Lindon, but she tells him that she is secretly engaged to Lessingham. Worlds
collide when the beetle person appears to Atherton in his lab and offers to help him punish Lessingham, since now Atherton rather dislikes the man for being engaged to Marjorie. However, Atherton is significantly creeped out by the beetle person and refuses her “services.” Later, Lessingham visits Atherton’s lab to ask him if he knows anything about the Cult of Isis and people being able to transform into beetles. He finds, much to Atherton’s surprise, an image of the very beetle under discussion left by the mysterious person on a scrap of paper in the lab, and promptly goes into a panic. Atherton calms him down and sends him on his way.

The same evening there is a ball and a political meeting. After hapless Percy Woodville confesses his love for Marjorie, he and Atherton follow her to watch Lessingham give a speech, get drunk, and end up back at Atherton’s lab, where he insists Percy watch him do a demonstration of his gas on a stray cat. The cat dies, Percy is accidentally exposed to the gas and is knocked unconscious, and then the beetle person appears just outside his lab. She once again offers to take care of Lessingham and make Marjorie love him, but he becomes enraged that the disgusting beetle person would dare address Marjorie, and a duel of sorts ensues. So, in a nutshell: Lessingham and Marjorie are engaged, Atherton loves Marjorie, and the beetle seeks revenge on Lessingham, tries to find an ally in Atherton, but Atherton refuses because the beetle thing is so offensive.

Though this only gets us halfway through the novel, it is already apparent that Atherton’s lab serves as an important location, not only for chemical work that is frequently demonstrated, but also for meetings that drive much of the action, and this is enough summary to get us to the scene I’m most interested in discussing today. The duel in the lab is particularly interesting because the beetle woman’s mysterious transformative power is clearly portrayed as magic, but
Atherton’s chemistry is also discussed in magical language. To balance the science and magic, Marsh is careful to establish plausibility for Atherton’s work.

Like Stevenson’s novella, *The Beetle* is written such that the section titles present the narrative like a case study or trial with “objective” accounts in from different “witnesses.” We have the story, with various starting and ending places, from Robert Holt, the first man mesmerized by the beetle, Sydney Atherton, Marjorie Lindon, and from an outside perspective that is nearly third person omniscient. This last narrator would be commonplace if not colored by the very scientific description that begins the section: “The Conclusion of the Matter as Extracted from the Case-Book of the Hon. Augustus Champnell, Confidential Agent.” That Augustus Champnell has a title lends him authority, and that he has a case-book puts us in mind of Jekyll’s experiment leger.

And like Dr. Jekyll’s laboratory, Atherton’s lab is described here and there in realistic detail. He has numerous chemicals, all listed by name; there are “some of the finest destructive agents you could wish to light upon—carbon-monoxide, chlorine-trioxide, mercuric-oxide, conine, potassimide, potassium-carboxide, [and] cyanogens” all in his lab (102). He has shelves and shelves of materials and contraptions of his own making, like his gas mask and glass chamber. Many of the items are mentioned in passing, like when Atherton narrates “I was regulating the valve of a cylinder in which I was fusing some oxides when…” (103), and if conversation touches upon objects in the room, like when Lessingham is trying to distract Atherton from asking questions and says, “What is this curious arrangement of glass tubes and bulbs?” (175). Despite the traffic in his lab, Atherton says, “It is my rule to take no one there; it is a workshop, not a playroom” (157).
Furthermore, Atherton knows the importance of doing repeated tests of his noxious gas, and, judging by his confidence when he schedules a test run with Dora Grayling, a potential investor, and Percy, he has already done enough testing to be sure of the results. The tests that we see in the novel prove that Atherton has done significant work on his product already, and the gas’s impact shows us that his labor has been successful: after all, the cat is killed and Percy is accidentally knocked unconscious.

In these ways, plausibility is directly related to the portrayal of scientific work in each story. By revealing the man behind the curtain, so to speak, and showing the audience that “real science” is being done, we find it easier to believe that although the results are fantastic, they are grounded in reality. For each of the more plausible details noted just now, there seems to be a counterbalance of mystical or metaphysical description or effect.

I noted above that the chapter and section titles sound like record-keeping or testimony, but each also includes a bit of subjectivity, hinting at the “magic” of individual experience—*Jekyll and Hyde* begins with a bit of gossip, and *The Beetle* begins with a poor man being mesmerized.

The laboratories of both Jekyll and Atherton which add so much realistic detail and plausibility to the science of each story are also described as strange, mysterious, or magical. By the end of Stevenson’s tale, the laboratory is *haunted* by a pacing maniac Poole suspects killed his master. We find that instead, the laboratory has become rather like Schrödinger’s box, containing a living Dr. Jekyll, but once opened, only a dead Hyde.

Atherton’s laboratory is rather fantastic from the beginning, since Atherton is a bit more flamboyant than Jekyll and describes much of his work as fabulously as possible. He insists on calling his discovery “magic vapour” and, as I discuss shortly, he embraces the performative
aspect of doing science. Rather than a triumph of science over superstition, the chapter that begins the duel in Atherton’s lab presents only two options; it is called “Magic?—Or Miracle?” I mentioned this duel earlier in the context of plausibility—Marsh has to do some serious work establishing that Atherton’s gas is legitimately scientific because Atherton is so intent on presenting himself as a magician. Dora Grayling even calls his lab a “wizard’s cave” (154), and Marjorie says “it looks uncanny” (162).

During his first meeting with the beetle woman, she slips past his servant, prompting Atherton to ask, “are you a magician?” to which she replies, “You, Mr. Atherton,--are you also a magician?” because Atherton is wearing his gas mask (104). This conflation of science and magic continues into their next meeting when they duel: Atherton has the lever for an electric machine within reach, and gives his visitor “a little exhibition of electricity” (145). The beetle woman is terrified, and Atherton threatens, “You may suppose yourself to be something of a magician, but it happens, unfortunately for you, that I can do a bit in that line myself,--perhaps I’m a trifle better at the game than you are. Especially as you have ventured into my stronghold, which contains magic enough to make a show of a hundred thousand such as you” (145). He follows this speech with another scientific display, this time showing off a liquid that causes pyrotechnics and smoke. He narrates, “it was a sufficiently simple illustration of one of the qualities of phosphorus-bromide” (145). By showing off some of the more flashy chemicals and contraptions in his lab, Atherton demonstrates that his sufficiently advance technology is indistinguishable from magic to the beetle woman.

She is so frightened that she transforms into a small beetle, and then quickly changes back, leaving Atherton wondering if he can trust his eyes. He puts on another display of electricity, and she fully transforms into a monstrous, person-sized beetle. Atherton is surprised
but quickly regains his composure and “felt as an investigator might feel, who has stumbled, haphazard, on some astounding, some epoch-making, discovery” and wishes to mentally photograph it, saying, “I believe that if it were possible to take a retinal print—which it someday will be—you would have a perfect picture of what I saw” (150). His reaction places him firmly back in the realm of scientific work, but also suggests his openness to unknown technologies that would seem like magic to the uninformed.

Clarke’s claim that “any sufficiently advanced technology is indistinguishable from magic” clearly applies to both Dr. Jekyll’s potion and Atherton’s poisonous gas, and serves to unite the pair of science and magic. Clarke says, “to predict the future we need logic; but we also need faith and imagination which can sometimes defy logic itself” (142). Certainly Dr. Jekyll’s transformative potion is unexpected and, by contemporary and current scientific understanding, illogical or impossible. But Clarke leaves room for the unexpected, adding that, “even things that are undoubtedly impossible with existing or foreseeable techniques may prove to be easy as a result of new scientific breakthroughs. From their very nature, these breakthroughs can never be anticipated” (143).

On the other hand, one feature of the science in science fiction is that it can also be quickly outdated—Atherton’s magical gas can be easily compared to pure sulfur mustards, also known in an impure, weaponized form as mustard gas. So, while Stevenson provides the imagination of predictive science, Marsh uses logic to come to the conclusion that real world scientists did not fully develop into its currently-known form until roughly fifteen years later. In both cases, until the science is or was fully developed, the results appeared magical.

Perhaps, in the future, some new, unexpected discovery will even lead to the ability displayed by the beetle: spontaneous interspecies transformation of the body, no potion needed.
One keyword from Clarke’s Third Law that merits brief focus is “indistinguishable.” This term means that the descriptions and portrayals of science (or magic) are an important part of the Law. “Indistinguishable,” after all, does not mean “same,” it just means we cannot tell a difference. Historian of science Iwan Rhys Morus develops the idea of the performativity of Victorian public interest in natural philosophy and, tellingly, couches most of these performances in terms of magic shows, which he calls “sensationalist” and which required “careful choreography” (808, 807). Thus, though certainly scientific in nature, demonstrations of things like magic lanterns, electric devices, and pyrotechnics were “described in an aesthetically loaded language of wonder” which required serious planning and work to execute (Rhys Morus 813). The presentation and perception aspect of scientific performance echoes the true meaning of “indistinguishable” as relying on the senses to discover scientific truths.

Moreover, these performances resemble moments of display and spectacle in both Jekyll and Hyde and The Beetle and they make the scientific work of Dr. Jekyll and Atherton visible. In the instance that another character witnesses Hyde’s transformation back into Jekyll, he unquestionably dramatizes and sensationalizes the performance: he tells Dr. Lanyon that if he insists on seeing him drink the potion that “a new province of knowledge and new avenues to fame and power shall be laid open to you, here, in this room, upon the instant; and your sight shall be blasted by a prodigy to stagger the unbelief of satan” (JH 59). All his speech is missing is a “step right up, folks!”

Atherton similarly sets the stage for each of the times he has people in his laboratory to witness the marvelous gas he has been working on. When he shows Percy the effects of his gas on a cat, he says to him, “you are about to be the witness of an experiment which, to a legislator—such as you are!—ought to be of the greatest possible interest. I am going to
demonstrate, on a small scale, the action of the force which, on a large scale, I propose to employ on behalf of my native land” (B 135). He then narrates the entire experiment, drawing his spectator’s attention to each particular part of the contraption he has made to safely contain the poisonous gas, how it enters the chamber, and the eventual effect on the poor cat. Just like a magician daring his audience to attempt to make sense of some sleight of hand, Atherton says “now, attention!”

The performative aspects of scientific demonstrations reinforce the importance of Clarke’s word “indistinguishable” by focusing on sensory ability to perceive difference and the audience’s inability to understand the science behind the spectacle when the display is “sufficiently advanced technology.” Performance also serves as a layer of work on top of experiments in a lab, a type of work needed to make science visible to others. Using Clark’s Third Law helps illuminate the importance of both the science and the magic in both stories; each of these texts portrays laboratory work alongside unexplainable phenomena.
Works Cited


For Further Reading


