

Laboratory Literature:  
Science and Fiction in the Place of Production.

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**Dedication**

To my daughter Sylvie,  
who came into the world  
just before this dissertation,  
and will forever be first.

## Abstract

In this dissertation, I claim that the figure of the scientific laboratory in literature serves as a means for the literary text to reflect upon its own conditions of possibility, its processes of production, and its socio-cultural functions, all of which enact an autocritique of literature by literature. In representing production within the scientific laboratory, Mary Shelley's *Frankenstein* (chapter one) and H. G. Wells' *Island of Dr. Moreau* (chapter two) demonstrate how this space of scientific labor is a model for the space of literary production. Elaborating the claim that an isomorphy exists between these two spaces, I offer new insights into the processes and effects of literary inscription. With this focus on literary production, I read these literary texts from the perspective of the material and affective processes that constitute a literary object rather than from a point of view on the finalized product alone. I argue that the novel itself becomes a laboratory, a space of experimentation in and through which one enacts and reenacts the myriad living processes associated with literary discourse. In my third chapter, I further develop this perspective through a reading of bodies and social groups in Octavia Butler's *Xenogenesis* trilogy that take on the qualities of scientific or literary laboratories, and often both at once. I specifically pay attention to Butler's use of genetics and genetic engineering in both the content and formal characteristics of her novels. Here, I take the laboratory as a concept for thinking through both literary labor, as well as the function of speculative fictions and utopian thought in the biotech industry and the life sciences. Finally, in my fourth and final chapter on Ridley Scott's film *Prometheus*, I consider the

function of the laboratory as a social apparatus for not only producing discourses on (human) life, but also for bringing new forms of life themselves into existence. As in the previous chapters, the laboratory is here a site in and through which the work's conditions of possibility are made visible, enabling the film to critique the roles of venture capital, marketing, and finance in contemporary forms of laboratory labor that come to blur the line between the fictional and the scientific.

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## INTRODUCTION

### “A Laboratory of One’s Own”

In October of 1928, Virginia Woolf gave two lectures at the Cambridge women’s colleges Newnham and Girton on the subject “Women and Fiction.” She later expanded these two talks into the book *A Room of One’s Own* in which Woolf tells the story of the process that led her to the deceptively simple claim that in order to write fiction, women need money and a room of their own. I begin with a close reading of Woolf’s text/talk in order to highlight the primary concepts and dynamics at work in my dissertation overall.

The text’s first claim is that her story itself will be fictional, and that the narrator is not one individual but any and all, a spokeswoman of sorts for the tradition of women writing that she considers at length: “call me Mary Beton, Mary Seton, Mary Carmichael or by any name you please--it is not a matter of any importance” (5). The immediate transposition of what she claims to be her story into a fictional register challenges the codes and conventions of the academic lecture, unsettling her text’s relationship to truth and fiction. Not only does the text produce a new type of reader or listener, a new hybrid interpretive ear, it also presents a narrative that cannot be passively recorded, as with facts, but rather must be interpreted and engaged. As she says, “One can only give one’s audience the chance of drawing their own conclusions as they observe the limitations, the prejudices, the idiosyncrasies of the speaker. Fiction here is likely to contain more truth than fact.” Woolf constructs her listener as an actor in the drama who must “seek out this truth...to decide whether any part of it is worth keeping” (5). In this sense, one can

already witness Woolf's attempts to conceptualize the space of her lectures—and by extension the space of her writing—as a site of experimentation. Furthermore, this talk is not presented as a final product of her labor, redrawn, cleaned, and perfectly shaped into a visible truth. Rather, Woolf invites the audience into her own laboratory, giving them a tour through the place and time of her labor that led to her central claim.

Woolf's invitation to speak on woman and fiction should be situated within the historical context of a moral panic in Britain that revolved around Radclyffe Hall's racy novel *The Well of Loneliness*, which becomes a key allusion in her address. Hall's novel was at the center of a highly publicized obscenity trial in response to the novel's depiction of an explicit lesbian relationship, one based explicitly on sexologist Richard von Krafft-Ebing's theories in *Psychopathia Sexualis*. This spectacularized trial opposed a literary intelligentsia to the governmental and social forces of censorship, and posed the questions of women, sexuality, writing, and their relationships as a central problematic for the time. This controversy transformed Britain itself into a space of social experimentation and investigation through which dissenting voices clashed with the deployment of an entire apparatus of reactionary social forces aimed to stabilize the turbulent problematic of sex, woman, and writing. Along with a wide range of social actors, Woolf herself contributed an antagonistic voice to the clamor.<sup>1</sup>

In the fifth chapter of *A Room of One's Own*, Woolf brings the raging public debate into the room, so to speak, through a direct naming of the chief magistrate residing at the obscenity trial, Sir Chartres Biron. He is named, or more precisely, his “figure” snaps into view, during the narrator's reenactment of a critical reading of a novel. The

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<sup>1</sup> For further information on the controversy surrounding Hall's novel and its central role in the emergence of modern lesbian culture in Britain see Doan 1-30.

figure of this man is so poignantly seared onto the mind of this fictional speaker that she stops in mid-sentence (marked in the text by an ellipsis) to assure herself that this man is literally not present: “I am sorry to break so abruptly,” she continues after the caesura, “Are there no men present? Do you promise me that behind that red curtain over there the figure of Sir Chartres Biron is not concealed? We are all women, you assure me?” (82).

The reference to the magistrate, one who was making headlines at the time of her lectures, places before the audience/reader the sensationalized sexual scandal that had consumed the public eye. This was not the first time the figure of a man had ruptured the narrator’s train of thought (for example, she is channeled onto the proper path for women, or barred entrance to the male only library by University functionaries). However, Biron is the only one of these otherwise nameless regulatory personae mentioned by name, a name that functions to ground what she is about to say in a concurrent and heated social and literary controversy in Britain regarding precisely the topic of discussion suggested to her from the beginning. Were one given only the information above, the expectation would be that the narrator has chosen to work through the very writing at the center of this historical, political debate, but this is not the case. This dramatic rupture raises several questions for the audience: What could be in this novel that would cause the speaker such anxiety? Since she is not reading from Hall’s novel itself, is this yet another writing that may spark into motion the juridical and social apparatuses of Britain so as to contain and frame, define and explain away this anomaly? To get at what Woolf as the narrator/speaker of this text is up to here, I need to provide more context.

After her survey of writings from a variety of discourses, as well as a consideration of the “great” women novelists of her recent past, the narrator explains that

she had turned her attention to the fiction being written by women at that very moment in Britain. The narrator pulls a book published “just this month” off the shelf “at random” and performs a reading for the audience. The novel, *Life’s Adventures*, is written by the “unknown author” Mary Carmichael. Bringing a critical eye to a reading of the novel, the narrator/speaker/reader finds little of interest in the prose. She is not noticeably impressed by the style, but not entirely put off either. She is most uncertain, however, about the ways in which the novel breaks with the heritage, or with what she had just recently established as the masterful styles of the all too few examples of women writing from the past. It is on this point that the protagonist reader presses Mary Carmichael, hoping to find something in her reading that could contribute to this impoverished history of women writers:

First she has broken the sentence; now she has broken the sequence. Very well, she has every right to do both these things if she does them not for the sake of breaking, but for the sake of creating. Which of the two it is I cannot be sure until she has faced herself with a situation. I will give her every liberty, I said, to choose what that situation shall be; she shall make it of tin cans and old kettles if she likes; but she must convince me that she believes it to be a situation; and then when she has made it she must face it. She must jump. And, determined to do my duty by her as reader if she would do her duty by me as writer, I turned the page and read...” (82)

Here marks the moment I had begun to consider above, the moment when Sir Chartres Biron enters the text. In this narrative break, the ellipsis swells with a dramatic and anticipatory weight, throwing the audience/reader into that very moment of the “jump.”

One can imagine the prose delivered to the women in the audience, the speech breaking off, leaving the listeners suspended in the silence of mid-thought just as the lecturer has suspended her writer in mid-jump. Hanging in the air, scouring the room for this threatening figure of juridical power, one awaits with eager anticipation to see where Mary Carmichael might land: “Then I may tell you that the very next words I read were these—‘Chloe liked Olivia...’ Do not start. Do not blush. Let us admit in the privacy of our own society that these things sometimes happen. Sometimes women do like women” (82). Having planted within her narrative the necessary tools (a reference to the magistrate) and the proper environment (a room to themselves), this phrase takes on the clear meaning of a sexual love between two women. For the narrator, this is something seen “perhaps for the first time in literature” (82). Something new has emerged; the portrayal of a relationship between women such that the speaker has never seen figured in writing. However, having just made oblique reference to Radclyffe Hall and her explicit representation of a lesbian relationship, why would this example be so intensely marked? “Also,” she continues on the next paragraph, “looking down at the page again, it is becoming evident that women, like men, have other interests besides the perennial interests of domesticity. ‘Chloe liked Olivia. They shared a laboratory together...’” (83). Within a talk that is so aware of the material effects of place on thought—her verbal ramblings keeping perfect step with her physical amblings through quadrangles, streets, libraries, pathways, dining halls, the British Museum, or London itself—the space in which Chloe liked Olivia must not be read as a trivial matter.

The spokeswoman has found a turning point for the concept of women and the concept of fiction—the laboratory becomes the space in which women can be in love

beyond the confines of domesticity in a seemingly open ended transformative process that is indicated clearly within the narrator/speaker/author's own citations of Carmichael's text. The first iteration ends with the open ellipsis 'Chloe likes Olivia...'" making way for its repetition within a larger context that is itself closed with the mark of an opening: "Chloe likes Olivia. They shared a laboratory together..." Furthermore, within this biological laboratory, "these two young women were engaged in mincing liver, which is, it seems, a cure for pernicious anaemia" (83). Thus the laboratory provides a room through which two women can together practice a creative experimentation on and with the material organs of life itself. Their labor involves "mincing" the liver (chopping it into unrecognizable and uncountable pieces). Even though necessary for human life, this destructive process nevertheless transforms the material conditions of life for others through the creation of a "cure" for "pernicious anaemia," a disease defined by the lack of blood, the circulating bodily fluid which signifies the "life" within a living body. Like Chloe and Olivia's mincing of vital organs, Carmichael's mincing of sentences and sequences (the essential "organs" of what, for the narrator, made Jane Austen a master), has shown to give rise to a creativity and invention that has never before taken shape in literature. The narrator/speaker/author/Woolf has found the proof that a "jump" has been made—a creative and life-supporting jump written into existence through the language of Carmichael's novelistic experimentation that is echoed in her character's own scientific labor in the biological laboratory.

What Woolf's speaker, or Woolf as speaker/writer doesn't tell her audience, however, is that this novel does not exist, nor does its author Mary Carmichael. Both are literary artifacts produced by Woolf herself. Within these deep layers of narrative fiction,

however, Woolf insists on the presence, however spectral, of truth. “Lies will flow from my lips,” Woolf admits at the outset, “but there may perhaps be some truth mixed up with them; it is for you to seek out this truth and to decide whether any part of it is worth keeping” (4-5). In fact, Woolf makes necessary a return to her own processes of production. The audience/reader has no choice but to enter and reenact (with, through, and as the narrator<sup>2</sup>) the space of her labor. This laying bare of the processes of production of the narrative, which enlists the reader as participant, is shown by the narrator to be an ethical necessity: “At any rate, when a subject is highly controversial—and any question about sex is that—one cannot hope to tell the truth. One can only show how one came to hold whatever opinion one does hold. One can only give one’s audience the chance of drawing their own conclusions as they observe the limitations, the prejudices, the idiosyncracies of the speaker” (4).

So let me take her advice, and return to the question of the laboratory as it emerges itself through a laboratory experimentation through *A Room of One’s Own*. The laboratory is now understood to be the literary figure of a space that never did exist in literature, though is produced by Woolf herself as a literary figure projected into the recent past, and then written into (one could say programmed into) the fabric of her historical present. Even though Woolf is adamant about exposing and laying bare her processes of production the audience/reader is never shown the actual space in which the fictional narrator, or in which Woolf actually writes. The audience is also not shown explicitly the historical “raw materials” that went into the creation of the figure of the laboratory. Yet, while not explicitly shown, her tools and materials become visible

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<sup>2</sup> “Call me Mary Beton, Mary Seton, Mary Carmichael or by any name you please--it is not a matter of any importance” (Woolf 5).

through the reenacting of the processes that informed and impressed themselves upon the body and mind of the narrator. Therefore, the suggestion of the text is that one need not see the actual details of the narrator sitting at a writing desk with pen and paper making inscriptions upon sheets of paper because Woolf has lain before the reader/audience the entire apparatus necessary to write the narrative themselves. Whether there was a writing before the speech (lecture notes), or if the speech came before the writing (as if she simply walked up to the podium and narrated her past few days extemporaneously) is forever held in suspension. Thus, the history of the originary inscription of the text vacillates between an inscription onto the listeners' ears, the readers' eyes, and minds of all, putting into practice her claim that "masterpieces are not single and solitary births; they are the outcome of many years of thinking in common, of thinking by the body of the people, so that the experience of the mass is behind the single voice" (65).

In *Virginia Woolf and the Study of Nature*, Christina Alt points me to another crucial component involved in Woolf's invention of the laboratory by demonstrating how Woolf's fictional narrator points to an important female scientist working at the time. Alt devotes an entire section to this relationship between the fictional Mary Carmichael, and the sexologist and birth control activist Marie Stopes ("a household name") who had just published the novel *Love's Creation* under the pseudonym Marie Carmichael. Alt's reading of Stope's (Marie Carmichael's) novel shows that the reference is not a mere appropriation but was an important "rewriting of it" (120). Alt claims that "While Stopes finds no permanent place for the female scientist in *Love's Creation*, her novel celebrates science itself as a creative endeavour, and Woolf echoes this in her use of metaphors drawn from the life sciences" (120).

Including this piece allows me to show precisely how important the laboratory was to Woolf, and to draw out some of the elements taken from the life sciences that contribute to her use of the laboratory. Alt reads this reference as one of many examples that show the importance of the sciences for Virginia Woolf, and the formative influence of biological laboratory sciences on her fiction. While Alt shows that Woolf held a clear disdain for the “taxonomic” sciences through readings of *The Years*, and *Night and Day*, among others,<sup>3</sup> she demonstrates that Woolf was familiar with and amenable to the biological sciences and “embraced as disinterested...the new biology of the laboratory” (109). Her detailed reading is useful here in showing that Woolf’s literary style was greatly influenced by her knowledge of Darwin, Mendel, and the emergent biological sciences that dealt with living organisms and the ever changing world.

I would like to take issue with one point in Alt’s reading that I would argue is crucial to understanding not only how the laboratory functions in Woolf’s text, but to understanding Woolf’s own laboratory labor in producing the laboratory scene. Alt begins her reading of *A Room of One’s Own* with a claim that the common conception that Woolf directly appropriates Stopes’s novel is misguided. Alt uses this critical moment as an entry point into a consideration of the role of the life sciences in Woolf’s work. Yet even while Alt makes the important point that previous interpretations of this scene have limited Woolf laboratory scene by seeing it as a direct import from Stopes, I would argue that Alt’s reading itself limits the full extent of the work done by Woolf’s laboratory. She writes:

This sequence of events [in *Love’s Creation*] may be read as a triumph over the misogyny of the scientific establishment and the conventions governing women

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<sup>3</sup> Alt, See for example pgs. 109-114.

and work. Yet despite this representation of a married woman pursuing a scientific career, Stopes's narrative falls short of Woolf's conception of Chloe and Olivia together in a laboratory. The unprecedented aspect of Mary Carmichael's *Life's Adventure*, Woolf suggests in *A Room of One's Own*, lies in its portrayal of woman not 'only in relation to the other sex' but in relation to one another and to concerns beyond the romantic (AROO 107). *Life's Adventure* strikes Woolf as a work of revolutionary potential because in it 'two women are represented as friends' and not simply feminine confidantes but professional colleagues, an association that adds new complexity to the literary representation of female relationships (ibid.) *Love's Creation*, by contrast, subsumes the narrative of the female scientist within a traditional romantic plot, such that the resolution to the problem of misogyny in science is achieved through marriage. Stopes's novel thus does little to counteract the impression that love is 'the only possible interpreter, of women in fiction (AROO 109). (Alt 116)

This leads Alt to conclude that,

*Life's Adventure* constitutes not an echo of *Love's Creation* but a rewriting of it. Woolf's variation on Stopes's title is no accident: she transforms a narrative driven by romance into one offering a wider view of women in which the adventure of living extends beyond the social and biological imperative of motherhood. (120)

While I fully agree with Alt's reading of this reference as a critical statement on women's work in the sciences, and its potential emancipatory potentials, I would push this reading further on a specific point. Alt registers Woolf's own important modifications to Stopes'

novel, and shows importantly how this “adventure of living” extends beyond domesticity, but she ignores in her reading how Woolf set up the laboratory scene in the first place, namely, through the reference to Radclyffe Hall’s lesbian novel and its attendant public reaction. Alt’s focus on the relationship between Chloe and Olivia as one “beyond the romantic” that exceeds Stopes’s novel by counteracting “the impression that love is ‘the only possible interpreter’ of women in fiction,” dilutes the fact that this relation is *also* romantic and *also* loving. Reading Alt’s interpretation, one loses the heat and controversy of the loving, sexual relationship of Chloe and Olivia within their also important scientific collaboration.

Returning to the way in which Woolf constructs the laboratory, it is now possible to see that it is done through the placing together of two novels written by woman authors (both very much in the public eye) in order to produce something new. Stopes’s novel foregrounds the labor of the sciences and the figure of the laboratory as a powerful site of creative production. Hall’s novel becomes itself the laboratory in and through which a theory of sexual love between two women (a theory itself created by a male sexologist, Krafft-Ebing) is dramatized, given life, and put to the test of trials and experimentation. One is a novel that produces an image of the laboratory as a site of creative potential. The other is a novel that becomes itself a laboratory, throwing the public conceptions of woman and fiction writing into crisis. Out of this is created Woolf’s *A Room of One’s Own*, a writing that both functions as a laboratory in which the figure of the laboratory plays a visible and important role.

The novel that Woolf was hoping to find in this random extraction from the most recent writings of her contemporaries did not exist; Woolf therefore had to produce it

herself. Woolf's lesson is a demonstration of how literature plays a role in shaping reality. When she was in need of a space or a venue, functioning both as figure and concept, that would provide the image of woman that she desired, yet could not find in the world around her, Virginia Woolf created the space herself. Through her own laboratory Woolf brings these two texts together in the creative production of the literary figures and concepts that she needed, while making visible to her audience the important conditions of possibility for how she was able to do this—by wresting libidinal and political economic control from authority (men), and through a laboratory of one's own.

Following Woolf's lead, this dissertation will continue the construction of this concept of the laboratory as a crucial site for social experimentation and creative invention. The trajectory of my dissertation emulates the processes through which Virginia Woolf constructed her literary laboratory as the place of encounter between two treatments of the literary laboratory: the first, an explicit representation of the figure of the laboratory, as was the case with Stopes's *Love's Creation*; the second, the use of the novel as itself a laboratory of social experimentation and invention, as was the case with Halls's *The Well of Loneliness*. Each of my chapters focus on specific novels or films that incorporate the figure of the laboratory within a space that is itself a laboratory, much as I have read *A Room of One's Own* to be as a whole the laboratory through which Virginia Woolf is able to show us the laboratory as figure. This conception of the novel as laboratory is in fact suggested as a possibility in Woolf's book itself:

If one shuts one's eyes and thinks of the novel as a whole, it would seem to be a creation owning a certain looking-glass likeness to life, though of course with simplifications and distortions innumerable. At any rate, it is a structure leaving a

shape on the mind's eye, built now in squares, now pagoda shaped, now throwing out wings and arcades, now solidly compact and domed like the Cathedral of Saint Sofia at Constantinople. This shape, I thought, thinking back over certain famous novels, starts in one the kind of emotion that is appropriate to it. But that emotion at once blends itself with others, for the "shape" is not made by the relation of stone to stone, but by the relation of human being to human being. Thus a novel starts in us all sorts of antagonistic and opposed emotions. Life conflicts with something that is not life. (AROO 71)

The reader, however, will have to wait until the next chapter of the book to understand that this "shape" that Woolf is searching for is the laboratory, characterized as "a structure leaving a shape on the mind's eye," in which "antagonisms," "oppositions," and "conflicts" emerge between "life...with something that is not life." But even more revealing is the meditations of the narrator/speaker on the form of the novel, which is itself a social and collective shape (like that buildings of the University mentioned earlier that were constructed through the labor and money of the patriarch of the past) that the woman writer may build in any way she wishes. Completing her thought begun in the quotation above, the narrator says:

Moreover, a book is not made of sentences laid end to end, but of sentences built, if an image helps, into arcades or domes. And this shape too has been made by men out of their own needs for their own uses. There is no reason to think that the form of the epic or of the poetic play suits a woman any more than the sentence suits her. But all the older forms of literature were hardened and set by the time she became a writer. The novel alone was young enough to be soft in her hands—

another reason, perhaps, why she wrote novels. Yet who shall say that even now ‘the novel’ (*I give it inverted commas to mark my sense of the words’ inadequacy*), who shall say that even this most pliable of all forms is rightly shaped for her use? No doubt we shall find her knocking that into shape for herself when she has the free use of her limbs; and providing some new vehicle, not necessarily in verse, for the poetry in her. For it is the poetry that is still denied outlet. And I went on to ponder how a woman nowadays would write a poetic tragedy in five acts—would she use verse—would she not use prose rather? (77, my italics).

These thoughts, given in the penultimate paragraph of the chapter before her reading of the fictional *Life’s Adventure* become, in retrospect, the clarion call for Carmichael’s laboratory. Even in this passage the narrator claims that the “novel,” as it has been given to woman by literary history, is “inadequate” to describe what the narrator seems to be looking for. What is needed, this passage asserts, is a space in which a writer might have “the free use of her limbs” to construct a proper vehicle for “the poetry in her.” But what is this odd shape of prose that is both a constructed space (“knock[ed]...into shape for herself”), and an outlet for poetry? I read this space as the laboratory. It is a constructed space through which one may experiment with a life that necessarily exceeds its understanding, or gives way within the laboratory to all forms of mutations, emergences, and further forms of living complexity. Even when the narrator presents the laboratory to the audience/reader, it is not given as an answer to this question, nor is the discussion of the “shape” of women’s writing taken up at any future point in her narrative. Despite being unable to foresee her own proposed answer in the form of the laboratory, she ends

on a hopeful note for what seems to be an impossible task for her present. It is, in fact, the very question of foresight that is raised throughout this narrative. And the clues to understanding this important component of the laboratory are to be found precisely in this dismissal of the question of the novel:

But these are difficult questions which lie in the twilight of the future. I must leave them, if only because they stimulate me to wander from my subject into trackless forests where I shall be lost and, very likely, devoured by wild beasts. I do not want, and I am sure that you do not want me, to broach that very dismal subject, the future of fiction, so that I will only pause here one moment to draw your attention to the great part which must be played in that future so far as women are concerned by physical conditions. The book has somehow to be adapted to the body, and at a venture one would say that women's books should be shorter, more concentrated, than those of men, and framed so that they do not need long hours of steady and uninterrupted work (78).

By raising the question of foresight, even dismissively, the narrator discloses another spectral presence within her narrative that itself points to another important figure of the laboratory that had been written by a woman more than one hundred years before Woolf's lectures. To anticipate the first chapter of my dissertation, I would like to show how the presence of Mary Shelley's *Frankenstein* pervades Woolf's narrative. In doing so I raise several figures that remain central, even if not fully developed, to my dissertation as a whole: the myth of Prometheus, and the related question of foresight in narrative fiction (Prometheus, after all, means foresight in Greek).

The novel *Frankenstein* is in fact a type of parasitic guest of *A Room of One's Own*, and it is hard for me to imagine that Mary Shelley's novel was not on the mind of Virginia Woolf as she wrote, even though it is never explicitly mentioned. I'll give here several pieces of evidence for this claim. On page 38, after exposing the "anger" that she reads as a common tone to the ways in which men construct or produce the figure of women in their texts, she attenuates her implicit hatred and blame through recognizing the historical struggles of those in power themselves. She says,

They too, the patriarchs, the professors, had endless difficulties, terrible drawbacks to contend with. Their education had been in some ways as faulty as my own. It had bred in them defects as great. True, they had money and power, but only at the cost of harboring in their breasts an eagle, a vulture, for ever tearing the liver out and plucking at the lungs—the instinct for possession, the rage for acquisition which drives them to desire other people's fields and goods perpetually; to make frontiers and flags; battleships and poison gas; to offer up their own lives and their children's lives (38).

This ascription of the atrocities of the world's history is displaced onto the allusion to Prometheus as the source of a type of hubris similar to that of Dr. Frankenstein.

Moreover, at the end of the same paragraph, Woolf makes allusion to the god of Milton's *Paradise Lost*: "Indeed my aunt's legacy unveiled the sky to me, and substituted for the large and imposing figure of a gentleman, which Milton recommended for my perpetual adoration, a view of the open sky" (39). Bringing the figure of Victor Frankenstein, though unnamed, into focus through connecting the two allusions to Prometheus and Milton, the very next paragraph offers an image of a newly transformed and monstrous

London: “It was as if the great machine after laboring all day had made with our help a few yards of something very exciting and beautiful—a fiery fabric flashing with red eyes, a tawny monster roaring with hot breath” (39). Erasing this figure of a man from her “view of the open sky,” allows the narration to return to this scene in the laboratory, where the two women are busying mincing, what else? Liver. Furthermore, is not there a Mary Shelley to be included, yet remaining unnamed in her collective narrator? It may not be “a matter of any importance” which Marys she names, but the three that she does name—Mary Beton, Mary Seton, Mary Carmichael—calling out the historical “Four Marys,” leaves out only Mary Hamilton, the narrator of the Ballad in which all are characters. Of course, the result of this exclusion makes clear the fact that all “Marys” could not possibly be named. This doesn’t mean, however, that one could not add to the list of Marys, Mary Shelley, the author of *Frankenstein*.

To return to the passage where this attempt to extract and redraw Mary Shelley from the laboratory of Woolf’s narrative began—the passage in which the question of the future of fiction is evoked as quickly as it is foreclosed, I would recommend that one ignore the narrator’s “venture”—“that women’s books should be shorter, more concentrated, than those of men, and framed so that they do not need long hours of steady and uninterrupted work”—which reads to me as an unnecessary limitation to the future potential of women’s writing. However, the suggestion upon which the venture is made remains valid; that is, “The book has somehow to be adapted to the body.” Each of my chapters address this anticipation in various ways, though in my reading of *Frankenstein: or the Modern Prometheus*, I explicitly show how the creature’s body has been read as a metaphor for the novel itself. Finally, Shelley’s sub-title alone indicates something of

what Woolf described as the poetry within the prose, for in making Prometheus “Modern,” Shelley is placing myth explicitly within the boundaries of the emergence of the sciences as we know them. The insertion of a mythical figure within the scientific laboratory (just emerging at the time Shelley was writing) seems to be an odd move, especially considering the English Romantic relationship to the sciences. Yet even this supports Virginia Woolf’s vision of the laboratory, for another important influence on Mary Shelley’s text is Percy Shelley’s poem “Prometheus Unbound.” Would Mary’s novel not then be a placing into prose—into a literary laboratory of her own construction—her husband’s poetry?

I continue to wonder why it is that Woolf, while in my mind so clearly impacted by Mary Shelley’s novel, chose not to speak of it explicitly when she combs through the history of women’s literature in search of important precursors. Relying on the past “masterpieces” of women’s literature to provide her with examples, might it not be the case that conceptions of class (via Woolf’s identifications with “high” or “low brow” culture) kept her from speaking of this gruesome tale of horror? One could after all maintain that Woolf has so completely inhabited the laboratory of *Frankenstein* that *A Room of One’s Own* is in fact a revision of Mary Shelley’s novel, one in which the rewritten tale of the female creature (stitched together by the bodies of many) is not slashed to pieces by the Professor/scientist, but is rather allowed to live and take control of Frankenstein’s laboratory itself. And is not Woolf’s entire book itself the Frankensteinian creation of a monstrous and indefinable literary text without or beyond *Frankenstein*? The two, of course, need not be mutually exclusive, and thus one could read Woolf’s narrative as the productive encounter of these two influences.

Whereas the specter of *Frankenstein* haunts the pages of Woolf's text, remaining unseen, my dissertation will begin with Mary Shelley's novel as my point of origin in the concept of the laboratory, and my study of "laboratory literature." From the first to the last chapter I produce a genealogy of the figure of the laboratory, beginning at a moment when its visibility as the central and perhaps most important site of labor for the life sciences was just coming into focus, and ending with the spectacular visibility of the laboratory in contemporary biotechnological practices. I focus on the transformations of the laboratory as both a literary figure and historical space through various historical periods. In the first half, chapter one marks the first Industrial Revolution at the turn of the nineteenth century, moving in the second chapter to the rise of a "second" Industrial Revolution (due to the social transformations that occurred through the introduction of the steam-engine, electricity, and communication technologies). In the second half of the dissertation I consider two texts that straddle (by roughly the same distance) the turn of the twenty first century—the first marking the fall of the Berlin wall, and the second bringing the dissertation up to the present. Throughout this periodizing schema, I consider how fictional representations help to make visible as well as participate in the various social functions of the scientific laboratory.

My focus on the figuration of a future that itself makes visible an historical process is something the structure of both my first chapter, as well as my dissertation in general, share with *A Room of One's Own*. Virginia Woolf makes visible the crucial importance and radical potential for the figure of the laboratory only at the end of a historical process that retroactively makes it possible to understand this process itself as a laboratory experimentation. It was in this sense that I could argue that what Woolf

designates as the necessary precondition for woman (or even men for that matter) to write fiction—money and a room of one’s own—was from the beginning a prefiguration of Chloe and Olivia’s shared laboratory. Thus, I was able to read Woolf’s text as the place of the laboratory production of both truth and fiction (a point she herself makes explicit from the onset). Yet, I have shown that Woolf’s text—that “novel” is surely an “inadequate” word to describe—was itself prefigured within a broader historical process that can be traced back to *Frankenstein*. I incorporate this structure into my dissertation through a movement that begins with *Frankenstein, or the Modern Prometheus*, and ends, in my final chapter, with a (re)turn to the film *Prometheus*, Ridley Scott’s 2012 motion picture. Finally, throughout this genealogy I attempt to understand what Woolf refers to as the fictional staging of “life conflict[ing] with something that is not life” as the antagonistic condition of and struggle within and through a broader collective history.

To complete this discussion of the structure of my dissertation I’d like to return to the two novels (*The Well of Loneliness* and *Love’s Creation*, contemporary with one another and with the publication of *A Room of One’s Own*) that Woolf hybridizes to produce Chloe and Olivia’s laboratory in *Life’s Adventure*. Viewing once again these novels beside one another, a chiasmic structure emerges (*Love’s Creation* favoring the figure of the laboratory over the practice, *The Well of Loneliness* the practice over the figure). This was the productive encounter that itself created the condition of possibility for Woolf’s inventive production of *Life’s Adventure*. While all of the texts that I consider draw from both poles of this chiasmus (each having some element of both the figure and practice of the laboratory), my history of the laboratory in fiction has itself

suggested to me an organization for my dissertation that places my texts within a similar chiasmic grouping.

My first two chapters (as with *Love's Creation*) deal with novels that explicitly include the figure of the laboratory. In chapter one, "Mary Shelley's "Literary Laboratory": *Frankenstein* and the Emergence of the Laboratory in 19<sup>th</sup> Century Europe," I claim that a reading of the "space" of the laboratory in Mary Shelley's *Frankenstein* (1818) is key for understanding how the novel treats and engages with the emerging life sciences in Europe at the turn of the nineteenth century. Not surprisingly, the figure of Victor's laboratory has been consistently overlooked by critics of the novel, yet the highly "spectacularized" laboratory in James Whale's 1931 film adaptation retroactively demands a second look at this otherwise "absent presence" in Shelley's text. By the early to mid-twentieth century, the laboratory was unmistakably the primary space of scientific labor, though at the time that Shelley was writing, this space (predominantly private and still tied to its pseudo-scientific, alchemical heritage) was just emerging as a legitimate, and soon to be dominant public space for scientific instruction, experimentation, discovery, and invention. While much of the action in *Frankenstein* takes place beyond the walls of Victor's lab, the only labor that "counts," one could say, occurs in "laboratory" settings, such as the production of the creature, the production or telling of stories in Walton's ship and the De Lacey home, the writing of letters and journals in private spaces (crucially important for an epistolary novel), or the production of subjectivity in the creature's hovel, to give a few examples.

After considering the novel's relationship to the emerging history of laboratory science at the time, the chapter shows how contemporary theories of the social and

epistemological function of the scientific laboratory (through the work of Science and Technology Studies scholars such as Karen Knorr-Cetina and Bruno Latour) can be articulated as well to theories of the “space” of literature (in the work of thinkers such as Blanchot and Deleuze and Guattari). The product of this articulation is what I call the “literary laboratory,” which I find to be a useful concept for dealing with the complex interrelation (and that hazy “space” of co-production) of scientific and literary discourses. Finally, the chapter will consider how the laboratory (and the fictionalization of scientific labor) functions in *Frankenstein* as a way for *Frankenstein* to think its own process of production and conditions of possibility. This self-reflexive turn of the novel, made possible by Shelley’s literary figuration of the space of scientific labor, leads me to reconsider the role played by literary and scientific practices and discourses in the organization, regulation, and at times radical reconfiguration of society.

In chapter two, “H. G. Wells’s ‘Stubborn Beast Flesh’: The Laboratory, Control, and Resistance in *The Island of Doctor Moreau*,” I discuss the historical conditions surrounding the second industrial revolution and the technological, machinic developments that gave rise to this particular historical shift. Additionally, I draw out the resonances between *Frankenstein* and *The Island of Doctor Moreau*, and show how *Moreau* represents a more advanced subsumption of the biological sciences under sovereign power. The clear literary historical tradition in which many have situated *Moreau* (the “English Island Myth” or the sea narrative; from More’s *Utopia*, to Shakespeare’s *The Tempest*, to Swift’s *Gulliver’s Travels*, and to Shelley’s *Frankenstein*), points to a newly emerging, or perhaps more explicit, relationship between sovereignty and the biological sciences.

I argue that *The Island of Doctor Moreau* can be considered a laboratory in its own right, through which the body, subjectivity, and our relationship to nature might be reworked. The novel becomes, quite literally, a site for the production of new affective relationships of human to animal, culture to nature, colonizer to colonized, and so on.

Taking the “raw materials” (in Jameson’s words, *Archaeologies* 14) of everyday life into its enclosure, the novel allows for the imagining of bizarre new life forms, alternative communities, and possible worlds. Furthermore, I claim that taking the novel as a laboratory leads to a better understanding of the emergence of science fiction itself, and therefore adds to the critical debates on the origin of this genre in the field of Science Fiction and Utopian Studies.

I take the laboratory as a central feature of the second industrial revolution, which plays an instrumental role in bringing about the historical shifts in capitalism—a claim that I will be the first to explore in detail. The laboratory in its contemporary form first emerges in the mid-nineteenth century, and by the end of the 1800s becomes the hegemonic space for the production and legitimation of scientific knowledge. I argue that Wells was in a particularly privileged position to consider the dangers and benefits of this space. As a student of the preeminent biological scientist of the time, T. H. Huxley, Wells was among the first generation of biologists to be trained in the laboratory (which becomes institutionalized as a pedagogical tool by Huxley in the late 1870s). It is perhaps for this reason that *Moreau* offers a trenchant analysis of the laboratory’s central role in the shifting landscape of the biological sciences at the time.

Furthermore, I explore how the laboratory plays a crucial role in the question of origin in three related ways. First of all, I claim that the novel presents the laboratory as a

powerful tool for the production and regulation of the figure of the “Human.” This is highlighted by the emergence of new forms of sovereignty and technological control, as given in the character of Moreau, who manufactures human-animal hybrids. This critical dystopian novel raises a pressing bioethical and biopolitical question for the contemporary context: namely, if one’s biological life is itself produced and reproduced by the sovereign, how or where does one find grounds from which to resist exploitation and oppression?

Secondly, I consider the active role of the space of the laboratory. I consider Science Studies Scholar Robert Kohler’s characterization of the laboratory as a homogenous, universalized space, removed from geographical place and locality. This disarticulation from the surrounding world, then, creates a space in which the scientist can directly intervene not only in the emergence of new forms of life, but in the conditions of possibility for this life itself. For this reason, the laboratory allows for an invasive intervention in the life processes—that is, an intervention in and direction of the emergence of new forms through mutation and evolutionary change.

Finally, I consider the role of this space in the processes of utopian thought. I argue that the figure of the laboratory is a capturing of what Jameson calls the “utopian enclave,” the space, that is, that makes possible the process of utopian thought (10-21). The figure of the laboratory in *The Island of Doctor Moreau* indexes that moment at which the utopian impulse becomes a tool for political control. This subsumption of the utopian impulse makes the very plasticity and mutability that characterizes life itself a source of legitimation for and perpetuation of capital and sovereignty. At the same time,

however, the very uncertainty of what is being managed (its potential for error, mutation, failure) is precisely, and ambiguously, the location of a possible challenge to that control.

In contrast to the first two, my last two chapters (like Woolf's use of *The Well of Loneliness*) deal with narrative fictions that can themselves be considered laboratories. In my third chapter, *The Genetic Engineering of Octavia Butler: Biocapital and the Laboratory in the Xenogenesis Trilogy*, I read Butler's trilogy as a literary laboratory that stages an extended experimentation with the human and its alien other, the Oankali. The encounter between these two radically different beings has often been interpreted through the discourses of postmodernism and posthumanism. As opposed to reading Butler's novels as privileging the amorphousness of cyborg bodies, I ask what in Butler's novels is constructed through the processes of genetic engineering, both as an explicit technology used in the narrative, as well as a metaphor to describe Butler's own processes of literary production. I pay specific attention to the ways in which speculation has functioned historically in the emergence of what Kaushik Sunder Rajan calls "biocapital" as a way to elaborate the role of "vision," "promise," or "hope" in the biocapitalist era.

I locate Butler's literary laboratory as the space in and through which the two radically different species of her trilogy meet. Butler's novels raise pertinent social, political, and ethical concerns regarding the social uses of biotechnologies, and attempt to make visible the ways in which subjectivities, bodies, and collectives are both shaped by, and respond to, the intervention of these discursive and non-discursive forces within the fabric of communal and individual lives.

In my fourth and final chapter, *Ridley Scott's Prometheus, and the Ambiguous Place of Labor in the Global Laboratory*, I turn to Scott's 2012 film *Prometheus* as a means to further elaborate upon laboratory bodies and places of production within the era of biocapital. Through close readings of the opening scenes of Stanley Kubrick's *2001: A Space Odyssey* and *Prometheus* (which Scott claims to be a revision of *2001* "on steroids"), I question the ways in which biotechnologies and biocapital have shifted the question of the human's relation to its own technicity onto the terrain of the genetic processes of living beings and social organizations. By showing that the metaphysical split between the human and technology that is posited in Kubrick becomes in Scott a question of the co-origin of the human with technology, I set the stage for a reading of *Prometheus* that extracts and redraws many of the concerns raised throughout my dissertation regarding the figure of the laboratory, and the function of the novel itself as lab. I consider how Scott's film becomes as a place of encounter between the alien, the human, biotechnology, and biocapital. I question how the places and practices of labor are reconfigured and problematized in Scott's film, and ask whether it still may be possible (within a future and a past subsumed within the biocapitalist mode of accumulation) to produce and share a laboratory that has encompassed the globe itself.

As I trace the lab throughout the chapters of my dissertation I question this concept of the laboratory in each case (originating in literary discourse yet made more fully visible in film and other media forms) as a disclosure of the processes involved in the production and reproduction of life. I attempt to show how laying bare these historical processes opens up a space for autocritique. Just as Woolf puts women's literature to the test through her own creative production—rendering history at once a

collective/individual process of the production of truth/fiction—I hope to contribute to making more visible that “future of fiction” in and through which “Chloe loves Olivia.”

## CHAPTER ONE:

### Mary Shelley's "Literary Laboratory": *Frankenstein* and the Emergence of the Modern Laboratory in Nineteenth Century Europe

*We are only just starting to take up the challenge that laboratory practices present for the study of society.*

-Bruno Latour

#### INTRODUCTION: FRANKENSTEIN'S CINEMATIC LABORATORY

As a literary figure, the laboratory is a space for art to reflect on its own conditions of possibility and processes of production. Mary Shelley's *Frankenstein* serves as an exemplary case. While Shelley's novel will be my main focus, I begin by reading the depiction of Frankenstein's laboratory in James Whale's 1931 film adaptation. As many have pointed out, the myriad adaptations of the novel—in various genres and media, through the volumes of literary and cultural criticism, as well as in the popular conceptions of the story and characters—cast (as Chris Baldick put it) a long “shadow” over encounters with the text.<sup>4</sup> In the case of Whale's 1931 film adaptation,

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<sup>4</sup> This shadow can be thought in at least three ways. First, it is difficult for the Modern literary critic to deal with the novel *Frankenstein* without having in some way to acknowledge (or perhaps “fend off”) the contemporary image of the myth solidified by Whale's 1931 film adaptation and the often-campy sequels. Harold Bloom introduces his “authoritative” edited collection on *Frankenstein* with the concession that a reading of the novel is inevitably colored by the images of Frankenstein given to a contemporary audience through the movies—this point is further driven home by the cover image of the collection, an iconic film still of the monster. For many critics, the “distortions” of the novel in the abstracted repetition of the Frankenstein “myth” become usefully folded back into a reading of the novel. Thus the elision of Dr. Frankenstein with his monster adds credibility to what Bloom takes as a starting point for criticism: “A critical discussion of *Frankenstein* needs to begin from an insight first recorded by Richard Church and Muriel Spark: the monster and his creator are the antithetical halves of a single being.” See Bloom 2.

this shadow actually helps to highlight something crucial about the novel itself: the importance of the place of the laboratory. Shelley's laboratory is only faintly exposed, whereas the laboratories in the various film adaptations are eminently spectacular, drawing attention in a way that the novel does not. The spectacular figure of the laboratory in the classic film adaptation, James Whale's 1931 *Frankenstein*<sup>5</sup> or the various other film versions, being constructed as *the* space of visualization, provokes us to see the importance of the laboratory within and for the novel itself.

By the film making the laboratory visible, the figure of the laboratory in the novel is paradoxically and retroactively made visible as a space of obscurity. This peculiar revision of the laboratory from an otherwise private, domestic, and overlooked space to one unavoidably visible—indeed the most centrally spectacular space in the film—becomes instructive for my own revision of Shelley's novel in several ways. First of all, adapting the novel to a visual medium discloses the desire to produce a reflection or image of the human as a latent specularity already present in the literary narrative. Secondly, by 1931, the laboratory was firmly established as *the* space of scientific labor,

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Second, scholarship on the novel is so vast that many readings of it seem obliged to mention the ostensibly endless number of ways the novel has been, and can be interpreted. See, for example, Halberstam. One important reason for such a wide range of readings has to do with the figure of the monster—at once human, yet an uncanny placeholder for a multitude of human forms. The fact that the “monster” was a product of Victor's labor plays importantly into many arguments that see the “monster” as variously a figure for the “masses” who were “produced” by the bourgeois *philosophes* of the French Revolution, or the swelling masses of laborers produced by the scientific and technological advances of the Industrial Revolution and the transition to large industry capitalism. See, for example Sterrenberg, Moretti., Baldick, Montag. The story of *Frankenstein* has for others been apotheosized into a secular allegory for technological modernity. Baldick, for example, traces the influence of the Frankenstein “myth” throughout the two centuries following the novel's publication not only in film and theater (theatrical versions of the novel appeared almost immediately after its initial publication, the first in roughly the 1820s), but also in political and social discourse.

Third, as Botting argues, *Frankenstein* is a site at which interpreters expose as much about themselves as the novel.

<sup>5</sup> Whale's film famously features Boris Karloff as the Monster, though appropriately named in the credits as Monster = ?, bringing the symbolic weight of the monster as potential to signify into the pro-filmic world.

so the increased “visibility” of the laboratory in the film attests to the particular historical shifts in the practice of the life sciences. Furthermore, since the laboratory is above all marked by inscribing reality (something I deal with extensively below), the visibility of the laboratory in the film makes clear the technological advances made since the early nineteenth century, as well as their role in the production and reproduction of human life. The distinctions between these two treatments will of course bear the traces of very different historical periods and places, yet some of what will be said regarding the filmic laboratory will hold for the literary laboratory. What I want to suggest here is that the laboratory be thought as a figure in various art forms (painting, film, literature) that functions as a self-reflection on the process of production of the form in which it appears.<sup>6</sup> I follow out this process of reflection into the medium of film as well. Finally, this juxtaposition of Shelley’s and Whale’s treatments of Dr. Frankenstein’s workplace initiates a preliminary case study for the genealogy of the laboratory that I conduct throughout this dissertation as a whole.

In contrast to the spectacular lab space in Whale’s film, the laboratory in Shelley’s novel figures so sparingly that a reader may easily miss the importance of its role. Descriptions of the two separate laboratory settings (the first for the creature, the second for the creature’s aborted female companion) are strikingly scant in a novel otherwise known for its sublime images. The very lack of detail regarding the laboratory in the novel serves to invite varied and elaborate re-figurations in the novel’s adaptation. If the laboratory of the film is pure spectacle, operating with an intensification of the

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<sup>6</sup> While a treatment of painting is beyond the scope of this chapter, any reading of the figure of the laboratory in painting might begin with the depictions of the alchemist’s laboratory in late seventeenth century paintings by such artists as David Teniers and Jan Steen. Not to mention the operating theater.

visual and imagistic, the laboratory in the novel, by contrast, emerges less as image than as a functional node within a network of spatial and social relations.

Clearly, Frankenstein's early nineteenth-century lab giving way to its 1931 manifestation speaks to the progressive historical sedimentation of the laboratory as the preeminent space for scientific labor. Whereas in the novel the laboratory, when it is mentioned, is still very much connected to a domestic space (contained within the same building as domestic apartments), the laboratory in the film becomes removed from domestic life, and thus removed from the labor associated with the home or the gentleman's "house of experiment" throughout the seventeenth and eighteenth centuries.<sup>7</sup> No longer an attic space contained within the domicile of everyday life, Whale's laboratory is housed in the gothic castle-like abandoned watchtower. The cold, damp stones and vaulted ceilings give space for the numerous instruments, machines, beakers, and other contraptions. While otherwise secretive and kept from view, the events of the film lead to a presentation of Frankenstein's laboratory as the site to be seen *par excellence*. This space becomes a magnet for the attentive gaze, an internal space oriented around, and by, both visibility and spectatorship. For one, the lab is in the "watchtower," a space created specifically for the purpose of looking, and for making sense of and policing the territory of its surroundings. The laboratory is harshly lit, producing a great deal of contrast and sharp lines of shadow, as if to suggest a meeting point of light and dark. Whale's lighting characterizes the space as one of opposition, an opposition that finds its final expression in the binary of life and death. Practically every instrument in

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<sup>7</sup> For a further discussion of the connection between the site of experimentation and the upper-class manor home see Shapin.

the laboratory jitters with sparks and light and the machines in the room surge with energy at the climactic moment of the genesis of the monster.

This production of a site of spectatorship is driven home when Frankenstein's ex-professor Waldman, his friend Victor, and his fiancée Elizabeth—out of concern for his mental well-being—visit his laboratory and inadvertently become witnesses to a fantastic production of lights and action. Frankenstein escorts the visitors to a seating area at the back of his laboratory from which the entire room can be surveyed, much as a studio audience, or the moviegoer facing the framed space of the screen. As Frankenstein sits professor Waldman down, he begins to divulge pieces of his discovery. He refers to Waldman's work on light rays, claiming that, contrary to what Waldman had believed, there was another ray on the spectrum beyond the ultraviolet, "the great ray," he claims, "that first brought life into the world." Here the insistence on the visible opens into the discussion of what is beyond human vision, what can't be seen by human eyes. Frankenstein claims that this "ray" is the very source for the reanimation of human life. The animating force, then, becomes a ray just beyond the visible, yet associated with visuality, made of the same "substance" as that which is registered as color and light by the human eye. The unseen ray becomes visible through the animation of the monster—the invisible is given a frame, it becomes visible through the emergence of life in the otherwise inanimate body. The invisible resides, then, at the very heart of the human. To discover the essence of humanity, Frankenstein gives form to that which would remain ephemeral or hidden.

Frankenstein leads his guests through the laboratory, making clear the sovereign control he holds over access to the space through the invitation to look if not touch. He

directs when to look, where to look, and explains how to look. As if a verbal cue for the action, which leads to the animation of the monster, Frankenstein turns to his audience saying, “Quite a good scene, isn't it? One man crazy,” pointing to himself. “Three very sane spectators.” While calling himself “crazy” is to be taken as disingenuous, the scene almost requires the presence of the “sane” spectator to lend validity to the event.

Film produces spaces in which life is discovered, and the spectator is presented with certain, perhaps monstrous, visions of what it means to be human. The laboratory scene is fundamentally a metaphor for filmmaking, a moment of self-reflection in the film on its own processes of production and consumption. We can understand the work of the filmmaker in the laboratory to be similar to Frankenstein's—the suturing of scraps of organic flesh, splicing takes and frames while film editing, filling the final form with rays of light (electrical illumination) which brings the monstrous creation to life. In a certain way, the film is itself the monster, produced in a laboratory, developed in a space carefully blocked from the “ultraviolet” rays that overexpose the film (remember that in the film it is a spectrum of light beyond the “ultraviolet” that explains the reanimation of inert organic matter). Immediately after the flurry of lightning that Frankenstein harnesses for his task, we are given multiple quick cut shots of the apparatus in the room sparking to life—electricity flowing, machines clearly at work. Frankenstein lowers the lifeless human frame as if bringing down to earth the divine. There is a cut to a tight close up of the hand of the monster, the camera assuming the subject position of Frankenstein for the moment before cutting to a medium shot of the doctor looming over the hand, the two sharing the frame in practically equal proportion. With enraptured and crazed eyes he exclaims, “Hey, look, it's moving,” followed directly by the often parodied lines, “It's

alive! It's alive!" The perception of movement taken for life also alerts us to an effect particularly present in the reception of film—otherwise dead matter, moments captured on celluloid which, when seen in rapid succession, give the viewer the impression of motion, of a temporal duration, and thus of a living process.

Frankenstein's quick reaction, eliding motion with life, alludes to early alchemical and scientific experimentation with the revitalization of inert matter. In the eighteenth century, Italian physicist and philosopher Luigi Galvani had used electricity to animate human corpses, sending surges through the bodies that would cause limbs to move, after which the corpse returns to its previous state. The perception of a reanimation was exposed as a merely ephemeral effect; yet in the film, Frankenstein hesitates little in pronouncing the body to be alive simply from the observation of movement. Light passing through frames, filtered by organic material, bringing what was once lifeless to "life." As Frankenstein tells the doctor earlier, who skeptically asks if he really intends to restore life to the dead, Frankenstein responds, "The body was never dead. I created it!" Here is a body never dead, yet now living, pieced together from fragments of wholes, placed in new relations to one another, though never before existing in this particular configuration.

There is clearly more to say about this, but my intention here is not to exhaust a reading of the laboratory in the film, but rather to use this reading as a way to bring into focus, to magnify as if through the lens of a microscope, my primary object of study: the figure of the laboratory in Mary Shelley's *Frankenstein*. While the transition from alchemy to modern chemistry in seventeenth century Europe marks the first private uses of the laboratory by "scientists," it will take another two centuries for these spaces to

migrate from the private, domestic spaces to larger institutions, public universities, and corporate laboratories (Edison’s “invention factory” being an early example of the laboratory on a large scale).<sup>8</sup> The laboratory since this time has been indispensable to the sciences, becoming the most important tool for the “manufacture of knowledge,” the production of scientific discourse, and the production of new forms, both living and nonliving. In its pedagogical use, the laboratory became the space for the production of “scientists” themselves who adhere to the methods of science, who know how to function as part of the laboratory spaces, who are familiar with the instruments and methods of the laboratory, and who uphold the communal processes and norms of scientific inquiry and production.

Despite the crucial importance of the laboratory today, Victor’s lab remains overlooked by readings of Shelley’s novel. However, a focus on this space of labor brings together a fairly significant range of scholarship on *Frankenstein*. For one, it contributes to studies that focus on space in the novel—from sublime landscapes to political geographies.<sup>9</sup> Furthermore, the laboratory raises the issue of the novel’s relation to science, and builds upon Brian Aldiss’s argument (generally accepted yet not uncontested) that *Frankenstein* is the first “science fiction” novel (Aldiss 8). In line with this, George Levine begins his book on literary realism with a lengthy discussion of *Frankenstein*, claiming that the novel provides both a “metaphor” and a “pattern” for the

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<sup>8</sup> As of July 17<sup>th</sup>, 2012, A National Park Service web entry quotes Josephson regarding Edison’s “Invention Factory” and describes the now desolate West Orange, New Jersey complex in the following way:

When [Edison’s “Invention Factory”] was in operation, however, this complex was one of the most important, if little known, creations of Thomas Alva Edison. These buildings—the chemistry, physics, and metallurgy laboratories; machine shop; pattern shop; research library; and rooms for experiments—were built in 1887. They formed the core of Edison’s research and development complex, which he claimed contained everything necessary to invent “useful things every man, woman, and child in the world wants...at a price they could afford to pay” (314).

<sup>9</sup> See Knellwolf, Randel.

entire tradition of literary realism that followed (Levine 23).<sup>10</sup> A focus on the laboratory brings into relief the public image of science at the time, and stands as a case study for the implications of fictionalizing scientific propositions and discourses. While the narrative would literally be unimaginable without the laboratory (or the condition of possibility for the emergence of Victor's creature), much of the narrative occurs beyond the lab's walls. Yet, and this is the crucial point, the only labor in the novel that "counts" occurs in these settings, i.e., scientific work, the telling of stories, the writing of letters, the production of subjectivity, etc. A focus on the laboratory in literature is a focus on "labor" and on "laboring" bodies, as the examples just given suggest.

Part of my intention here is to show how a consideration of this figure as an absent presence is crucial for a reading of the novel. I begin with a short history of this space, dating the emergence of the teaching lab, its institutionalized form, within a decade of the novel's publication. I then consider the function of lab work in the sciences by Science, Technology, and Society (STS) scholars such as Bruno Latour and Karen Knorr-Cetina. I elaborate how the scientific laboratory as a space of labor, and the ways in which it relates to its larger social milieu, can be articulated to theories of the space of literature. I juxtapose a theorization of the scientific laboratory and the "literary laboratory," which allows for a better understanding of the complexities, and overlaps, of both practices. This will lead me to show how the laboratory functions in *Frankenstein* as a way for the novel to think about its own processes of production, about the nature of both literary and scientific practices, and thus about the active participation of both in the organization, regulation, and at times radical reconfiguration of society.

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<sup>10</sup>See Levine, *The Realistic Imagination*.

## LABORATORY SPACE: A BRIEF INTRODUCTION

I understand the laboratory as a network of various forces and materials that form an autonomous space, which reconfigures social structures, challenges dominant presuppositions, and produces the conditions of possibility for the emergence of new forms. The configuration that I call a laboratory (as one of the leading theorists of the laboratory, Karen Knorr-Cetina, suggests) need not be reduced to a physical space or geographical location (1999). I argue that the laboratory can be equally found in a single individual or the largest organization of human bodies, materials, and forces. The question of whether the laboratory is a specifically human space will be one I will take up in subsequent chapters. However, suffice it to say here that I take the human body (as a physical and psychic construct) to be the minimum requirement for the existence of a laboratory for the precise reason that I see no possibility to conceptualize the laboratory without an observer, and one cannot observe without taking an active role in the system under question. There are of course many types of scientific laboratories which all have their own particular practices, instruments, and norms. In this chapter I focus on the protobiotechnical laboratory (more specifically the chemical and biological laboratory), as well as what I will call the “literary laboratory,” or that organization of texts and bodies that stand as the condition of possibility for the production of literary discourse. Laboratory space in its most generalized form, however, will be an enclosed or regulated space that allows for the rupture of the unknown or anomalous into otherwise stable discursive or material forms.

The OED records the first use of the English word laboratory in 1592. It was defined as a “room or building for the practice of alchemy and the preparation of

medicines,” and later became “one equipped for carrying out scientific experiments or procedures, esp. for the purposes of research, teaching, or analysis; (also) one in which chemicals or drugs are manufactured.” As a subset of the primary definition, which registers the term’s origin in the Latin for workplace, or *laboratorium*, is the figurative definition (“In extended and fig. use. Something likened to a scientific laboratory, esp. in being a site or centre of development, production, or experimentation”). Below one can see that the first record of the figurative use of the term in English appears in 1654, with subsequent entries up through 2006, making rather clear the figurative and conceptual potential for the term.

- 1654 W. CHARLETON *Physiologia Epicuro-Gassendo-Charltoniana* III. xv. 342  
Some more worthy Explorator · shall wholly withdrawe that thick Curtain  
of obscurity, which yet hangs betwixt Natures Laboratory and Us.
- 1664 H. POWER *Exper. Philos.* I. 65 The Soul (like an excellent Chymist) in this  
internal Laboratory of Man, by a fermentation of our nourishment in the  
Stomach [etc.].
- 1709 J. REYNOLDS *Death's Vision* x. 68 The House and Laboratory of the Soul,  
With all its Vital Furniture's Destroy'd.
- 1794 R. J. SULIVAN *View of Nature* I. 461 Fissures and caverns of rocks are the  
laboratories, where such operations are carried on.
- 1814 H. DAVY *Agric. Chem.* 15 The soil is the laboratory in which the food is  
prepared.
- 1860 M. F. MAURY *Physical Geogr. Sea* xviii. §740 Like the atmosphere it  
[sc. the sea] is a laboratory in which wonders by processes the most  
exquisite are continually going on.
- 1870 J. H. NEWMAN *Ess. Gram. Assent* II. viii. 260 A notion neatly turned out of  
the laboratory of the mind.
- 1901 *Ann. Amer. Acad. Polit. & Social Sci.* **18** 149 Switzerland · :is so often  
called the political laboratory of Europe.
- 1956 C. WILSON *Outsider* iii. 51 The *Bildungsroman* is a sort of laboratory in  
which the hero conducts an experiment in living.
- 2006 *N.Y. Rev. Bks.* 13 July 8/1 New Prospect, a place where the Great  
Depression never lifted, supplies Updike with an ideal laboratory in which  
to cultivate the germ of militant Islamism.

Not only is “Nature” conceived as a laboratory, but “man,” or more precisely in the analogy, the human body, is conceived as the laboratory of the “soul.” From the 10

quotations listed above, spanning almost 4 centuries, the figurative use of the laboratory designates variously the soil, the atmosphere, the sea, (all particular laboratories within the larger laboratory of nature), the mind, the nation (as a political laboratory), the *Bildungsroman*, as well as the city. The laboratory as a figure seems to extend to any structure that may abstractly be conceived as a building of sorts, something that contains, that provides walls delimiting its boundaries. In this sense, the figurative use of the laboratory is seen in cases where what is being figured must already be prefigured as an enclosure, a site or centre, an opening that gives way to a type of interior space, or an organized configuration that provides the conditions of possibility for production in a broad sense. I begin with the definition to show that many of the spaces I will claim to be laboratory spaces have already been seen to be so, even if only in passing. I take these metaphorical valences at face value in order to carry out more systematic questioning of what is meant when something is designated a laboratory. Frankenstein's lab, presented in the novel as the condition of possibility for the biotechnological production of the human body, will then find its correlate in the laboratory of the creature's mind, or of Walton's ship. The figurative range of the term gives further justification to my attempt to understand how the novel itself is a type of laboratory.<sup>11</sup>

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<sup>11</sup> The word workshop has, indeed, had a lengthy history of use as a metaphor for productive activities as well (in fact, Frankenstein refers to his laboratory as a "workshop of filthy creation"). However, workshop remains tied to something closer to a production within a more rigid structure, whether it be the material organization of an assembly line, or the unwavering allegiance to a particular method (for even though the term seems to be used as a synonym to laboratory it is used in a phrase that clearly has pejorative overtones). The workshop, as proto-factory, is already tied to notions of usefulness, efficiency, or capitalism in a way that the laboratory (as a site of disinterested experimentation) would partially resist. The workshop is a place for the implementation of labor that has been circumscribed and determined. One labors in a workshop in a particular manner for a particular predetermined end. The process of labor, in other words, has been determined in advance, and all that is required is the carrying out of a certain method, of certain manual actions that the shop has been equipped to support. In the arts, where the figurative idea of the workshop first originated,<sup>11</sup> the workshop was established to refine or comment on work already completed. The workshop is an opportunity for a group response to something already established (whether it be an artwork, a piece of writing, a company, an organization, etc.). The workshop may become a

A history of the scientific laboratory, as most historical accounts of the laboratory will attest, is difficult, if not impossible. There are, of course, histories of individual laboratories ascribed to the efforts of individuals, though nothing that would definitively mark an origin for the space in general. The practices of the modern laboratory are so dispersed throughout the entire social landscape that we can only think of the gradual sedimentation of the space of the laboratory over time—a slow historical process of repeated practices that led to the necessary existence of the laboratory. Another way to say this, then, is that the historical space of the laboratory must be thought of in terms of a process of individuation. Elements of the laboratory can be found *a posteriori* in the history leading up to modern science, even if these elements didn't have the coherence or constitution that we associate with the laboratory today. The process of emergence does not involve in this case an author, whether human genius or god, but is rather the formation out of a precondition, a certain milieu, or a proper condition of possibility whose conjunction makes possible the emergence of a particular historical form. The history of the laboratory, in this sense, makes visible an adequate understanding of

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laboratory, and conversely, the laboratory may be captured within the more static relations and functions of a workshop. One might say that the workshop is a type of labor associated with what Kuhn called “normal science,” or everyday “puzzle solving” within a particular normative world picture, as opposed to the type of radical experimentation that challenges the preconceived scientific paradigm. The laboratory, we could say, would be a space organized as the precondition, or the condition of possibility for the workshop. The laboratory attunes the observer to perceive a singular or unique event, whereas the workshop unfurls the implications of the perceived rupture. In other words, the workshop integrates and refines the products of the laboratory, while the products of the laboratory inevitably challenge the very scaffolding or frame of scientific discourse itself. The laboratory in this sense has a closer affinity to the emergence of the new. The work performed within the workshop is of a fundamentally practical nature, and mistakes, errors, blunders, while at the very heart of the laboratory—and what the laboratory seeks to produce and integrate into scientific understanding—are for the workshop merely roadblocks to be overcome and dismissed. Error, in other words, throws the workshop into crisis. Error is what challenges the order and the smooth processes of the workshop. On the other hand, the error or the misstep becomes what the laboratory seeks to cultivate, which it then calls discovery, experimentation, or invention. The emergence of something previously unseen or unknown, the production of something that has never before existed, the anomalous, is the material outcome used to challenge the entire structure of scientific understanding.

emergence within history—valid equally for the constructed space, as well as the artifacts produced within.

The spaces of experimentation and invention have most likely always existed, even if not recognized as such. Lord Kelvin, then Sir William Thomson, published a history of the laboratory in an 1885 issue of the journal *Nature*. Reflecting back on the by then well-established space, he credits the first two decades of the nineteenth century with fostering the emergence of the first modern laboratory. This is in line with the introduction to Frank James's *The Development of the Laboratory: Essays on the Place of Experiment in Industrial Civilization*, where he states up front and unambiguously that “Laboratories did not exist in the pre-industrial age,” if one can mark the late eighteenth and early nineteenth centuries as the origin of industrialization (1).

Several historians, reflecting on the laboratory at the end of the nineteenth century, note the paucity of historical accounts of the lab, yet also mention the crucial precursors to this modern space. Scientific laboratories as we know them today clearly require the advances in machinery and technology which made the laboratory apparatus possible (key instruments of measure and imaging that are essential to the operations of lab work). However, as Lord Kelvin quips regarding the pre-modern history of the laboratory, “No doubt Aristotle had his,” (Thomson 409) which is again echoed in an entry in the 1895 Smithsonian Institute annual report, “Doubtless Aristotle had his laboratory.” One of the first recorded public laboratories, aside from that of the Ptolemies in Alexandria during the third century B.C. (which “gradually sank into a place for metaphysical discussions” (Welch 495), was developed by King Fredrick II for anatomy. This space, which Lord Kelvin dubs “the first laboratory,” provides a useful insight into

the connections between the laboratory and the human form (and should resonate in ways that remain to be elaborated with *Frankenstein*). Since then there seems to have been a designated space for the study of anatomy, though it won't be until the sixteenth century that this type of space will have a lasting and important public role.

Rather than anatomy, it was the alchemical sciences that stand as the clear precursor to modern science and its space of labor. Alchemy required a space of *experimentation*, one that could be regulated and controlled. This practice gave way to modern chemistry, the first discipline to systematically use the lab. One can't overemphasize the importance of the laboratory for the founding and continued practice of science in its modern guise. In their book *Order Out of Chaos*, (cited by Deleuze and Guattari in *What is Philosophy?* as the source for their concept of "chaos") Nobel laureate and physical chemist Prigogine and Isabella Stengers evoke French philosopher of science Alexandre Koyré who "defined the innovation brought about by modern science in terms of 'experimentation'" (5). Modern science is intimately tied to the increasing importance of experimentation through laboratory practices. In fact, one could say that the labor associated with the practice of science, and the production of scientific artifacts and discourse, is unthinkable (i.e. Aristotle *must* have had his) without the space proper to experimentation.

The laboratory is the site of precisely this type of inquiry into the natural world, one less dependent on the word of authority and rather directed towards the observation and primacy of the material world itself, a shift in consciousness and practice that opened one to a respect for contingency and error. In fact, laboratory work was seen as a process

not held to the categories of the true and the false that might otherwise filter unwanted results. As Lord Kelvin writes:

In the laboratory everything tested or tried is found either true or not true. Every result is true. Nothing not proved true is a result;—there is no such thing as doubtfulness. The search for absolute and unmistakable truth is promoted by laboratory work in a manner beyond all conception (Thomson 411).

A constructivist position such as Bruno Latour's (which I deal with below), would be wary of the "absolute" qualification in the final sentence above. Nevertheless, what makes the experimentation and labor of the scientific laboratory such a powerful and crucial force in modernity is the fact that the laboratory is less concerned with producing and guarding a conception of "truth" than one might expect for a product of the age of reason. One would still have to deal, of course, with the interpretation of the event, yet the fact that "something" happens is "unmistakable." The practices of the laboratory, as Lord Kelvin asserts, are judged solely by their success—and this despite and beyond any desire or hope of the scientist.

Echoes of Lord Kelvin's late nineteenth century observation can be seen in late twentieth century theories of science as well. "Science is like a two-partner game," explain Stengers and Prigogine, "in which we have to guess the behavior of a reality unrelated to our beliefs, our ambitions, or our hopes... [I]n the final analysis rational science owes its existence to its success; the scientific method is applicable only by virtue of the astonishing points of agreement between preconceived models and experimental results" (Prigogine and Stengers 5).

It is through experimentation that the right questions are progressively found for the object of study; the “models” are to be worked upon as much as the results. The “truth,” if one can even call it that, is what happens in the interaction between the scientist and the space of the laboratory and this is a truth determined not by an authority who stands in the proper position to judge the validity of a proposition or outcome, but rather by the inscriptions of a real material history. This observation points to the importance of inscription in laboratory work and prefigures, as I will show shortly, the conceptions of science put forth by Bruno Latour. A result leaves a trace (and Latour means this in the Derridean sense), and it is only this truth with which the scientist is concerned by virtue of the historical event that gave rise to the trace.

In terms of the history of these practices, there are many accounts and records of the work done by experimentalists, inventors and scientists in private laboratories, and it is crucial to think about these spaces as the pre-history of what will become a more standardized and disciplined space, but will take a further public investment in the practice of the sciences for the laboratory to become historically visible. The emergence of the modern laboratory cannot be dissociated from its use as a space of instruction. The privately owned and operated spaces were the incubators for what would slowly be centralized in the public laboratories of eighteenth and nineteenth century Europe. By the end of the 1800s, scientists working in chemistry, physics, and the life sciences (anatomy, medicine, physiology, biology, etc.) found their workshops transplanted from private dwellings to public universities. It was the housing of the laboratory in publicly funded spaces of education that solidified the laboratory as the most important site for experiment, discovery, and invention. The pedagogical use of the lab not only

standardized the use of certain apparatus and methods, it also secured funding for the further outfitting and development of these spaces. It wasn't until 1825, just seven years after the publication of *Frankenstein*, that Justus von Liebig would establish the first teaching laboratory soon after his appointment at the University of Giessen, thus establishing a model space for scientific work, and definitively connecting laboratory work to research, invention, experimentation and instruction (Good 557). Without the rigid disciplinary distinctions between the various natural sciences, and with significant overlap and relevance of, for example, chemistry to anatomy or physics, Liebig's chemistry lab gave way to the establishment of laboratories for research and instruction in practically all other scientific disciplines such as physics, physiology, pathology, and finally, towards the end of the nineteenth century, biology. *Frankenstein*, to anticipate what is to come, registers this important connection between laboratory spaces and education, not only in the education of Victor (that which produces the scientist), but also in the education of the creature (that which produces human subjectivity).

Shelley wrote at a time when the image of the laboratory was still tied to its alchemical heritage. Humphrey Davy, one of the most vocal chemists in England at the time, is noted for making appeals to the general public for laboratory funding, and was instrumental in the establishment and legitimization of the use of the laboratory for the practice and teaching of Chemistry. Shelley's journal mentions having read Davy's *Elements of Chemical Philosophy* in 1816 with Percy Shelley, which is to say that his text on the discipline and history of chemistry was at least known to Mary, and left a visible influence on her novel.<sup>12</sup>

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<sup>12</sup>This is most notable in his introduction, "Historical View of the Progress of Chemistry," where he elaborates the essential link between the science in question and alchemy.

Turning to the treatment of scientific work in the novel, it is possible to argue that Shelley's knowledge of the scientific discourse of her contemporaries allows her to play out, through the character of Victor, many of the monumental shifts in the sciences, transitions that required the use of the laboratory. Frankenstein's space of labor does not belong to one particular science, which speaks to the nature of scientific work at the time as it was just beginning the process of differentiation into discrete disciplines; the figure draws from all of the various isolated and solitary spaces of study and invention—from the alchemist's lab, to the medical room, to the philosopher's library, to the rising importance of the chemical laboratory. Chemistry had been established by the time of Shelley's writing, and was considered one of the most prestigious of the natural sciences, perhaps at a par, if not exceeding physics as the cutting edge field, lending its discoveries and experimental practices on the microscopic structure of nature to practically all other fields of scientific study. Victor's legitimate studies begin, therefore, with chemistry after an inspiring lecture by a professor M. Waldman. Upon meeting this lecturer face to face, Waldman explains to Frankenstein that "Chemistry is that branch of natural philosophy in which the greatest improvements have been and may be made; it is on that account that I have made it my peculiar study." He then impresses upon Frankenstein the need to know all branches of natural philosophy, a statement that will lead Victor to acquire a breadth of expertise in a wide range of scientific pursuits. Waldman continues: "[B]ut at the same time I have not neglected the other branches of science. A man would make but a very sorry chemist, if he attended to that department of human knowledge alone. If your wish is to become really a man of science, and not merely a petty experimentalist, I should

advise you to apply to every branch of natural philosophy, including mathematics” (Shelley 28).

Victor was shown Waldman’s laboratory, and given instruction as to what he should procure for his own. We never know precisely with what Frankenstein fills his laboratory, other than the flesh and bones of human and animal bodies. He does, however, describe the use of his “instruments of life,” perhaps first encountered in Waldman’s laboratory, though now turned towards a subject of study that more approached anatomy, physiology, or medicine, and predates anything like a biological laboratory by at least half a century. In fact, if the distinction between a “naturalist” and a “biologist” turns on the use of the laboratory, Frankenstein would be one of the earliest literary figures of the modern biological scientist. The discussion of the role of science in Frankenstein commonly leads to the conclusion that Shelley deploys within her novel a full range of the sciences at the time. It was clear that Shelley was not only influenced, as she explains, by the discussions of her companions dealing with the contemporary debates and controversies over materialism, galvanism, vitalism, etc., she was also known to have attended lectures and would have had access to a range of popular outlets in British society for the discoveries and findings of the sciences. Marilyn Butler deciphers contemporary reviews of the novel which claim it to “covertly promote” “favourite projects and passions of the times” and precisely the “novel’s network of allusions to contemporary science—not science as formally taught, but current scientific activity as represented to the British public in the 1810s by lectures, newspapers, a few accessible books, above all the serious Reviews” (302). The point here is not to elucidate the serious science to be found in the novel, as some seem want to do, as if to disregard or forget the

fact that we are dealing with a figurative text. I'd rather like to draw out the much more interesting frictions, or unexpected perspectives that emerge with the fictionalization of scientific discourse.

Shelley's novel was first published, as I've mentioned, at roughly the historical moment when the chemistry lab became a valued and institutionalized space for pedagogy. It wasn't until the 1820s that laboratory instruction in chemistry started to become a common feature in institutions of learning. As a space of instruction, the chemical laboratory served the more limited purpose of the transfer of knowledge from the instructor to the students, whose role was to passively record the information gained through the witnessing of well-established experiments. However, the nature of the laboratory also transforms this model of instruction into a collaborative process for both professor and students in experimentation and invention. It wasn't until the end of the nineteenth century (more precisely the late 1870s) that the biological laboratory (if that is indeed what Frankenstein's laboratory prefigures) was established as a legitimate institutional space of learning. There were, of course, dissecting rooms and medical spaces that might be considered the precursors to the biological laboratory, though the central function and drive of the medical lab differed from the biological lab. The science of biology, the "study of life," and the question of "life's origin" mark the range of the science's problematic, though biology as a discipline would have to wait until well into the nineteenth century—specifically until the influence of Charles Darwin and Alfred Russel Wallace (the co-founders of the theory of natural selection in the 1860s)—to become a legitimate field of study. This is to say that the biological laboratory wouldn't have existed as such while Shelley was composing her novel. The figure of the laboratory

in *Frankenstein* allows for the unique depiction of the chemical laboratory as a space in which human life (or any life for that matter) might be created. If it is possible to create new compounds and materials from disparate substances, why not imagine it possible to produce a human in a similar fashion? It is not hard to see how Shelley's novel in many ways also prefigures the emergence of biotechnologies, a type of proto-genetic engineering whose fundamental limitation is a lack of access to the structure of living forms on the molecular level.

While the sciences were limited by technological means to operate and manipulate material at the genetic level, the novel dramatizes the limitations of access to various levels in other ways. Victor, for example, runs into the issue of operating on the biological level alone, while ignoring the existence of the social, economic, or cultural exigencies and realities, which invest in, complicate, or even clash with the very practices and knowledge of biology. (It is not hard to see these imbrications of science and society today—one need only think of the political controversies and battles surrounding genetic engineering, stem cell research, or even more essentially, the very political and social nature of the construction of scientific knowledge itself.<sup>13</sup>)

*Frankenstein* also parodies a central tenet of the life sciences and natural philosophy at the time, in that Victor treats the biological as if purely mechanical. For him, the human body is not seen as a living system in flux, but as composed of static, interchangeable parts. This is a mechanist world-view that would correspond to something like Descartes' conception of material bodies as in themselves automatons, entirely determined by external causes, in opposition to the governing force of the human soul. It was characteristic of the categorical nature of natural philosophy to deal with

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<sup>13</sup> For a thorough and clear analysis of this process see Latour, *Science in Action*.

living forms as if dead and static—the structure of the living being was foregrounded at the expense of an understanding of bodily processes which might exceed or disrupt such a conception.

In practice, the mechanical world picture corroborated a method of collecting the living organism and preserving only its body in order to determine its structure. The organism, ironically, was killed in order to be understood. Life was studied through the death of the object of study. In a philosophical light, it seems necessary to have knowledge of death for one to produce knowledge of life. As Frankenstein says of his own studies, a trajectory that ultimately leads to the dissolution of the perceived opposition of life and death, “To examine the causes of life, we must first have recourse to death” (Shelley 30).

Even so, Victor’s task reaches beyond the mechanical structure of the human body. Simply knowing the parts and how they fit together is only part of the puzzle for him, and could not in itself be considered “life.” “Life” involved more than the frame, or the structure. There is a presupposition in the novel that life somehow involves an internalized set of relations, an animation, or an internal motive principle related in some way to electricity, though also only made visible, or made to “appear” through the contrast, from the movement from one to the other. As Victor explains, “No one can conceive the variety of feelings which bore me onwards, like a hurricane, in the first enthusiasm of success. Life and death appeared to me ideal bounds, which I should first break through, and pour a torrent of light into our dark world” (30). Life and death, to emphasize, appeared as “ideal bounds” that he must first “break through.” To discover the secret of life, neither a study of “life” nor “death” would suffice, but rather their

sublation (a term entirely appropriate here considering its obvious sexualized overtones), a dialectical “breaking through” of the contradictions that would lead him to discover a new relation or organization between these states of being, and thus cross the threshold from death to life.

When the creature awakens, Frankenstein is faced not only with the success of his project, but also with the startling moment that makes visible what could not be thought by the scientific discourse, or worldview at the time—life as historical, lived process. He had claimed to know everything, to have achieved totality, so of course he would experience a subjective rupture when this totality continued to change, to move, or to operate in ways he could not comprehend. The coming to life of the creature can be seen as the rupture of the social and cultural within the center of the scientific laboratory, which is another reason for Frankenstein’s inability to comprehend or deal with his creation. To recognize the creature as a human being, as one worthy of the same treatment and attention given to members of his own community, would be tantamount to admitting the social and cultural, or more to the point, political nature of scientific production. So, what Frankenstein struggles with in the novel, perhaps also something that Shelley could not address directly herself, are the very same problems that it will take biology at least fifty years if not a full century to come to terms with: the history of living forms or life as process, and the political nature of scientific discourse and practice.

I’ve discussed the limits to representing the processes that occur within Victor’s laboratory and the ways we might interpret these attempts in light of the history of scientific work, yet it still remains to consider the larger set of relations that constitute the space of the laboratory itself as well as its particular relation to the larger social landscape

in general. To begin with, the laboratory in *Frankenstein* is marked by secrecy. We are told little of what occurs within its walls, though we do know that it is populated with the disembodied elements that, when properly sutured, become a body. We also know that the laboratory contained the “instruments of life” necessary to accomplish this ghoulish deed. Little is known of the space of Frankenstein's laboratory in terms of its material configuration (i.e., where objects stand in relation to one another, how large it is, what materials are included within), which presents the difficulty of discussing a space without the necessary descriptive cues for constructing an image or for visualizing the space. But one place to begin, and here we might call on our reading of the cinematic depiction of the laboratory for amplification, is with the aura that surrounds it. There is an intensity of feeling attached to the space, and the descriptions of the labor are less meticulous details for how flesh is sutured to flesh, but rather the sentiments and deeply felt internal emotions that are produced through the operations enacted.

At the bottom of a long paragraph expressing Victor's internal state, we are given a cursory, one sentence description of the laboratory. Victor explains: “In a solitary chamber, or rather cell, at the top of the house, and separated from all the other apartments by a gallery and staircase, I kept my workshop of filthy creation,” and the sentence continues with a second, attached to the first with a semi-colon; “my eyeballs were starting from their sockets in attending to the details of my employment” (33). If we are not given the detailed outlines and contours of a physical space of the laboratory, we are clearly given the way in which Victor perceives the laboratory subjectively. The room is separated from the other living spaces in two dimensions (horizontally by a gallery, and vertically by a staircase), yet is also included within the larger structure proper to the

space of everyday life. It is a space within the home in which the relations and affections of the family (the moral and domestic bourgeois obligations) are kept at bay, are in a manner of speaking forestalled. Frankenstein's laboratory is, to be more precise, situated at the literal limit of the domestic enclosure, yet taking part only at the very edge; contained yet marking the threshold between the social and the interiority of the lab.

Moreover, it is not only family relations that are excluded. Frankenstein, usually attuned in proper Romantic fashion to taking pleasure in the singularities of the natural world around him explains, "It was a most beautiful season; never did the fields bestow a more plentiful harvest, or the vines yield a more luxuriant vintage: but my eyes were insensible to the charms of nature. And the same feelings which made me neglect the scenes around me caused me also to forget those friends who were so many miles absent, and whom I had not seen for so long a time" (32-3). This self-imposed isolation and solitary confinement within his "chamber" or "cell," words that draw out the more oppressive sensations of being imprisoned, clash with the affections he is known to have for family, friends, or all of the vibrant life outside. The withdrawal to the interior, the "cell" of his laboratory, implies that his work is iconoclastic yet genius, in the sense that the social need not play a role in his labors. One might in fact recognize once again the influence of a certain Cartesian relationship to the external world. One must turn away from the extended bodies of the material world, and look only to the *Cogito* for the Truth of the external world. The turning away of the body, and material bodies in general, is often thought to correspond to the cold and calculated rationality of the modern scientist. Yet, here again, Victor is overtaken with an overwhelming intensity of emotion. Feelings are compounded, expanded, aspirations grow and feed off of the successes gained, a great

swelling up of desire, charged with a not too subtle sexual overtone; all of this is contained within the prison cell of his laboratory and the emotional prison of his own mental and corporeal—if one considers his fainting spells—interior.

However, what is most interesting about Frankenstein's one sentence description of the laboratory are not the many references to isolation and solitude. That is, what appears as more revealing is not the content of the description, but rather the form of its presentation. The two clauses read grammatically articulate the same thought in separate ways, the semi-colon is less a break or transition than a suggestion that the two parts of the sentence share something essential with one another. I've dealt extensively with the first clause of the sentence in which the only description of the lab appears, but I have yet to deal with this revealing yet jarring cut and suture to a description of Frankenstein's own body, "my eyeballs were starting from their sockets in attending to the details of my employment" (32). It makes sense to some extent that a description of one's working environment would lead to a description of the intensity of labor. However there's a suggestion in the construction of the sentence that creates an analogy between the laboratory (enclosed, set off from the rest of day to day activity, and at the height of the house), and Frankenstein's own body—the laboratory is the place of sight, the space in which one visualizes and witnesses the secrets and processes of nature; the eyes, and therefore the head (or more precisely the brain) is likewise often considered the seat of vision, a repository for knowledge, a laboratory in its own right, set off and afforded a privileged status, aloft the machinery of the body which supports the higher functions of the intellect. If one can make this connection between the laboratory and the head (which by extension includes the brain and mind), then the image of Frankenstein's eyeballs

“starting from their sockets” suggests not only eyestrain but also a certain pressure from within. It is as if the mind is overflowing with the information which it has absorbed, pressing the eyes out of the sockets and threatening to break free, much like the laboratory contains or imprisons Victor himself, as if “one doomed by slavery” (31). He is separated from all otherworldly affections, yet conversely is full of an overwhelming desire to pass what is gestating within to the world without.

### **THE CHANNELING OF BOUNDLESS DESIRE: FROM MAGIC TO SCIENCE**

Victor’s affective state provides a way to explore the affective “tone” of the laboratory. In the histories and descriptions of scientific practice, the feelings and affects of the practitioner are rarely included. One would have to turn to the biographies or autobiographies of notable scientists for insight into the affective realm of scientific production, the feelings and emotions, or that which is usually associated with interpersonal relationships rather than one’s relation to the natural world. *Frankenstein* no doubt makes use of a particular form of (auto)biography, yet the affective and bodily dynamics of the scientist at work are further amplified by the epistolary form, as well as by Shelley’s intimate connection to a movement, English Romanticism, conceived of as, if not an opposition, then at least a response to the impersonal and demeaning consequences of the industrial and technological “progress.” Returning again to the focus on labor, and on the conditions of production, one can read Shelley’s novel as circumscribing, or bringing into relief the affective (and that is the material, bodily) dimensions of scientific work.

In the initial sections of *Technics and Civilization*—which deals with the shift in the West to a culture dominated by what he calls “the machine” (but what he might equally call the industrial mode of capitalist production, and thus not to be confused with particular machines)—Louis Mumford echoes the opinion of Victor's more open-minded professor, M. Waldman, on the issue of the magical arts of alchemy. Waldman describes the alchemists as:

...men to whose indefatigable zeal modern philosophers were indebted for most of the foundations of their knowledge. They had left to us, as an easier task, to give new names, and arrange in connected classifications, the facts which they in a great degree had been the instruments of bringing to light. The labours of men of genius, however erroneously directed, scarcely ever fail in ultimately turning to the solid advantage of mankind (28).

Waldman's assessment of alchemy, which legitimates Victor's continued study, is one shared by Mumford, who speculates on the importance of the seventeenth and eighteenth century alchemists for preparing the ground for true science. Beyond this, Mumford's text is useful here for considering the transformations in terms of “inner urges” and desires (what Waldman had called “indefatigable zeal”), and thus provides an observation of the subjective and affective shifts from magic and fantasy to modern science. He writes:

The dream gives direction to human activity and both expresses the inner urge of the organism and conjures up appropriate goals. But when the dream strides too far ahead of fact, it tends to short-circuit action: the anticipatory subjective pleasure serves as a surrogate for the thought and contrivance and action that

might give it a foothold in reality. The disembodied desire, unconnected with the conditions of its fulfillment or with its means of expression, leads nowhere: at most it contributes to an inner equilibrium (38).

Furthermore, he characterizes the imaginations of the alchemists as marked by the unscientific qualities of “secrets,” “mystification,” and the “impatience for ‘results,’” which often lead to flights of fancy and charlatanism, and thus to a “short-circuit” of the potential for actualization. The alchemists and magicians developed the “instruments of research” and the apparatus that would eventually lead to the methods and processes of modern chemistry. It was the aspirations and unbridled scope of what the early alchemists and magicians dreamed could be possible that inadvertently consolidated the conditions of possibility for modern scientific work. As Mumford so eloquently puts it: “to have dreamed so riotously was to make the technics that followed less incredible and hence less impossible” (41).

Here again we should remember the slippage for Frankenstein among emotions, feelings, desires and knowledge. He begins his early studies dealing with a discourse already discredited (the alchemical studies of Paracelsus and Agrippa), yet full of the profound desire to know what can't be known, or to accomplish the impossible. Frankenstein's first experiences at school give him two avenues for the pursuit of knowledge and the practice of science, exemplified in the two very different reactions of his professors to the passion he felt for these occult and antiquated texts. Reading these ancient and discredited thinkers filled Frankenstein with, as he explains, a “delight” for the “treasure” of this knowledge produced through “wild fancy,” a type of philosophical drive or speculation imbuing the work of these proto-scientists. Yet the first faculty

member Victor encounters, M. Krempe, has no mixed words for his opinion, one shared by his father, of the alchemical sciences: “Every minute...every instant that you have wasted on those books is utterly and entirely lost” (26). For Frankenstein, however, this rejection was tantamount to destroying what passion he once had for scientific study in the first place. As he explains:

It was very different, when the masters of the science sought immortality and power; such views, although futile, were grand: but now the scene was changed. The ambition of the inquirer seemed to limit itself to the annihilation of those visions on which my interest in science was chiefly founded. I was required to exchange chimeras of boundless grandeur for realities of little worth (27).

We can see in this passage a foreshadowing of the struggle, often mentioned by critics, played out between Frankenstein as ego and Monster as alter ego or “id.” The pleasure principle that drives Frankenstein comes to clash with the reality of scientific work at the time, its application and practical use which for Frankenstein have, “little worth.” In fact, the science to which he devotes himself has as its precondition the “annihilation” of those “grand views” and the “boundless grandeur” that was the foundation for his interest in science. Modern science, in contrast to alchemy and magic, requires the institution of limits, it draws the boundaries of its practice and its legitimate knowledge such that magic, speculation, even profound desires come to be contained and channeled by science.

Victor’s process of discovery and invention not only seems to anticipate Mumford’s speculation, but also contributes to further developing an understanding of the role of “riotous dreaming,” not as something external to, but rather as a driving force

in modern science itself. The entire description of Victor's labors is wrought with extremes of feeling. The physical confinement and isolation of the laboratory is matched by the containment of extreme sensations, or overwhelming knowledge. The disgust, for example, produced by the manipulation of flesh and bone only seemed to become another source of a paradoxical pleasure in pain for Frankenstein: "My limbs now tremble, and my eyes swim with the remembrance; but then a resistless, and almost frantic impulse, urged me forward" (32). It is, again, as if the source and secret of all knowledge, of all life itself (the philosopher's stone, the holy grail), a knowledge so expansive and totalizing, so encompassing, a knowledge that pertains to the very essential core of what it means to be alive, is funneled into the confined space of the laboratory. Following Mumford's observation, the lofty aspirations of Victor—to discover the "principle of life"—would perhaps have remained a mystical fancy (as they did for the alchemists who shared the same aspiration) if he had not submitted them to the rigor, methods, and beliefs of the natural sciences of the time. Regarding his successful creation of life, Victor explains that "Some miracle may have produced it, yet the stages of the discovery were distinct and probable" (30).

The recourse to the miraculous here requires further consideration. The "miracle" alludes to a type of religious infusion, the "spark" of emergence, that instant at which a certain organization or conjunction of parts (objects, relations, structures, etc.) comes to be radically different and takes on a lasting consistency supported by an internal principle. Drawing out the contradiction given in his statement, the "miracle" was in some sense "coerced." What does it mean that the procedure for the discovery was distinct and probable when the discovery was itself the product of a miracle? Can the

“miracle” then be reproduced at will? And if so, are we still talking about the miraculous? What can be said is that Victor was an active participant in the miraculous through the “stages” of discovery, the application of limits, of methods and processes that supplied the proper conditions of possibility for this particular emergence (the coming to life of the creature). Put differently, the “miracle” points to something sublime that Victor had previously referred to as “boundless,” (27) something that remains unknowable and unmastered by reason, yet something that can be, yet only to a certain level of probability, reproduced.<sup>14</sup>

No doubt Frankenstein believes his isolation in the laboratory has consequences of a universal nature. What was passed on to science proper from alchemy (via hermeticism) was a particular belief in the relation between a macrocosm and microcosm. As David Channell writes in *The Vital Machine*:

The alchemist believed that when he conducted an experiment on a small part of the universe, he was in fact conducting an experiment on the entire universe. Therefore, if the alchemist succeeded in transforming some base metal like lead or iron into a more perfect metal like gold, he had actually acted on the entire universe and in so doing had himself undergone a transformation that would be similar, in many ways, to a religious rite. It should be noted that the belief that an experiment conducted on the microcosm could be seen as an experiment on the macrocosm has become a fundamental assumption of modern science (49).

Victor explicitly believes that the knowledge he had gained through the intensity of solitude was of a sort that stretched to the entire history of human desire for knowledge.

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<sup>14</sup> This claim is similar to one made by Gigante. She argues that an aesthetics of the ugly (as given through the experience of “facing” the creature) disrupts a Kantian conception of the sublime in that the ugly cannot be recuperated by, and therefore mastered or contained within Reason.

“What had been the study and desire of the wisest men since the creation of the world,” he explains, “was now within my grasp” (Shelley 31). Furthermore, there is a type of zeal, or perhaps maniacal sense that what he was producing was in fact a new social world, which would raise him, in a type of apotheosis, to the status of father/creator/god. “A new species would bless me as its creator and source,” he says, “many happy and excellent natures would owe their being to me. No father could claim the gratitude of his child so completely as I should deserve theirs” (32). Through the most intense internal activity, folding the external world upon itself to produce the boundaries of the laboratory, Frankenstein understands his work as “godlike science,” and feels as though his production gives him direct access to the universe, as if he himself were a god. (The Whale’s film version makes this even more apparent in the embarrassingly kitschy and blatant proclamation of Frankenstein at the moment of the creature’s animation: “In the name of god, now I know what it feels like to be god!”)

This shift to modern science, to the primacy of reason and rationality has, of course, been well charted by Adorno and Horkheimer in *The Dialectic of Enlightenment*. One could say that the phylogenetic history of the life sciences in the West (a progressive exhumation of the irrational, mythical, or magical), comes to be recapitulated ontogenetically in Victor’s own biographical history (that is, Victor as an individual undergoes, in true Hegelian fashion, a process that recapitulates the history of the sciences in general). But Victor is far from the stereotypical man of science, and still crucially retains within himself these grand visions of the proto-scientists. Victor is often for this reason read as an “overreacher,” one whose ambitions inevitably, and perhaps tragically, end in failure, or in his case, death. This may be, but the fact remains that

Frankenstein did not fail as did the alchemists or as did other literary instances of the “overreacher.” Quite the opposite, in fact; Victor spectacularly succeeded, even beyond his own expectations.

One could say that the swelling up from within of the “grand visions,” not pushed outside, but rather held within the limits imposed by modern science, is essential to the constitution of Victor. I would suggest that to a large degree the labor and production of scientific practice itself is made visible through the character of Victor. Myth, magic, speculation, or strong feeling and affect in general might be said to be the driving force for scientific work. Science reaches for the impossible, for an understanding of chaos itself, while displacing this central desire as something beyond or outside the scientific as such. Just as the history of science charts the shift from alchemy through the regulation and standardization of technologies and procedures, Victor himself learns to “frame” his own “riotous dreaming” with the techniques and methods which had been established by the scientific community. For example, even armed with the secret knowledge of “life,” Victor has little or nothing to show for it. Knowing the secret, or possessing the knowledge does not signify without a proper frame, an appropriate context or material embodiment in which the “spark of life” might come to have meaning. As he explains, “Although I possessed the capacity of bestowing animation, yet to prepare a frame for the reception of it, with all its intricacies of fibers, muscles, and veins, still remained a work of inconceivable difficulty and labour” (31). The novel’s obsession with “framing” comes up here, and, as I will show, is one characteristic of the novel that illuminates both the function of literary, as well as scientific, discourse.

I have described this paradoxical play of forces in Victor's narrative, and will later discuss this paradox in the narrative of his creature as well. Furthermore, this otherwise chaotic or unnamable desire, brought within a particular form (whether scientific discourse and practice or the anatomical body of the creature), can now be tied to the paradoxical conditions of the laboratory—the combination of a highly regulated space (both spatially in the form of his chamber and temporally in the form of method), through which the new emerges. Victor's laboratory can be seen as the spatial instantiation of the conflict at the heart of Victor himself. The history of the laboratory plays a crucial role in this very transition from the private aspirations of alchemists and magicians to the legitimate, and ultimately more empirically verifiable practices of modern science. While the scientific laboratory functions first by closing itself off from those relations to the external world, reconfiguring natural and social relations alike within its own microcosm, work in the social studies of science, science studies, and anthropological studies of science have systematically worked to show how this ostensible autonomy of the laboratory nevertheless has implications for the macrocosm (the lab's natural, social, political, and economic external environment). Not only does the social permeate scientific work, but there is an essential social and political relation at the heart of the construction of scientific facts themselves. It is this somewhat paradoxical nature of laboratory work described here that is central to Latour's observations of the lab that I take up in the following section.

## LATOUR AND THE LABORATORY

A systematic study of the actual labor that occurs within the laboratory not only helps one understand scientific work, but can provide a compelling model for a reading of the literary (both in the sense of the lab as a literary figure and as a space of literary production). I'd like to propose that one read Latour's discussion of the laboratory with the literary held in one's periphery. When this term is used, "laboratory" might also resonate with its alternate conception as a space of literary production. This experiment to elide a study of the scientific with the literary laboratory (that is, to hear "literary laboratory" resonating within Latour's concept of the scientific laboratory) is only a start. The ultimate task will be to unfold this initial elision into a more particular discussion of the literary laboratory, testing out the experiment's limitations, while remaining attentive to how it may open up a discussion on the literary. This section, then, will take a momentary detour through science studies, specifically looking at Bruno Latour's analysis of Pasteur's lab work on anthrax in "Give Me a Laboratory and I Will Raise the World," before bringing these insights into a reading of *Frankenstein*. I would like to begin, however, with a little historical context before turning to Latour's essay.

Of the surge of interest in the laboratory in the late 1970s and early 1980s Latour and Woolgar's *Laboratory Life*, at the same time an anthropology, sociology and philosophy of science, had perhaps the largest and most lasting influence (though Karen Knorr-Cetina's *The Manufacture of Knowledge* should be mentioned as well). The claims made in *Laboratory Life* informed much of Latour's subsequent work in science studies, and attests to the active role of the lab in scientific production. For Latour and Woolgar, the laboratory is the primary space in which scientific facts are assayed, proposed,

debated and negotiated before being transposed to a public field for further debate. The distinctions between the internal space of scientific production and the social space outside become continually problematized, leading Latour to show how laboratory production can change the makeup and organization of an entire society, profoundly altering social and cultural relations. Therefore, from the start, Latour and Woolgar understand the laboratory as a political space in the deepest sense of the word (one need only look to the large pharmaceutical companies today to begin to understand this claim).

*Laboratory Life* is perhaps best remembered for its constructivist position that studies the processes whereby laboratory sciences produce facts about the world. This differs from a realist perspective that presupposes the existence of scientific fact, eternally present yet hidden, waiting for the scientist to find means to uncover or expose the truth. In a humble reconsideration of this book, Ian Hacking (self-described as an experimental realist, and thus at first blush opposed to Latour's position), points to the lasting and important philosophical conclusions of Latour and Woolgar. In the midst of debates concerning realism or anti-realism at the time (framed differently for the social sciences and the humanities as the question of social construction), Hacking understands Latour's position to be neither one nor the other, and grapples with the complexity and difficulty of what he calls Latour's "irrealism." He quotes Latour and Woolgar on the notion of "reality:" "reality' cannot be used to explain why a statement becomes a fact, since it is only after it has become a fact that the effect of reality is obtained. This is the case whether the reality effect is cast in terms of "objectivity" or "out thereness. [...] It is because the controversy settles, that a statement splits into an entity and a statement about an entity: such a split never precedes the resolution of controversy'" (Hacking 280).

Hacking makes it clear that this version of “reality” is not, in Latour and Woolgar’s words, relativism. They are not saying that “facts” do not exist, or that theories about “reality” are purely instrumental and not to be believed. Hacking parses this in the following way:

This is a quite different doctrine from that of the anti-realists who say that theories are only instruments to be used but not believed, or those who say that the aim of science is empirical adequacy, not truth. Latour and Woolgar report a world full of facts, but those facts are the historical product of “microsociological processes.” There is a substance, TKH, secreted in minute amounts by the hypothalamus, and whose structure is that of a tripeptide, a string of three amino acids. That is a fact. But it became a fact (281).

I’d like to pause here to gesture towards where I see this discussion leading before continuing on with Latour’s theorization of the scientific laboratory. If the laboratory is a space of production in which scientific facts are historically produced through “microsociological processes,” then the novel, or perhaps literature in general, becomes the venue through which affects, moral truths, values, images, relations, or ideologies are constructed, debated, contested, or further solidified as components of larger social networks. (If the figure of the laboratory in *Frankenstein* is, as I’ve claimed, a way for the novel to reflect on its own conditions of production, and more generally a means by which literature reflects on its own production, how do we understand a literary dramatization of the production of the human in the laboratory? Diagetically, Victor’s monster is the human form produced through scientific technology applied to the biological body of the human. From a perspective of literature’s means of production,

this seems to suggest that “the human” is a fundamental, yet potentially vexing and terrifying product of literary production.).

Latour has dealt extensively with laboratory work in *Science in Action* (which I deal with more in the final chapter). Here I focus specifically on the essay “Give Me a Laboratory and I Will Raise the World.” This essay looks specifically at Pasteur’s invention of an anthrax vaccine for farm animals in 1881 as a case study. Part of what concerns Latour is to understand how the products produced in the lab make demands on the society as a whole, thereby transforming the lab into an invaluable space and unavoidable junction for the larger network of those concerned. The power of the laboratory, its specific social “gravity,” displays the political implications of laboratory labor in the very place where many see an absence of politics.

The playful rewording of Archimedes’ famous proclamation “Give me a place to stand and I will move the earth” in Latour’s title (“Give Me a Laboratory and I Will Raise the World”) is more than just a playful rhetorical gesture. The observer from the original statement asks for a firm position somewhere beyond or outside of the Earth, which makes possible his action on the Earth. This type of transcendent position characterizes much of the disinterested observation inherent in modern science, vehemently criticized by anti-Cartesian, feminist theorists of science such as Susan Bordo, Donna Haraway, Evelyn Fox Keller, Sandra Harding, among others. In Latour’s updated version we find a reversal of the observer’s position and perspective. The laboratory is a place or ground of action not beyond or outside the world, but rather a space of interiority within the interior of the world itself. From the very outset Latour is

concerned with localized and individuated spaces that, nevertheless, have global significance, spaces that can “raise,” or (as Latour will also say) “transform” the world.

When the essay was written in the early 1980s, the field of Science, Technology and Society (STS) was in a process of formation. In order to demystify science, and understand its process of production, studies on laboratory practices were “starting to pour in,” as Latour puts it, as legitimate subjects of sociological, anthropological, and philosophical analysis. Latour's title alone becomes a rejoinder to those working in the policy or history of science that saw the laboratory as “utterly irrelevant,” in his words, to larger political and social concerns.

Latour demonstrates not only the central importance of laboratory work for the sciences, but also its political and social relevance. To do this, he zeros in on France in 1881, where Pasteur's lab has made great advances in the analysis of anthrax (a fatal microbe for cattle that had farmers and ranchers discouraged and ill at ease). The careful study shows how lab work and its products came to be necessarily incorporated into French society. Latour looks to the internal functions of Pasteur's lab in light of the “construction of the laboratory and its position in the societal milieu.” One major claim is that the laboratory destabilizes certain categories and boundaries such as “truth” and “falsehood,” or, in the case above, “inside” and “outside.” More to the point, he intends to “convince the reader that the very difference between 'inside' and 'outside,' and the difference of scale between 'micro' and 'macro' levels, is precisely what laboratories are built to destabilize or undo” (“Give Me a Laboratory” 143).

Latour insists that the material inscriptions of laboratory labor are central to understanding the lab. Beyond this, however, Pasteur participated in capturing the

public's interest in his work on a few colonies of microbes in his lab by setting up laboratories on infected farms, extracting a culture, returning it to his lab to isolate and propagate the pure bacillus, produce trial infections, and definitively prove to the French public that what he had in his laboratory was worth their attention and interest (interest being crucial for funding, of course).<sup>15</sup>

Furthermore, his “translation” of the micro-organism from the complexity of the farm to the controlled conditions of his lab allowed Pasteur to convince those interested in controlling or eliminating the disease that a pass through his laboratory (in the sense of not only recognizing its importance, but also conceding to the authority of Pasteur to determine what was needed for an outbreak that threatened the farm life, and therefore France’s production of food) was indispensable to integrate the vaccine invented in 1881 into larger social networks. This is another difficult “translation,” as Latour calls it, that is, a translation of the significance of Pasteur’s work within the laboratory for society in

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<sup>15</sup> In a literary realm, if I may be allowed this parenthetical observation, the question may be asked differently—how might the products of the individual resonate with or find relevance for the collective? Virginia Woolf is aware of such a translation from individual to collective in literature. In *Orlando* she writes, “Her words formed themselves, her hands clasped themselves, involuntarily, just as her pen had written of its own accord. It was not Orlando who spoke, but the spirit of the age” (246) Further in the novel is a free-indirect discursive statement “Life? Literature? One to be made into the other? But how monstrously difficult!” (285). In as much as *Orlando* allegorizes literary history (and *Dorian Gray* comes to mind here, for example), we can take such a statement as the response to an imperative felt for literature, and one not simply of mimesis. The imperative is not to represent life in literature, but to somehow make life the literary, make literature life itself. The drawback here, however, is that the boundaries are still held in place, and the passing of one to the other, even if challenging the borders, still maintains the distinction. Perhaps it would be better to think of the intermeshing of life and literature, and perhaps they were never truly separate to begin with. Woolf’s quotation could be applied to *Frankenstein* in several ways. For one, the myth of Frankenstein has surely integrated and networked its way into popular culture, regarding which many studies have been done. Secondly, we might read Shelley’s novel as answering this challenge, but in a different way. It seems that Shelley would rewrite the question: “Life? Science? One to be made into the other? But how monstrously difficult!” Of course, one way to think of science becoming life is through technology and technique—scientific theories “made to work” in the material world. Why not, then, think of the technologies of literature? The narrative models, the laboratory experiments within novels and poems, become in some way techniques of living processes. Of course, the history of comparative literature is full of precisely these types of translations communicated through concepts such as “orientalism” and “structures of feeling,” through studies of nationalism and literature (such as Benedict Anderson), and of literature and the postcolonial.

general, which, without the labor of “translation” would have no necessary importance. Now that Pasteur has a vaccine and the public's attention, asks Latour, how can this practice be extended? That is, how can Pasteur definitely prove that the product of his laboratory deserves to play a legitimate role in social and political life? His fascinating answer: “only by extending the laboratory itself” (150-1). In other words, Pasteur has to extend the conditions of his laboratory trials (those conditions of possibility that made the vaccine successful in the first place) out into the wider and more complex social field in order to build his case upon multiple and consistent successes. Another way to put this, so as to bring out the resonance with the product of the laboratory in *Frankenstein*, namely the creature, one must build a “world” in which the products of the laboratory “make sense” or have relevance. Without this extension of the “laboratory,” the product of the lab easily risks falling into obscurity. So, the story as Latour tells it is a process of three displacements or “translations” made by Pasteur. He first brings the microbe from the farm into the lab, a displacement from a context of extreme complexity to one of controlled conditions, and creates something that has never before existed—a pure specimen of anthrax in a concentrated quantity such that it may be made “visible” and thus made into a material for study and experimentation. Second, he translates his findings into the interests of those in the field (not only the pathologies, veterinarians, and farmers, but also the politicians and policy makers) making “visible” to them why the work done in his highly controlled and ordered laboratory matters to the French public. Finally, he makes the move out into the world by displacing laboratory conditions out into farms, building in other locations the conditions and outcomes of his laboratory,

therefore building faith not only in his work in the laboratory, but also solidifying a belief that the products of his laboratory are relevant and necessary for those in the field.

One important summary conclusion, mentioned above, made by Latour is the dissolution of inside/outside or micro/macro through the laboratory practice, which he discusses through the case study of Pasteur's various "translations" from lab to society. He explains:

In this succession of displacements, no one can say *where the laboratory is* and *where the society is*. Indeed the question 'where?' is an irrelevant one when you deal with *displacements* from a lab in Paris to some farms then back to Paris, drawing along with it the microbes and the farmers' interests; then to Pouilly le Fort where an extended repetition is staged, then to the whole agricultural system through statistics and bureaucracy (154).

Yet the crucial point that he will make, which registers the title's namesake is the following:

But it is clear that the situation of the farms after the moves is not the same as before. Through the leverage point of the lab, which is a moment in a dynamic process, the farm system has been displaced. It now includes a routine annual gesture, part of which used to be a laboratory practice and still is a lab product.

Everyone has changed, including the 'whole society,' to use common terms (154).

Latour is making what he sees to be an important intervention in the sociology of science on several fronts. Following from the observations given above, he makes the move to show precisely how the microstudies of the laboratory can lead to quite cogent understanding of the macro level. Additionally, he complicates and expands the

sociological understandings of the politics of laboratory work. As Latour notes, Pasteur was a lousy politician, and failed miserably in his attempts to participate in French electoral politics. This, however, does not mean that the labor of Pasteur was not political. In fact, Latour will argue that it is precisely because of the fact that his work seemed “apolitical” that it was able to have such a profoundly powerful political role. Latour explains that “it is not necessary to search for political drives, for some short-term monetary or symbolic profits or for long-term chauvinistic motives. It is no use looking for unconscious ideologies or devious drives (drives which, by some mystery, are clear only to the analyst's eyes). It is no use muckraking. You just have to look at what [Pasteur] does in his laboratory as a scientist.” It is the addition of a social actor (the microbe) that confers a massive political power on Pasteur and his work. The force and relationship of this actor to the rest of society is strong enough to change the very structure of French society itself, a relation that was in no way inevitable; it was a condition that was produced. Furthermore, “The congenital weakness of the sociology of science is its propensity to look for obvious stated political motives and interests in one of the only places, the laboratories, where sources of fresh politics as yet unrecognized as such are emerging” (157). It is not by acting in any way as recognizable politician that Pasteur's work was political, but rather by positioning himself as spokesman for these “invisible” and “threatening” microbes which conferred upon him “one of the most striking fresh sources of power ever.” Here in the essay we come to one of the most poignant translations or metaphors in Latour's essay. As he remarks in his own italics: “Microbiology laboratories are one of the few places where the very composition of the social context has been metamorphosed.” But he makes it clear that he's not just talking

about microbiology, and suggests that this observation might be extended into other realms, indeed opening up the possibility for us to extend his observations to other “laboratory-like” processes. He claims that if the “reader isn't convinced” that the laboratory is truly as powerful a force in determining the social makeup, “then he can compare the sudden moves made at the same time by socialist politicians, talking on behalf of another crowd of new, dangerous, undisciplined and disturbing forces for whom room should be made in society: the labouring masses.” The microbe is here related to the “labouring masses” through the way in which scientist/politicians (and here we could bring up again the French *philosophes* of the French Revolution) mobilized and made visible previously invisible entities. He continues by claiming that, “The two powers are comparable in this essential feature: they are fresh sources of power for modifying society and cannot be explained by the state of the society at the time.” This suggestion is one that has, in fact, profound implications for understanding political processes on the microscopic level. Even though there are similarities between the laboring masses and the microbes (both of which in various ways might be described as monstrous), he claims that it is clear the Pasteurian laboratories have more political influence than the already politicized laboring masses at the time. As he explains, “it is clear that in political terms the influence of Pasteurian laboratories reached further, deeper, and more irreversibly since they could intervene in the daily details of life—spitting, boiling milk, washing hands—and at the macroscale—rebuilding sewage systems, colonizing countries, rebuilding hospitals—without ever being clearly seen as a stated political power” (158). These microbiological laboratories challenge the separation of levels into the micro and macro, but he makes clear that Pasteur might easily have failed in making this the case.

His strategy for his laboratory, which allows it and its products such a vastly sweeping influence, situates the laboratory “in such a way that all the interested commercial, colonial, and medical interests had to pass through their laboratories to borrow the technics, the gestures, the products, the diagnostic kits that were necessary to further their own desires.” What is clear to Latour, and one of the crucial points he is trying to get across, is that laboratories (contrary to a public belief in the disinterested, removed position of the scientist at work) are “places where society and politics are renewed and transformed.” Latour's final move is to draw some more general conclusions about the laboratory, many of which he offers as correctives to fields (he mentions STS) that maintain the distinction of levels between, on one hand, the “scientific,” and on the other, the “social context.” Latour claims that, “on the contrary, laboratories are among the few places where the differences of scale are made irrelevant and where the very content of the trials made within the walls of the laboratory can alter the composition of society” (159). Latour finally asks what it is about the laboratory that confers upon it such lasting and strong power. The answer for him, first suggested in *Laboratory Life*, and taken up as a fundamental observation in most of all of his work, is that laboratories are places of inscription. It is not, he argues, some special cognitive quality of the scientist that makes them perform the “miracles” they seem to enact, but rather the inscriptions of the scientists, and the development of inscription devices (a rather unmiraculous and mundane aspect of the lab), which makes the lab so powerful. Latour: “The technology of inscribing (writing, schooling, printing, recording procedures) is seen by more and more analysts as the main cause of what was attributed in earlier times to 'cognitive' or 'vague cultural' phenomena” (162). And furthermore:

This mysterious thinking process that seemed to float like an inaccessible ghost over social studies of science at last has flesh and bones and can be thoroughly examined. The mistake before was to oppose heavy matter (or 'large-scale' infrastructures like in the first 'materialist' studies of science) to spiritual, cognitive or thinking processes instead of focusing on the most ubiquitous and lightest of all materials: the written one (162).

In other words, the scientific laboratory is a space in which experimentation and observation come to be inscribed in various forms (and predominantly written forms), which is not only of central importance to the work done within the laboratory, but becomes the crucial and necessary vehicle for thought itself. Without going into great detail at the moment, the relevance of Latour's argument to a reading of the figure of the laboratory in *Frankenstein* seems fairly obvious. We have the question of the politics of the laboratory, and an articulation between a "microbe" and the "laboring masses." It is a simple move to include Frankenstein's monster in this group, a character that has often been read as a stand-in for precisely those laboring masses evoked by Latour. Furthermore, we are given an articulation between "writing" and the political and social power of laboratory practices as a reconfiguration of the way in which historians have dealt with "thought." Finally, it is hard not to hear the resonances to *Frankenstein* in the passage quoted above. Frankenstein's conception of "life" and the "human," the "mysterious processes that seemed to float like an inaccessible ghost" for Frankenstein, as well as for Western civilization, "at last has flesh and bones and can be thoroughly examined."

## **THE BOOK AS CREATURE: BODIES OF DISCOURSE AND THE SPACE OF THE LABORATORY**

In the penultimate paragraph of her introduction to the 1831 edition of *Frankenstein*, Shelley speaks of her novel as the “offspring of happy days,” and bids her “hideous progeny go forth and prosper” (173). This playful comment has been the invitation for *Frankenstein* scholars to claim that the novel (and specifically the process of production of the creature, and I would add, with and through the laboratory) allegorizes its own process of production. David Ketterer is perhaps the most important source here who has meticulously shown, in his 1979 book *Frankenstein’s Creation: The Book, The Monster, and Human Reality*, the metaphorical connection between the “novel” *Frankenstein* and Victor Frankenstein’s “creature” as its guiding thread to explore the thick tapestry of the novel’s allusions, influences, and historical associations. In a nutshell, Ketterer understands the production of the novel (as an accumulation and suturing together of the fragments of literary, political, religious, and scientific history) as itself made visible in the process of production of Frankenstein’s creature, who with fragments from past human discourses, as well as material fragments of human bodies, stitches together the human. Shelley places herself metaphorically in the place of Frankenstein by claiming her own novel to be her “hideous progeny,” and there are many ways in which we might think of the novel’s patchwork of genre, citation, reference, allusion, and literary history as Shelley’s “monster,” metaphorically given in the novel by the patchwork of human outcast and degenerate “poor” (as Moretti called the donor bodies) that were sutured into the composition of Frankenstein’s monster, which constitute a large proportion of Ketterer’s book. He solidifies the relation between

Frankenstein and Shelley, then, by showing how Frankenstein's narrative characterizes him as an "artist," thus making ambiguous the nature of his work. Furthermore, he shows how certain references to writing in Victor's narrative elide his own scientific work with the labor of writing. If we carry the analogy further, the production of the novel shares an affinity to Frankenstein's labor in the laboratory; Shelley laboring to write her novel by working through the agony of the process by imagining a character who suffers through a similar experience. Finally, Ketterer shows how the novel's consideration of the production of the creature, manifested as well in the production of the "world" or specific "illusory" reality of the novel, sheds light on the processes by which human "reality" is itself produced. The similarities between the production of various forms of discourse is, of course, one of the key arguments in Marxist literary critic Pierre Macherey's seminal *A Theory of Literary Production*, in which he shows how literary discourse "parodies" the construction of discourse in general, thus opening up otherwise rigid or unquestioned discursive formations (and specifically scientific discourse) to question. Both Latour and Macherey are appropriate sources for a novel that foregrounds the clash between science and the arts. The novel registers, one might say, a conflict between literature and science, not only in the figure of Frankenstein as artist/scientist, but also in the literary treatment of the scientific proposition of "human life." This is a conflict between the "artisan" practices and the emerging life science that was integral to the historical emergence of the scientific laboratory, as discussed above.

However, if we take as a given the relationship between the monster and the novel (a connection made by others as well including George Levine and Judith Halberstam), and focus on the product of labor (which I would argue is the limitation to Ketterer's

argument), Macherey would remind us (as a corrective of sorts to certain structuralist and formalist approaches to literature) that we miss something quite important about the nature of literature by ignoring or bypassing its process of production, and the conditions of possibility for literary discourse in the first place. If Macherey's approach to literature shares anything with Latour's study of science it is that they both give primacy to production. The processes of production of the object, the object as a product of the discourse through which and in which the object is first constituted. Macherey will, of course, attempt to delineate a "scientific" approach to literature ("science" in an Althusserian or Marxist sense), whereas Latour will bring the sciences, and specifically the practice of science, back to those moments of production, the manufacturing of scientific entities, facts, and concepts in the laboratory through processes of "inscription." Latour pushes the importance of writing, of symbolic production for our understanding of the sciences. Macherey thinks of the work of the literary critic as a science, and therefore offers some of the most useful overlap between the studies of these two discourses. It is almost cliché to point out the importance of narrative and metaphor to the sciences today. Scientists write papers, create images, tables, and graphs. They describe and explain through language. Latour, we might say, asks "How are scientific facts and truth produced?" "How do we get something we might call science?" Macherey, by contrast, follows the same line of questioning, though takes literature as the object: "How is literature produced" "What processes lead to the entity we call literature?" Returning to the moment of production, or the act through which these various objects come to be allows for a critical perspective that refuses presuppositions about the nature or essence of the object. A focus on literary or scientific production removes itself from what

Foucault calls “the will to knowledge” that presupposes a secret truth in the object of study that is then sought out. Taking all of this into consideration, I’d like to turn to an investigation of the “space” of literature, or more specifically that condition of possibility for the production of literary discourse as discussed by Macherey, Blanchot, and indicated more generally in Deleuze and Guattari’s discussion on the nature and production of artistic thought.

### **BLANCHOT’S “SPACE OF LITERATURE” AS LABORATORY**

Perhaps one of the most persistent attempts to understand the production process of literature, and therefore to understand literature’s very being, can be found in Maurice Blanchot’s *The Space of Literature*. Blanchot’s attempts to trace the contours of this “space” lead him to posit the boundaries and limits that must be placed on the interminable, the impossible, the unsayable, or the infinite if the work is to exist. The desire inherent in literature’s origin to reach the absolute or totality—death for Blanchot—cannot be allowed to operate unrestrained. In order for thought to be sensible, in order for literary discourse to make sense, it must work with the conventions of language, with syntax and grammar. It must also work with and on the history of literature, its themes, figures, and modes. But even before this, Blanchot seems to be saying, the writer must restrain him or herself from the desire to say everything, to capture all of life and death in the work, or to bind the entirety of chaos itself. Even so, and perhaps ironically, the “work” for Blanchot cannot exist without this confrontation with chaos, with that which dismantles or threatens the destruction of human-made forms of thought.

Deleuze and Guattari, in line with Blanchot, speak of D.H. Lawrence's metaphor for poetry, a metaphor that Deleuze and Guattari apply to all forms of thought, as an "umbrella" that shelters people from "chaos." As they explain, "people are constantly putting up an umbrella that shelters them and on the underside of which they draw a firmament and write their conventions and opinions" (203). This transcendent "firmament," which produces the image of the infinite, or of a totality is precisely what the artist, with the aid of chaos, struggles against. Even while the artwork might produce a totality in itself removed from the external world, its confrontation with chaos rents open those fixed opinions that become regulating truth. Chaos designates a concept of immanence in which forms constantly emerge and disappear, yet Deleuze and Guattari insist that chaos is not disorder, nor is it nothingness. Chaos is "a void that is not a nothingness but a *virtual*, containing all possible particles and drawing out all possible forms, which spring up only to disappear immediately, without consistency or reference, without consequence" (118). This is the massive churning of the real, which is accessed from the vantage of thought's various forms. Literature, then, takes the historical forms of language and works on them, exposing them to chaos, and thus challenging fixed opinions as transitory or temporary shelters from chaos. As they explain, "poets, artists, make a slit in the umbrella, they tear open the firmament itself, to let in a bit of free and windy chaos and to frame in a sudden light a vision that appears through the rent..." (203).

Blanchot, for his part, suggests that an unwavering desire must push the writer to attempt to capture everything in language, though to make possible the production of literature, this desire must be present along with the restraint of the author, the holding

back that allows for the work to emerge, which otherwise would result in a type of paralysis, the lure of the Sirens in which the poet is silenced by death. Blanchot explains the impulse or need to write as the approach towards the limits of language itself, a point at which one risks the disaster of saying nothing. He explains this in the following way:

The need to write is linked to the approach toward this point at which nothing can be done with words. Hence the illusion that if one maintained contact with this point even as one came back from it to the world of possibility, “everything” could be done, “everything” could be said. This need must be suppressed and contained. If not, it becomes so vast that there is no more room or space for its realization [52].

Blanchot may have in mind the immediacy of an intuition of totality, in a Kabalistic sense (he does after all quote Gershom Scholem), of the moment at which the individual connects immediately to the immanence of existence. In another sense, this point may be simply the lived and living experience of the body—feelings, sensations, perceptions, affections, etc.—which, due to the complexity of their arising, become impossible to capture fully in language. The point is somehow beyond the “world of possibility.” Does this mean that it is the realm of impossibility? In a sense it is, because it gives the hope to those in the realm of possibility, in the realm where things “can be done with words,” that one could do and say “everything,” which is of course not possible. The need (to say everything) in its realization is the production of literature—writing poetry, writing fiction. One must produce a reduction of chaos—not chaos itself but a cosmos, a microcosmos. The space of literature, what I am here calling the literary laboratory, is

that conjunction that might include a frame of mind, disposition, habit, and physical place, that allows for the realization of this need.

The laboratory is the condition of possibility for the production of literary as well as scientific discourse. The laboratory is a particular type of body (physical space, human body, discourse, mode of thought) that is an articulation of material and immaterial elements. It is a coordination of a host of actors and an environment in the production of a space of labor. The laboratory does not imply an entirely open space in which anything is possible, but rather a metaphorical shape like any other than functions in a particular way. As Deleuze and Guattari point out, “The painter does not paint on an empty canvas, and neither does the writer write on a blank page; but the page or canvas is already so covered with preexisting, preestablished clichés that it is first necessary to erase, to clean, to flatten, even to shred, so as to let in a breath of air from the chaos that brings us the vision” (204). Macherey says something similar when he writes: “In short, a book never arrives unaccompanied: it is a figure against a background of other formations, depending on them rather than contrasting with them. It is, like all products, a *second reality*, though it does have its own laws” (61). The “raw material” of the writer is literary history, the history of a genre, of styles, of particular forms and uses of language. However, when dealing with science fiction, we must take the “raw material” to be human history, and even beyond that, history understood in the Jamesonian sense to be the history of the “Real,” that which can be accessed only through its traces. Similarly, scientific discourse is restrained by a history of established methods, models, and facts, yet necessarily involves the “experimentation” (and the laboratory is that site of experimentation *par excellence*) that often counters our hopes, opinions, or beliefs.

The laboratory scientist experiments in a setting constructed and controlled in the ways I've mentioned, and what she experiments on is material forms, whether organic or inorganic. What are the materials of the writer in the literary laboratory? As Macherey has said, the writer works on language, on images, on literary history, and Jameson will add that the "raw materials" of a fictional work are taken from real material history. Perhaps most important, the writer works on relations (relations between humans, between humans and others, between humans and nature, humans and technology, etc.) and affects. Taking a relation into the literary laboratory allows the writer to, similarly to the "purification" of the microbes for Pasteur, concentrate, isolate, or purify a certain relation, allowing the writer to work with or experiment on this relationship in ways that would be impossible if it were situated within the complexity of the world outside. In this sense both the scientific and literary laboratory reduce the complexity of the surrounding world and in their autonomy experiment with materials (concentrations of materials, of affects, purified relationships) in a way that would simply be impossible otherwise. A concentration in a scientific laboratory of a particular substance might be, like anthrax in Pasteur's laboratory, something that has never before existed in the complexity of the world outside the laboratory. This concentration, however, is what allowed the anthrax microbe to become visible, and it was only through this purification and concentration that Pasteur was able to work on anthrax. This practice of concentration and purification can be useful in the context of the literary laboratory. The writer might take a relation (say familial, economic, cultural, sexual) and purify it, concentrate it, or in the case of an affect, intensify it, such that the emotion or feeling becomes "visible" or "tangible." It is

at this point, equipped with this purified relation or intensified emotion, that the writer produces an image as a component in the laboring process.

### **INFORMING LIVING LABOR, OR EMBODYING CHAOS (The Creature)**

The trajectories of Walton (the ship captain whose epistolary narrative constitutes the outermost narrative frame of the events) and Frankenstein have often been understood as a search or striving for the absolute. However, in as much as Victor Frankenstein “astonishingly” succeeds in embodying the “principle of life” (a figure for totality or the absolute if ever there was one), the novel might conversely be read as the *dénouement* that comes after the positing of totality, a continuation of a process that takes the otherwise static principle and unfolds it into an ever expanding life. The novel must be understood not as a warning against the unbridled pursuit of knowledge, which its subtitle “The Modern Prometheus” might suggest. It would seem more appropriate to say that the novel takes as a given the positing of totality (in this case the abstraction “life,” though it may just as well be “Nature,” or “God”). This makes it more than a moralizing tale decrying the misdirection and improper use of science, or an injunction against the usurpation of a god’s power. Rather, the novel makes visible the ways in which totalizing figures are used, how they are integrated into social relations and produce effects that may or may not be intended when given form, or when “embodied.”

It is at this point that a shift from the tensions in Victor give way to the intense conflict at the heart of the creature. The creature, as the embodied “principle of life,” is a character that cannot be contained, destroying all boundaries of the novel, continuing on even after the “death” of his creator, and the turning back of Walton, the “messenger” of

his tale. The sublime of the infinite expanse beyond, depicted famously by Romantic painters, a topic for no little number of essays on *Frankenstein*, comes to be placed firmly at the center of the human. In this sense the creature as the product of the laboratory becomes famously unassimilable. Halberstam discusses this in the following way in the context of the Gothic, alluding to the seemingly limitless ways in which the monster has been interpreted:

By his very composition, he can never be one thing, never represent only a singular anxiety. His formation out of bits and pieces of life and death, of criminals and animals, animate and inanimate objects means that he is always in danger of breaking down into his constitutive parts. It is the propensity for the monster to deconstruct at any time, to always be in the process of decomposition, that makes it/him/her a fugitive from identity and a model for the Gothic reader.

(37)

As her description suggests, the “monster” is a force of deconstruction precisely because of the way in which its/his/her form incorporates chaos. Shelley takes the most unassimilable of all, “life itself,” and places it firmly within the center of a human being which is taken to be fully a product of human labor. The novel, in this sense, through the “monster,” exemplifies the function of art as discussed by Blanchot and Deleuze and Guattari. That is, the novel brings that which is unassimilable, unknowable (“death” for Blanchot, “chaos” for Deleuze and Guattari), into a “frame” or an historical structure that results in the transformation (or becoming) of the structure itself. From Macherey’s perspective, the body of the monster, like the body of the literary text, exposes the “monstrous” nature of even those “bodies” assumed to be “natural,” and thus challenges

the processes of naturalization of body types, or moral and ideological constructions. Just as Frankenstein produces a likeness of the human (whose disproportioned body and exposed fracture lines on the surface of the skin signal a potential rupture of the total frame), Shelley produces a likeness of humanity, yet replete with the fissures and gaps that suggest a possible reconfiguration of the human form, that make visible the constructed nature of the form itself.

What Victor through his labors, and Shelley through her literary experimentation with the human have shown is that any attempt to contain an abstract universal does not result in the revelation of truth, or in a stable reflection of an unchanging ideal. If anything is disclosed through the embodiment of an abstract principle it is the truth of the constant historical becoming of the human being, or of life itself. Victor is captivated by the human form. He knows the body in death, has been able to construct, as a master machinist, a functional human frame from the dead. What Victor seems to know, though perhaps not transparently to himself, is that “life,” if it is to have any meaning to a human being, must be understood within a particular configuration, a singular structure, such as the human body itself. To his horror, once the abstract principle, the universal concept is embodied, that comfortable or reassuring position of truth is itself disrupted, thrown into a “monstrous” becoming. In this sense, Shelley has placed the unknowable at the center of her novel and has covered it over with multiple bodies and frames (the flesh, bones, and subjectivity of the creature; the layers of narratives, from the creature to Victor to Walton). The proliferation of attempts to contain this chaotic life registers a certain anxiety about the inability to find a proper space for the creature. The “principle of life” is most certainly unknowable (as unknowable for us as it is impossible for Frankenstein

to himself divulge the secret), but encased within these frames, (a human body, a domestic sphere, a hovel, a ship, a subjectivity—in short within forms that have the potential to become laboratory spaces) a world is produced, and something of the unknown, something not before conceived has been given form; something beyond language has been inscribed in the materiality of the world. What ensues in Shelley's laboratory experiment is the breaking free of life from all attempts at its containment within discursive forms. In treating this unknowable, this chaos—the immensity of that which can't be contained—Shelley places it first within a human body. This suggests that any access to the knowledge of life or its origin must begin with the living human body. Furthermore, if the knowledge of the unknowable begins with the human body, its final articulation cannot be formulated without initiating a further process of change. Truth can only be known within an historical process of transformation; the being of the human or of life itself cannot be posited outside of its historical process of becoming.

In the context of the narrative, Victor's inability to recognize the historical being of the human, or of life, results in his utter inability to organize or produce an environment in which the creature might have meaning, where, even as monster it may find its place (which might even be a degraded or oppressed condition; in a circus, let's say, or as the prop to a scientific lecture series exemplifying his work). In fact, Victor's inability (or refusal) to provide a framework for his work (beyond the body of the creature itself) is manifested in the creature as an inability to articulate his own meaning or value within the external world. If the novel is characterized by the individual's struggle and ultimate reconciliation with his or her world, the creature fails in many ways to achieve this end. The creature is excluded from the necessary relational structure,

excluded, as Peter Brooks argues in, “Godlike Science/Unhallowed Arts: Language and Monstrosity in *Frankenstein*,” from the symbolic order which would ascribe to him not only a name (for he remains nameless), but also a place in society (591-605).

The problem of an appropriate frame for this creature is finally a problem for the novel as a whole. There is an inability to contain this monstrous body, to find a place for this fabricated, artificial human, despite the novel’s frantic efforts to capture the creature within various spaces and frames. Where would the artificial human belong? What would be required for such a being to become integrated into the otherwise natural species of the human? These questions take on an even more pressing political urgency when, in place of the creature we reinsert those bodies that the creature figures. The body, through the chaos of its form, elicits the reactions that not only characterize various racisms, but also characterize more conservative or reactionary responses to unruly or ill formed human collectivities. The creature works to figure the biological other or what political theorist Antonio Negri calls the “biopolitical monster” in the structure and physiology of his body, allegorizing a *res publica* taken as mob, masses, the poor, and so on.<sup>16</sup>

In addition to the allegory of human masses, the body of Shelley’s creature becomes the site for an experimentation and critique of bourgeois subjectivity. The plight of the creature, in fact, has perhaps less to do with only the “monstrosity” of his physical body than with the clash or friction between the creature’s interpellation as bourgeois subject with its “hideous” frame. If the creature was biologically a construction, an artificial production of Frankenstein’s labor in the laboratory, the education that the creature receives via his observations of the De Lacey family—a model “liberal”

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<sup>16</sup> I specifically have in mind Antonio Negri’s reading of the monstrous in the history of political discourse, in his essay “The Political Monster” in Casarino and Negri.

education—estranges the creature’s own subjectivity as artificial (even though, outside of an image of his body, the creature is discursively presented as an epitome of a liberal human subject). In other words, the suffering of the creature is due to its being organized through the actions of the bourgeois subject. Were it not for the creature’s assumptions of bourgeois morality, many of his struggles would simply not have arisen. Without his particular bourgeois subjectivity, would the creature have demanded the recognition of his “creator/father/god,” let alone have gone to murderous extremes to gain this recognition from Victor? It is not his artificiality nor his “monstrosity” that directly leads the creature to kill, but rather the very construct of the bourgeois subjectivity that comes to define his interests, intentions, and actions. The inherent monstrosity of the bourgeois subject (itself not estranged, if anything more idealized than even the subjectivities of Victor or Walton) is here made explicit through its embodiment in Victor’s creature. Whereas Frankenstein succeeded in the production of the biological human, he fails to account for the production of human subjectivity and therefore fails in the successful production of the image of the human. It seems obvious that Shelley’s novel refuses to reduce the human or life itself to a type of abstract bare life, or simple being, yet complicates this through the further addition of a bourgeois subjectivity that acts to regulate, organize, or restrict the body.

## **CONCLUSION**

The creature’s narrative, describing his own experiences, acts as a juncture for the multiple levels of laboratory literature. Not only was the creature a material product of Victor’s labor, and by extension Mary Shelley’s own laboratory experiment, but his

actions also disclose and collapse the multiple levels at which laboratory literature functions. The creature's relationship to literature is a way to understand the role of literature in the production of the human, yet also suggests the continued importance of literature as an active partner in the construction of what might be called a social laboratory in which the various monstrous and contingent products of particular sites of production might find a relevance and meaning for a larger social whole.

Nowhere is the importance of literature in the production of society and the human subject clearer than that moment in the novel when the creature becomes self-aware. At the end of his detailed account of the formative influence of the De Lacey family, for whom he felt great affection, the creature describes the other sources of profound influence. These three books that he encountered fortuitously in the woods provide the creature with a specific context, one that epitomizes the way in which an English Romantic might understand his or her relation to the rest of society and nature: *Plutarch's Lives* provides an epic account of Western history; *The Sorrows of Young Werther* gives the creature a sense of the profound depth of sentiment and feeling of a contemporary bourgeois individual; and *Paradise Lost* provides him not only with a key canonical text for the history of English literature, but also maps out for him the mythological structure, Christianity, to which much of Europe is beholden. Remembering this first literary experience, the creature explains: "I can hardly describe to you the effect of these books. They produced in me an infinity of new images and feelings, that sometimes raised me to ecstasy, but more frequently sunk me into the lowest dejection" (Shelley 86). The impact is something the creature can "hardly describe," just beyond or at the limits of signifying language. The feelings produced are importantly listed

alongside the “infinity of new images” that led the creature through the entire range of human emotion—from “ecstasy” to “the lowest dejection.” As a description of the creature’s formation following his narrative of the De Lacey family, the idea that these books incited in him “new images” resonates with his purely voyeuristic relationship to the De Lacey’s, but is also reminiscent of the way in which Deleuze and Guattari speak of literature as the production of new or intensified “affects” and “percepts,” or ways of seeing.

If anything else, it is important to note Shelley’s explicit move through a theory of reading and learning that resonates, as has been suggested by others, with the importance given to education and self-advancement in Rousseau, Locke, and other philosophers, as well as the centrality of enculturation for the *Bildungsroman*. The creature himself furthers this connection between viewing the De Lacey family, education, and his private reading experience: “The cottage of my protectors had been the only school in which I had studied human nature; but this book [*Paradise Lost*] developed new and mightier scenes of action” (87). Not only was the creature aware of the hovel as a space of learning, as a “school” in which he “studied human nature,” the creature here implies that the books, specifically *Paradise Lost*, provided an even “mightier” insight into human nature put in terms of the book’s development of “scenes of action.”

Here again, as with Victor’s laboratory, Shelley collapses a physical space with a psychological space; the pedagogical place of the cottage/hovel with the even more pedagogically effective mental “scenes of action” of the book. True, then, to the Romantic revolution in poetry discussed by Ranciere in *The Flesh of Words*, Shelley gives the creature’s experiences with real life and the literary—whether it be history,

poetry, or the novel—at once in a single sentence, or in the same thought. Thus, the creature’s real life experience and the literary come to be, in a sense, interchangeable with one another. The literary book merges with and becomes indistinguishable from the “book” of his own reality.

Of all the creature’s experiences, the most defining moment is his discovery, and later ability to decipher, Frankenstein’s lab notes. This is where the theory of reading, the power of literature as laboratory, and the nature of laboratory work all come to a head. The creature is bodily text to the lab notes’ written text—both are aspects of one another—which is why the creature presupposes that Frankenstein would only need the “lab notes” in order to create another creature like him. The book here, Victor’s laboratory journal, is literally that which becomes flesh. The creature, perhaps better than any other, understands and feels the “flesh” of the book in that he himself is that living flesh. Victor’s laboratory notes are a book of genesis for the creature, and describe in detail the process that led to the instilling the creature with the “principle of life.” Just as the body of Christ is made flesh in the scriptures, the creature is the living flesh of Victor’s laboratory notes. Ironically, the laboratory notes produce perhaps the most powerful emotional response from the creature who explains, “I sickened as I read.” Coming to the laboratory journal after Milton, the creature can no longer situate himself and his life’s meaning within the metaphysical system of Christianity. The exposure to his origin does not, as one might expect, lead to the creature’s emancipation. Rather, the creature feels excluded from a meaningful and fulfilling existence.

What the creature fails to see, what he becomes blinded to after reading Milton, is that although heaven may not apply to him, neither does the rest of the Christian system.

In this sense, he cannot properly be understood as “fallen,” and is not the product of an “original sin.” As he himself expresses, citing a line by Percy Shelley, “I was dependent on none, and related to none. ‘The path of my departure was free...’” (Shelley 86). He has the potential for living in the world, here and now, without it being corrupted or overshadowed by a life beyond this one, even if this potential becomes foreclosed in the narrative after the fact. Interestingly, the creature's central problem is definitively not, as it is for Victor and Walton, a search for the unknown or for that which remains inaccessible to knowledge. He has the entire knowledge of his origin—all of the secrets are given to him in the journal, and there is nothing more for him to know, nothing more for him to explore or discover.

Here is a work of art that does not offer a home to a people to come, as works of art have the potential to do for Deleuze and Guattari. Rather Frankenstein's creature calls to a future world, one that does not exist, that cannot possibly exist, but one that must nevertheless be created, as Pasteur did for his microbes. There are no models or blueprints to follow to create this world that corresponds to the creature, yet however well considered, no world that restricts or prohibits the creature's ability to labor within the social laboratory will suffice. In this sense, one of the creature's central issues may be restated as precisely the loss of a space of labor, the loss or dejection from what I would call a laboratory space (Victor's laboratory, the hovel, his books). The creature's condition is one far worse than having been abandoned by heaven; the creature is abandoned by human society. When considering the ways in which laboratory work might transform society, one cannot ignore the laboratory creations that demand an altered or new context, which enact translations or displacements, as Latour would say,

that show the relevance of a localized laboratory production. The importance of laboratory literature is its continued insistence not to map the utopian relations in its own fictional or illusory world onto real social relations, nor to make these imaginary constructions necessary models for a future world. Its importance, marked by the production of literature, the reading of a novel, or the space of interaction between a writer, a reader, and a material inscription—the laboratory of literature—is a constant reminder to work to transform society by making society itself the laboratory.

## CHAPTER TWO:

### Wells's "Stubborn Beast Flesh": The Laboratory, Control, and Resistance in *The Island of Doctor Moreau*

In this chapter I focus on the role of the laboratory in one of Wells's "Scientific Romances," *The Island of Doctor Moreau*. While it may be claimed that certain spaces have similar functions in some of his other works—such as *The Time Machine*, *The War of the Worlds*, *The Invisible Man*, to name a few—*Moreau* (1896) provides the most exemplary case for the uses of the lab in Late Victorian England. Wells's novel acts as a heuristic device for exploring the massive shifts in the capitalist mode of production and sovereignty at the time, and attempts to map out the emergent forms of social, economic, and political life. With these claims in mind, I read the biological laboratory in this novel as a factory of the human that produces the biological form of the human itself, as well as its attendant forms of subjectivity and sociality.

The laboratory is a highly ambiguous figure in the novel as is evident through the anomalous description itself. The space proper to Moreau's lab is never fully given through physical description; its layout, processes, and relationship to characters and other spaces are never spelled out. Rather, it appears through asides, momentary glimpses, allusions, and symptoms; that is, through figurations which point indirectly toward the function of the space, and the roles of its inhabitants. In spite of its concealment (or perhaps precisely because of it), the laboratory is this novel's center, both structurally and narratively. What I mean is that the central influence of the laboratory makes the story possible—it provides the story with the means to investigate its various concerns and themes. The laboratory is the novel's dark center, the

inescapable gravity that pulls the characters and related spaces into its event horizon. For this reason, the laboratory cannot be understood, here, as an object unto itself (as separated clearly from its surroundings and the objects which it contains).

One way I give flesh to the laboratory, then, is through exploring its relations with the other spaces given in the novel, an investigation that attempts to expose the rays of influence radiating out and coloring the related spaces of the ship, the enclosure on the island, and the island itself. Another way I approach this environment is through questioning the practices and objects found within, as well as the functions that they serve in the novel as a whole; i.e. Who has access to this space? What are its controlling laws? What does this space make possible? What, in other words, are the products of this particular environment?

In drawing out the uncertain purpose of the lab, this reading takes full recognition of the very ambiguous nature of the novel as a whole. This ambiguity, in fact, is a commonly recognized point of distinction of Wells's early novels, what he called "Scientific Romances", precursors to what would come to be known as Science Fiction. As Darko Suvin puts it, "Wells's SF makes thus an aesthetic form of hesitations, intimations, and glimpses of an ambiguously disquieting strangeness" (29). Or in the elegant words of Jorge Luis Borges, in a short piece on Wells's early novels,

Work that endures is always capable of an infinite and plastic ambiguity; it is all things for all men, like the Apostle; it is a mirror that reflects the reader's own traits and it is also a map of the world. And it must be ambiguous in an evanescent and modest way, almost in spite of the author; he must appear to be ignorant of all

symbolism. Wells displayed that lucid innocence in his first fantastic exercises, which are to me the most admirable part of his admirable work (331).

These wise words will reverberate throughout this exploration of the truly prophetic visions of Wells. And while we may point to a particular untimely quality to his novel, it still remains to determine what relevance it may have for the contemporary world.

The narrator and protagonist of the novel, Edward Prendick, an English gentleman, can be seen as that character with whom the expected audience is intended to identify (and while Wells is lauded for his role as great popularizer, this is clearly a novel written to a white, male, educated, and financially solvent class—the one to which Wells himself belonged<sup>17</sup>). The allegiance of the narrator wavers variously between the ultra-rationalist Moreau (the model scientist), and his humanized animals. Prendick, in fact, finds himself split between these two conflictual poles.

This leads to the two-fold argument of this chapter, which takes into consideration the two very different figures that emerge as products of the laboratory: Dr. Moreau, and his grotesque creations, the ambiguous hybrids of man and animal. In the first section, I consider how the novel maps the emerging relations of power, and new forms of sovereignty made possible through the products of the second industrial revolution, specifically, the emergence of the laboratory as the dominant space of scientific work. Prendick wavers between the tyranny of Moreau, and the alarming possibilities of the beast-men as, in turns, active instigator and apathetic observer. In the spirit of a realism that understood the novel as site of social experimentation—as a progressive uncovering of the unknown—I argue that the figure of the laboratory acts as a reflexive meditation

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<sup>17</sup> The overlapping historical experiences, such as having worked with noted biologist T. H. Huxley, between Prendick and Wells might suggest this.

on how we might understand the novel as a laboratory itself, one which investigates the limits of and potentials within the human form.

The second section will elaborate on the hybrid bodies that emerge as products of experimentation. As Moreau's laboratory produces both the dictatorial figure of Moreau and the beast men, the novel as laboratory marks out a shift in Modern sovereignty (in the figure of Moreau), while giving voice to the potential for its resistance. As Suvin has noted, Wells often forecloses this fearful power of collective resistance, and *The Island of Doctor Moreau* is no exception. The novel does end, after all, in profound alienation and despair. However, this is not to say that a meditation on precisely those moments of rupture, or of the potential for resistance, even if it fails, should be ignored. The second section ends with a consideration of the role of affect in struggle, mapping the potential for and limits to a non-conceptual, or bodily resistance.

### **THE UTOPIAN ENCLAVE AND THE LABORATORY**

There is no doubt that *The Island of Doctor Moreau* is a dystopian text, and the question of whether the novel, at the end, provides us with a latent utopian impulse is left an open one. Prendick, the protagonist, begins and ends the novel in a state of acute social alienation. In fact, his progressive "unveiling" of the dark truth of Moreau's island, leads not to a resolution of Prendick's individual destiny with that of a social totality. Quite to the contrary, Prendick's heightened social awareness, his deepened understanding of the basis of the relations of the island lead him only to a state of greater confusion and separation. What remains to be determined, though, is to what extent this novel provides a direction for the utopian impulse—or that latent drive towards a reconfiguring of

society that is not yet an ordered layout or a self-conscious social organization, but rather a more precarious prefiguration of a possible community.

My chapter deals with the figuration of space in Wells's novel in a very particular way, which grows out of what Jameson calls the "utopian enclave." The utopian impulse is seen as a very specific type of fantasy production; one which, due to the specific characteristics of its outcomes, so distinct from erotic daydreams, warrants "special attention in its own right." The utopian enclave is the space in which such impulses and fantasies are given room to develop and evolve. As Jameson explains, utopian space is "an imaginary enclave within real social space, in other words, [...] the very possibility of Utopian space is itself a result of spatial and social differentiation. But it is an aberrant by-product, and its possibility is dependent on the momentary formation of a kind of eddy or self-contained backwater within the general differentiation process and its seemingly irreversible forward momentum" (15). There seem to be several intentions at play in Jameson's argument. One is an attempt to legitimate and delineate Utopian Studies as a field in its own right. Another is an attempt to understand how such impulses arise from a particular historical moment and environment. The enclaves of utopian impulses are transitory spaces in which the general course of things is momentarily cordoned off. As an eddy in a stream, there emerges a space that seems to follow an internal law of organization distinct from, and resistant to its surrounding environment. As Jameson goes on to explain, "Such enclaves are something like a foreign body within the social: in them, the differentiation process has momentarily been arrested, so that they remain as it were momentarily beyond the reach of the social and testify to its political powerlessness, at the same time that they offer a space in which new wish images of the

social can be elaborated and experimented on” (16). The utopian enclave is a space that removes itself from the surrounding social world in order to reconfigure the relationships that constitute the current state of things.

Utopian thought is a product of a moment of historical unrest, though one still blind to potential change. This blindness is seen by Jameson as the strength of the utopians “insofar as it allows their imagination to overleap the moment of revolution itself and posit a radically different ‘post-revolutionary’ society” (16). These utopian impulses can be found at various moments in the history of a people with a constitutive drive to redefine themselves. While Jameson is quick to locate these moments in a Modern world that is not yet fully colonized by capitalism, he is less optimistic about utopia’s contemporary possibility. Once capitalism becomes the hegemonic world economic system, the ability to even imagine a different world becomes much harder, if not impossible. In Jameson’s words:

Industrialization greatly increases the wealth of nations (Marx’s so-called General Intellect spreading through the whole social order), but is not felt in the modern period to have so completely colonized social space as to close all the loopholes and make an enclave-type withdrawal impossible. Indeed, it is precisely the closing of those loopholes (and the advent of the perspective of a concrete World Market) which is now called Postmodernity (or globalization) and spells an end to this type of Utopian fantasy. (20)

If the early utopian, as Jameson suggests, used the figure of the court as “a kind of mental space in which the whole system can be imagined as radically different” (16), Wells uses

the figure of the laboratory as a mental space which is similarly representative of a dominating social system, as well as its radical reimagining.

If there is a figure for the utopian enclave in this contemporary conjunction of capital, it is the laboratory. Jameson understands the conditions of possibility of the utopian impulse to be something dependent on a certain historical moment—the structure of society paints the horizon for the possible forms of thought, and gives shape to the utopian impulse. However, if the laboratory can be considered a utopian enclave, this alters the argument for several reasons. First of all, the laboratory is a site in which social forms are no longer prefabricated—it is not spaces and places alone that are reconfigured, but rather the very genetic elements of those objects inhabiting these spaces. Moreover, the laboratory does not produce a space that determines new forms of collectivity and social relations, rather it manages the emergence of new forms of life that will either inhabit the social spaces that already exist, or simultaneously reconfigure its milieu with no guarantee for success. Finally, the forms created in the laboratory call all forms of life into question, for the biological laboratory's *raison d'être* is an investigation of what we mean by life. The new life forms that emerge in the lab put demands, then, on all other forms of life to reconfigure themselves in response to what emerges.

Ultimately, the laboratory is a figure situated at the center of a structure of relations that have no external alternatives. It depends only marginally, and initially on the self-conscious and reasoned control of the scientist. What is produced is less a well thought out result, but rather that which results from a management of the unexpected, from a directing of the processes of growth and mutation toward a form that could not have been anticipated, but is nevertheless affirmed and helped along—this, of course, for

better or worse; the ethics of this situation are entirely dependent on the particular situation.

This presents the utopian thinker with a much more daunting challenge. The ‘utopian enclave’ is a space among many in which the totality can be reimagined—it produces sketches or workable models for the system as a whole. The utopian enclave requires a social actant who is the product of social forces and relations that have been instrumental in his or her formation. The actant in the biological laboratory operates on a similar level, that is, on that substance which makes his or her biological life possible in the first place. The biological laboratory, as a site of the production of forms of life, is that space which makes what is most common to us all possible. What is taken into the laboratory and managed is that which is most intimate and close to the life of an individual, and that which is most universal (DNA, Genomes, phenotypes, genotypes, etc.).

I argue that the laboratory in Wells gives shape to the capturing of the utopian enclave itself, and makes the very plasticity and mutability that characterizes life productive for the reproduction of capital and sovereignty. But, the very uncertainty of what is being managed (its potential for error, mutation, failure) is precisely the location of a possible challenge to the status quo. The laboratory is a truly ambiguous site in which radically new forms of thought and life originate. The figure of the laboratory in *The Island of Doctor Moreau*, fully a product of the second industrial revolution, though, perhaps, fully relevant to the third, indexes that moment at which the utopian impulse comes to be subsumed within the machinations of power (seen clearly in Eugenics or the

Nazi regime, for example), a situation that we might claim is indicative of the rather uncertain emotional tonality of political struggle today.

Within late capitalism, the laboratory is still a dominant figure for the production of resources and knowledge, tied to the massive biomedical and biotechnical industries. It is through the function of the laboratory that nature and culture become irrecuperably blurred, as was understood so well by those early biometricians and eugenicists. It is through the productions of the laboratory that living forms or chemical structures biologically tied to organic life become profitable. The laboratory is a site that is readily funded—indeed, it seems to be the privileged space to which the allocations of grants and resources are directed. It is, in other words, today the most effective and successful tool of economic development (or the most productive site of capitalist expansion and exploitation), though also a site in which the human species itself might find powerful resources to redefine itself.

### **WELLS, HUXLEY, AND THE BIOLOGICAL LABORATORY**

The biological laboratory is a unique space that first emerged during the mid to late nineteenth century, and is fully a product of the second industrial revolution. This environment was quite different than the enclosed spaces in which scientists had hitherto operated. Residential rooms, museums, “cabinets,” etc., are precursors to the lab, though in no way identical. The lab is tied to the consolidation of the biological sciences during the mid 1800s, but must also be understood within the context of an increasingly globalized capitalist economic system. The invention of powerful new tools (such as the microscope) aided in its coming to prominence. The lab is a sterile environment—

contagion by any outside unwanted element of the experiment is detrimental to the experiment's success. Therefore, we could also tie the emergence of this type of sterilization of place to the heightened awareness of hygiene and cleanliness that emerged in this period in figures such as Florence Nightengale or Louis Pasteur.

Philosopher and historian of science, Robert Kohler, sketches the contours of the biological laboratory in his book *Landscapes and Labscapes: Exploring the Lab-Field Border in Biology*. The thrust of his book deals with the threshold between the laboratory and the "field," an eminently permeable line between nature and culture, a boundary that emerges with the coorigination of both terms. In his exploration of this threshold, he discusses how the emergence of the laboratory's hegemonic status for scientific research involves the positing of "field work" as the outmoded labor of the biological scientist. He locates the emergence of the lab somewhere between 1840 and 1870, a period he refers to as the "laboratory revolution" for the sciences. However, it is not until the early 1890s that this particular work environment becomes the commonly accepted zone for legitimate experimental knowledge. The difficulty in thinking about the characteristics of this space is due precisely to its recent appearance, though it is also due to the fact that the history of the biological laboratory had not been recorded in detail. While one may construct an idea for the operations of the laboratory, it is not until the turn of the century that one finds actual images of the space. The history of the laboratory must ostensibly be culled from the cultural memory leading up to the moment of its recognition. As Kohler explains:

[I]n the absence of a full history of the lab-field border we can only take its existence as given and pick up the story in 1890, when it was a recognized but

still novel feature of biology's cultural topography, and memories of how it came to be were still fresh and raw. The field biologists who came of age in the early 1900s were the first who could not operate exclusively by their own rules on their own cultural ground. (4)

Once fully realized, the laboratory becomes the standard and limit for the type of biological work that could be done, promising standardized and universally valid results.

One of the most notable characteristics of the space of a laboratory is its homogeneity. It is unrooted to any locality or element of place, whereas the field as a space is indissociable from its particular location. This manipulation of space/place is one of the key components of the work of a laboratory scientist. "Laboratory workers eliminate the element of place from their experiments. Field biologists use places actively in their work as tools; they do not just work *in* a place, as lab biologists do, but *on* it. Places are as much the object of their work as the creatures that live in them" (6). Particular qualities of the place of the laboratory are "eliminated," which points to the extreme control and regulation necessary to construct and maintain a functional laboratory.

The homogeneity and eminently controllable space of the lab is contrasted to the fluctuation of the rooted "place" of the field. "Another obvious difference between lab and field is that natural places are *particular* and *variable* places, none quite like another, each the result of a unique local history, never the same from one moment to the next, unpredictable, unrepeatable, beyond human control" (6). The laboratory is a universalized space, one that remains the same regardless of its context, walled off from the surrounding environment. For this reason, the laboratory is necessarily off limits to

those who do not belong there—access must be restricted in order to maintain its integrity. One must understand how to work in the lab, how to treat its objects, instruments, and tools. In Kohler's words,

Laboratories...are socially homogeneous; access is restricted to those who are qualified and have legitimate business there. Socially as well as physically and biologically, the field is a more ambiguous and unstable place than any lab. Labs are separate, a world apart from the world; nature connects field biologists to other social worlds. (7)

A “world apart from the world,” an autonomous world within another surrounding world, in other words, an “enclave” of sorts within a larger social world. This points to a peculiar quality of the laboratory's relationship to that which exists beyond its walls. The field is permeable; it is in a varied and multi-directional relationship with the social world, never really under control, though easily reinscribed as a place for work, recreation, conservation, etc. The relationship of the laboratory to the surrounding world moves only in one direction; from the interior out to the rest of the world. The introduction of workers and objects into the interior (that is, the introduction of “nature”) is never forced on the laboratory. Its communication with the outside is regulated and controlled; a decision to commune in some way with the external world, catastrophes notwithstanding, must originate from out of the internal logic of the laboratory itself.

Such characteristics are, as Kohler points out, part and parcel of the value and hegemonic status of laboratory work:

These features of physical and cultural topography go a long way toward explaining why laboratory science seems always to be granted a higher standing than field science, and why observation and comparison are taken to be less credible ways of knowing than experiments. It is precisely the stripped-down simplicity and invariability of labs—their placelessness—that gives them credibility. Generic places sustain the illusion that their inhabitants' beliefs and practices are everyone's beliefs and practices. We credit knowledge and practices that are universal and mistrust what is merely local and particular, and laboratories are meant to seem universal, the same everywhere. The variability and unexpected occurrences of nature have no place in labs. Such things would only undermine the reason why we trust experiments, which is that they turn out the same wherever they are performed. (7)

Kohler is most interested in exploring the threshold of the lab and field. Therefore he describes how the laboratory is an internal space that repeats or reproduces the processes that occur beyond its walls. Yet even while elements of the field could always be found within the laboratory, Kohler shows how pressures to reproduce stable and repeatable results required field workers themselves to take on characteristics of the laboratory worker.<sup>18</sup> Thus, the form of the laboratory in the twentieth century became one of the central mechanisms for scientific study. The shift was made in the biological sciences from a practice primarily based on field work to one that relied almost exclusively on laboratory work. On the one hand, working in the field involved traveling to exotic lands to collect one's data (which had to be killed and preserved for further

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<sup>18</sup> See Kohler *Lords...* It is notable that Kohler would choose to reference a novel in the tradition of the "island myth," here.

analysis), or exploring the full scope of a local species by accumulating myriad variation of a single type. This method of research is best known through Darwin's autobiographical accounts of his time on the *Beagle*, during which he accumulated an overwhelming cache of organisms.

Laboratory work, as exemplified by Thomas Hunt Morgan's work on *Drosophila* (the fruit fly), moved the activity of data collection and observation to a more controlled space, where one no longer simply happened upon new forms of life, but rather was instrumental in producing the conditions of possibility for these new variations themselves. This new genetic science required a certain sterility of space that was intensified by the late nineteenth century's growing awareness of contamination and disease. Scientific treatment of living creatures shifted from a model, such as Darwin's mobile workstation, in which organisms were collected, killed, and preserved for later inspection, to one that rather kept organisms alive in order to give life to further generations.

In the century since the founding of genetics, the mapping of the human genome has become the frontier for corporate research and investment, a new terrain for a renewed "primitive accumulation" of resources and information. The colonization of the globe has given way to the invasive colonization of our interiors—that which is most uniquely ours (the individual genome), though also most collective (human DNA as representative of the species, consolidated over millennia). The ethical issues that emerge from such tight control of our biological foundation are clear concerns today. The eugenic sciences during the time that Wells was writing *Moreau* were much less a concern in a world that had not known the terrors of Nazism. However, the ethical

concerns with the manipulation of life forms did find a critical voice in Wells's novel, which, according to some scholars, anticipates the machinations of Fascism during the early half of the twentieth century.

H. G. Wells was in a privileged position for thinking about the function of the laboratory because of his experiences working closely with T. H. Huxley. In their essay "Constructing South Kensington: The Buildings and Politics of T. H. Huxley's Working Environments," Sophie Forgan and Graeme Gooday show how Huxley, Wells's most beloved and influential teacher and noted Darwinist, was a central figure in the introduction of the laboratory into the normal practice of the biological sciences. In fact, it was due to Huxley that the laboratory became a central feature in the pedagogy of the life sciences.

For Huxley the laboratory was far more central to biology teaching than for any of his predecessors. He often proclaimed that only a carefully managed programme of experimental work would give teachers the essential authority of having had 'direct' contact with the inner workings of 'Nature'. But establishing the laboratory, rather than the 'field' or the museum, as the definitive site for learning life science in the early 1870s, was by no means a straightforward task (Forgan and Gooday 449).

The coming to prominence of the laboratory was not easily managed, for it involved the construction of spaces specific to the training of teachers and students. Huxley was, however, determined, and ultimately succeeded in making the laboratory a formalized part of his instruction by 1872 (449).

There survive few images or descriptions of what these laboratories were like, but among these are the anecdotes given by Wells himself. In 1884, Wells won a scholarship to the Normal School of Science in South Kensington where he worked with Huxley. Entering little more than a decade after Huxley's introduction of the laboratory into his curriculum, Wells would have been quite familiar with the increasing importance of this new space of experimentation and learning, which, as Kohler points out, was generally accepted in the 1890s as the dominant setting for biological work (even though still quite new).<sup>19</sup> Wells, in fact, was among the first generation of students who would have experienced the laboratory as the preeminent tool for biological research. For this reason, his literary representations of the space of the laboratory are privileged in that the laboratory was not yet taken for granted. In other words, this new historical space for experimentation and research was still a site of contestation; the full range of possibilities, limitation, anxieties and concerns were still fresh.<sup>20</sup> This might account for the way in which the laboratory is represented in *Moreau*. As a space it is never dealt with directly. Instead, the figure of the laboratory is a product of allusions, asides, chance glimpses, and a complex layering of the affects that it produces in both those bodies being experimented on, and those witnessing.

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<sup>19</sup> At the time of the novel, the importance or potential for the laboratory still seemed to be put in doubt. However, in his much later *Experiment in Autobiography*, we are given a much less ambiguous understanding, one that perhaps corresponds to his increasing advocacy for a "World State." As he writes: "Mankind is realizing more and more surely that to escape from individual immediacies into the less personal activities now increasing in human society is not, like games, reverie, intoxication or suicide, a suspension or abandonment of the primary life; on the contrary it is the way to power over that primary life which, though subordinated, remains intact. Essentially it is an imposition upon the primary life of a participation in the greater life of the race as a whole. In studies and studios and laboratories, administrative bureaus and exploring expeditions, a new world is germinated and develops... We originative intellectual workers are reconditioning human life." (Wells 2-3)

<sup>20</sup> With the enormous success of Thomas Hunt Morgan in the mapping the DNA of *drosophila*, the laboratory became not only a preeminent site of labor, but also a symbol of status which conferred on the geneticists a healthy quantity of "cultural capital," and made their continued work in the lab more financially possible (Kohler *Lords...*)

## SHIP, ISLAND, ENCLOSURE: BUILDING THE LITERARY THEMATIC OF THE LABORATORY

The narrator of *Moreau*, like the reader, only learns of the laboratory a good fourth of the way into the novel. The first allusion made to the space is ominous, “a kind of Bluebeard’s Chamber,” as Moreau explains, though “Nothing very dreadful really—to a sane man” (32). This initial characterization of the lab has several effects. One places the laboratory within a trajectory of literary thematics, and asks both Prendick and the reader to consider a mythic underbelly to the physical space itself. Secondly, the articulation of such a gruesome tale as “Bluebeard’s Chamber” to the lab stands as a warning to Prendick, though also a coloring of the tenor of what is to come. That a bloody chamber of corpses, in which the wives of Bluebeard are tortured and left to rot is anything but horrific “to a sane man,” portrays Moreau as rather demented. Does he imagine himself in the role of Bluebeard? The laboratory a chamber in which the feminine is destroyed?<sup>21</sup>

What can be said here is that the progression of scenes in the narrative gives us a literary frame of reference in which to understand the thematic issues at play in the novel. Because there are few tales from which Wells might borrow that involve this specifically modern space of the laboratory, the novel turns to other spaces, creating a palimpsest of literary thematics that deal with various sites of enclosure. The two that I would like to specifically deal with here are the “sea narrative” and the “English Island Myth.” Wells takes up these older thematics and reworks them in relation to the laboratory, which at

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<sup>21</sup> While I do not have the space to consider this in more detail, it is worth considering the extent to which Moreau exhibits what has been called a “womb envy.” I am not concerned with either defending or disregarding this term, but it is clear that sexual relations, and the role of the male in reproduction, is at stake here, although never explicit.

turns takes up these older thematic's functions, or forces them to change in response to the commanding central function of this space. Wells was well recognized for his ability to extract elements from a wide swath of literary texts, reworking them in order to suit the needs of his rich and incisive imagination, or, in turn, being affected by them himself.

In the words of Darko Suvin:

[Wells] collected, as it were, all the main influences of earlier writers—from Lucian and Swift to Kepler, Verne, and Flammarion, from Plato and Morris to Mary Shelley, Poe, Bulwer, and the subliterate of planetary and subterranean voyages, future wars, and the like—and transformed them in his own image, whence they entered the treasury of subsequent SF. (31)

A similar insight, though more specific to the novel at hand, was given by Roger Bozzetto in his essay “Moreau’s Tragi-Farcical Island.” Bozzetto deals with the expansive range of interpretations given to the novel, and concludes that,

In the aggregate, then, these views convey *Moreau*'s hybrid quality, an aspect of the text perhaps most evident in the fact that the fiction situates itself in a literary tradition extending from Thomas More to Robert Louis Stevenson and comprising, *inter alia*, *Robinson Crusoe*, *Gulliver's Travels*, and even *The Tempest*. Uniting More's irony with a Swiftian sarcasm, *Moreau* offers a pessimistic, *fin-de-siècle* image of the hopes born of science, placing these in a framework of a new Genesis but looking at them, as it were, through the optics of *Frankenstein* or *The Sorcerer's Apprentice*. (34)

Taking up such an expansive history of literary and philosophical themes allowed Wells to give a prescient outline of the labor and power relations of his time and place. This

register in a shift of power relations must, however, be given within the true ambiguity with which it is represented. For, with the emergence of new forms of oppression and control emerge the appropriate forms of resistance. These massive and frightening transitions are, appropriately enough, given as quite shocking in Wells's novels (after all, shocking sells). This frightening potential source of destruction is considered by Suvin as both an index of a powerful collective movement, and its foreclosure:

The strange novum is gleefully wielded as a sensational scare thrown into the bourgeois reader, but its values are finally held at arm's length. In admitting and using their possibility he went decisively beyond Verne, in identifying them as horrible he decisively opposed Morris. Wells's SF works are clearly 'ideological fables,' yet he is a virtuoso in having it ideologically both ways. His satisfaction at the destruction of the false bourgeois idyll is matched by his horror at the alien forces destroying it. He resolutely clung to his insight that such forces must be portrayed, but he portrayed them within a sensationalism that neutralized most of the genuine newness. Except in his maturest moments, the conflicts in his SF are therefore transferred—following the Social-Darwinist model—from society to biology. This is a risky proceeding which can lead to some striking analogies but as a rule indicates a return to quasi-religious eschatology and fatal absolutes. (29)

Ultimately, this essay takes Wells's vacillation between a potential and its "neutralization" as an open question, and not a foregone conclusion. After all, in our contemporary world, the very biological nature of that which is most social comes to the fore through activities such as stem cell research, genetic engineering, the Human Genome Project, etc. In part, Wells does register a shift in the way one might think of the

social in a post-Darwinian context, though such a way of thinking provides the resources for a potential critical intervention when the biological becomes such a concern for power. Perhaps, such a shift to the biological in Wells might have been a more significant move than Suvin was prepared to recognize, even despite its attendant “eschatology and fatal absolutes.”

The novel begins in the tradition of the “sea narrative.” One is reminded of Melville or Conrad, though the reference that comes most immediately to mind is Poe’s *Narrative of Arthur Gordon Pym*.<sup>22</sup> Prendick begins his tale by relating his desperate situation; on a ship with two other men, devoid of resources, with no land in sight. The three reach the conclusion that one of them must be cannibalized in order for the others to live. Refusing to give his body over to such a gruesome end, the unlucky straw puller struggles with the other of Prendick’s shipmates, which sends them both spinning off the deck and into the sea. Alone, Prendick withers away to the point of death when he is rescued by the sarcastically named “Ipecacuanha,” a ship in utter disarray, captained by a crazed drunkard named Davis. Prendick is brought back to life by a man named Montgomery, and learns that the ship is on his way to an isolated island with a cargo of various caged beasts. There is a farcical quality to the captain: he is the self described “King and Owner” of the ship, the sole author of the ship’s localized and arbitrary “laws;” he is vicious and unrelenting in his treatment of those on board, a truly decrepit leader, unable to control his body or behavior, and given over to the obsession of drink. Furthermore, Davis appears to be on the very edge of losing control completely to the wild beasts that constitute the cargo of Montgomery, Moreau’s assistant.

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<sup>22</sup> This was noted as well by Bergonzi

On the one hand, the forced transposition of Prendick, himself a biologist, from mobile ship to stable island could be understood in part as referencing the historical displacement of the scientist from field work to the laboratory. Prendick's sense of helplessness, and his chance landing on the island seems indicative of the very uncertain history of this transposition in the sciences. On the other hand, Wells scholar Bernard Bergonzi understands *Moreau* within the long literary history of "the English island myth." One reference for him, with no laborious stretch of the imagination, is Shakespeare's *The Tempest*. The *Island of Doctor Moreau*, he explains,

[M]ay even be a demonic parody of another and older island story, *The Tempest*, for Moreau as king of the island, seems to be a perverted image of Prospero, while his drunken assistant Montgomery, stands in for Ariel, and the humanized bear M'ling, for Caliban. But if Wells's novel takes its place in a long and venerable line of 'island myths', the myth, in this particular instance, is given vitality by the meaning which it conveys. And the meaning of the novel is to be found, I think, in one of the profoundest intellectual preoccupations of the second half of the nineteenth century: the implications of Darwinism. (100)

Of course, the implications of evolution are clear here.<sup>23</sup> The fact that such a reading of the texts historical thematic references leads Bergonzi to Darwinism makes sense if we are to think of the transmission of these various thematics and genres in an evolutionary light. To what extent we can map the works of Wells onto an understanding of speciation is not, however, a question I am interested in pursuing here. Bergonzi, however, is correct to see the connections between *Moreau* and *The Tempest*—he provided apt advice for readers of Wells to question the way in which these previous themes were, in Wells's

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<sup>23</sup> Evolution has been, in fact, taken up itself as a literary theme in Wells. See Vernier.

hands, evolved and mutated into innovative literary forms. I differ with Bergonzi, however, in his elision of the animal-beast M'ling with Caliban. M'ling is far less a character in his own right, than a representative figure for the creatures on the island themselves. This updated form of Caliban is, then, transposed into a collectivity of beast-men.

One of the crucial points of connection that seems to hold is that between Moreau and Prospero. Bergonzi: "He appears not only as Prospero, manipulating the normal processes of nature to his own pleasure, but as God: not the traditional God of Christian theology, but the sort of arbitrary and impersonal power that might be conceived of as lying behind the evolutionary process" (104-5). If Prospero serves as a figure for the emerging sovereignty of the modern world, Moreau takes up such lineage by registering a similar shift in power relations that occurs towards the end of the nineteenth century. The shoring up, as it were, those remnants of the various failed revolutions earlier in the century. Along these lines, Mark Robert Hillegas provides a further outline of how we may understand this figure of Moreau,

Moreau is a far more sinister creature than the medieval Faust or Mary Shelley's Frankenstein. He has Huxley's intelligence, knowledge, and command of the powerful scientific method; but he does not have Huxley's controlling humanity. What we have here, of course, is a foreshadowing of the ruler of the modern scientific state. (37)

Without a doubt, this is a meditation on the emergence of a new figuration of sovereignty (now armed with the weapon of modern science), which engages the binary of man and animal, as well as inserts itself directly into the processes of the production and

reproduction of biological life. It remains to be seen how these thematics play out in this particular novel. What I would like to point out for the moment, is that the innovation in Wells comes through the introduction of the laboratory into these previous myths and themes. One might claim, in fact, that the introduction of the figure of the laboratory into the older figures of the ship and the island was a necessary progression towards representing the massive social, industrial and political changes that were at hand due to the rapid development of the sciences, and their integration into the political and social landscape.

The figure of the sovereign is handed off from captain Davis to Moreau, whose reach extends to the very biological life of his subjects. Davis, registering the breakdown of power over the economy of his ship, made evident in his constant assertion of ownership and control, gives way to Moreau, who's control and management of the island's economy is hardly up for question. Moreau, as has been noted, is presented more as a god than a king, and has established "Laws," which resound to a more universal height than Davis's "laws," understood as localized to the ship only. If Davis corresponds to the ship, and Prospero the island, then Moreau would be, as Bergonzi and Hillegas have suggested, the horrific updated figure of sovereignty and capital, tied now to the figure of the laboratory. This new laboratory space is one that delves deep into the plasticity of the biological, producing new forms of life, as well as drawing out an intimate relation between the sovereign/scientist/god/creator/father, who asserts an overwhelming control over the products of his creation.

Equally related to the tradition established by *Robinson Crusoe* or More's *Utopia*, the island is here given as a map in miniature of the social totality. The narrator himself

explains this in the following way that is a testament to the novel's self-referentiality. After the course of events, Prendick comes to the following realization: "A strange persuasion came upon me that, save for the grossness of the line, the grotesqueness of the forms, I had here before me the whole balance of human life in miniature, the whole interplay of instinct, reason, and fate in its simplest form" (Wells 95). When representing a social totality, of course, the "grotesqueness of forms" is unavoidable for Wells. Of course, as Jameson will remind us, the social totality is always unrepresentable, no matter the size of the group in question, "but it can sometimes be mapped and allow a small-scale model to be constructed on which the fundamental tendencies and the lines of flight can more clearly be read" (14).

Another way to put this, is that Wells thematized a thematic (or, in fact, several), and in so doing, made the tasks of that thematic more explicitly clear. Only with a sophisticated understanding of the convention could the novel's narrator give conceptual form (within the narrative itself) to the totalizing function of these various generic themes. Rather than a conventionalization of the theme of the "English Island" (a late Victorian Robinson Crusoe), for example, Wells uses such a thematic in order to ultimately attempt a conceptual understanding of the "work" or implications of the literary convention or theme.

But it goes beyond this; out of the merging of two thematics intimately related to one another, Wells introduces another theme more appropriate to his own time or mode of production, the second industrial revolution; that is, the laboratory. The lab functions in the novel as factory, as well as jail or torture chamber. Foucault, of course, considered the bodily transformations (behavior, habit, etc.) enforced by the penal system as it was

tied to the law in *Discipline and Punish*. However, the new historical conditions of Wells's increasingly industrialized world offer a view of such bodily control and reconfiguration in the most intimate of levels. That is, the bodies of Moreau's creatures are restructured at the level of the relationships between their various parts. Of course, the penal system, one could argue, did just that (manipulated and reconfigured the relationships of a bodies parts), though this is a process that works on already formed human life, and works on both mental and bodily conditioning. Similarly, Moreau's laboratory maintains the normal functioning of his society. However, the human life that comes under the sway of the lab is, in fact, quite literally produced in the laboratory. Vivisection alters not only the relationship that a body's various organs and parts have with one another, but also alters and manipulates the relationship of the creature to itself.

The creatures themselves become not only the objects of scientific study, but also the basis for Moreau's own political and economic world. His creations are laborers (M'ling and the boatmen), spiritual leaders or regulators (sayer of the law), pseudo-philosophers (the ape-man), but mostly criminals, cripples, or the detritus of a social world that appears to be on the verge of total degeneration. But how does one stand up to that which has produced, bodily, who one, in actuality, is? Moreau has created these creatures based on a specific model, the human, though without a specific end. How does one stand up to God?

In contrast to the realist novels that emerged during this period that sought to present the conditions of a world without distortion, Wells chose to collapse the island to such an extent that the placelessness of England, or the sense of its universality, becomes even more apparent. In other words, the fact that England's self-understanding as the

most evolutionarily advanced civilization, as the universal ideal of humanity, which may otherwise dissolve into the background of one's ideological makeup, is in Wells's novel distilled and brought to the surface.

Rather than a predetermined space of determination, the contracted space of the island (as representation of the entirety of social relations) allows us to situate the laboratory within a social totality composed not only of the characters' relations to one another, but also their relations and actions on the spaces in which they exist. The contraction to such a miniature level of the various living and work spaces of these characters exposes even more fully the relationships present at the most expansive levels.<sup>24</sup> It is both a process, to reiterate, of distillation and distortion, which results in a "workable" grasp of the otherwise disparate and wholly particular historical manifestations of these relations.<sup>25</sup>

Several questions can be raised at this point: Where does one find these various social representation? What are their relations to certain spaces, and to one another? The universality that might be seen in the character of Prendick—the epitome of white, bourgeois culture—is here bookended by the most outlandish and unspeakable forms of life; Moreau as proto-fascist who desecrates the bodily, and the Beast men as unintelligible hybrids of human and animal, seen variously as "cripples," "monsters," and "devils"—in other words, social outcasts, the frightening underbelly of civilized society, and a marked contrast to the Victorian gentleman. The monstrous social deviations made possible on

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<sup>24</sup> This argument is largely related to Jameson's notion of "cognitive mapping." However, one might argue that we already have here in Wells the outlines of this concept. I read the claims to a representation of social totality in the novel as a conceptual understanding, within the fictional narrative, of the function of the thematic of the "island myth," a tradition from which this novel clearly emerges.

<sup>25</sup> I want to reference an argument made by Wells in his debate with Henry James regarding the use of 'model characters' in his fiction. His claim is that James' critique of his less filled out characters was unfounded by virtue of the fact that there is a truth to the existence of social types.

the ship, now come to be produced in a landed, immobile, and homogenous space, whose influence reaches to the very tightly circumscribed space of the island, beyond which is only the vast and ever-churning sea.

The literary thematic of the laboratory emerges through the hybridization of the sea narrative's heterotopic potential and the English island myth.<sup>26</sup> The ship as a space for the exploration of contingent and potential forms of sociality is now taken into the very heart of the landed world as island. The new frontier for exploration and exploitation is no longer found at the fringes of that which is clearly defined, but rather in the interior of that which is most circumscribed and ordered. To put this another way, the laboratory provides us with a figure for the management of heterotopian possibilities, or the control of emergence, or the directing of the potential for change.

The structure of Moreau's island partakes of the permanency of utopia, while preserving at its very heart the processes of evolution, mutation, and change. Utopia, as arguably criticized in Wells's novel, is taken as a placelessness that involves a specific structure (such as that of the island), in which relations between people, places and things take on the characteristic of an immobile perfection. The placelessness of the laboratory is quite different. The laws of the lab are that of nature itself, which to someone like Wells who was trained in the biological sciences would more appropriately be understood as mechanisms rather than laws. Mechanisms such as natural selection and mutation, in contrast to stable laws, in fact counter any notion of continued stability or permanency. Moreau manipulates the mechanisms of change. He conducts his work through the careful direction of these otherwise unpredictable processes.

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<sup>26</sup> For a further analysis of the sea narrative, as well as an extended meditation on the concept of heterotopia and its relation to the literary figure of the ship, see Casarino.

This laboratory's placelessness is key to the manipulation of the conditions of possibility for cultural, historical forms. Yet the wide confluence of local (or even global) determinations that made the lab possible in the first place cannot be ignored. The laboratory is a space that tends towards, even if it never achieves, the complete reduction of external determinations. In order to operate optimally, the laboratory must isolate itself from possible contingencies. It is a space in which the conditions of possibility can be easily determined so as to be easily reproduced. In setting up the laboratory, then, one is producing the conditions of possibility themselves.

If this is the case, the significance of the objects within such an environment would be exponentially increased. One must be extremely vigilant about what is introduced into the lab, and what is prohibited. If the laboratory has no perceivable feature other than its ability to be any space that is needed, one gets a sense of its dependence on the objects and instruments with which it is populated. A laboratory space, then, is both determined by and determines the objects it houses. In addition to the obsessive intellectual laboring of Moreau, the laboratory is also the space in which bodies themselves labor. The work of Moreau's beast men includes the healing necessary after his vivisections. In a sense, he can only set the conditions for the emergence of the human form—it is up to the bodies to grow human, something that Moreau himself cannot make them do, but can manage and direct to its full fruition.

## **SPACE AND SUBJECTIVITY**

If the figure of the laboratory is connected most immediately to Moreau as the prefiguration of a new form of sovereignty, the enclosure is the space that corresponds

most appropriately to Prendick. This enclosure is a buffering zone that stands between the outer island—the domain of the Beast Men—and Moreau’s lab. As Prendick discovers upon his arrival, Moreau and Montgomery have constructed a walled-in square structure, referred to only as the “enclosure,” in which is found both the laboratory, as well as the living quarters. This space given to Prendick is the only area of the island that might be most recognizable as civilization, with certain amenities that one would expect—hammock, table, lamp, etc. There are two doors on either side of the living space: the first leads outwards to the rest of island, and remains passable at Prendick’s will; the other, which remains locked, opens to Moreau’s lab towards the interior of the enclosure. The interrelation of these structures might be said to construct a grouping of concentric spaces, at the very center of which stands the lab.

It is made clear to Prendick that he is forbidden access to this central room, which accordingly remains locked to him, as well as to all of the others on the island. The door to the exterior is described as solid and fortified, and the windows are barred, leading one to question whether this space, which appears, we might say, as a jail cell, is fortified in such a way so as to protect from the outside, or imprison that found within (or, of course, both of the above).

This scene introduces the reader both to the lab, as well as to the island, and positions the room in which Prendick has locked himself precariously between the two. Unaware at this point of the irony of his situation, Prendick has secured himself from an outside threat by locking himself into that space closest to, and which contains, the source

of the threat itself. In fact, we will learn that the threat from without is far less of a concern than what the lab within unleashes.<sup>27</sup>

There is a metaphorical relation between these spaces and the mental structures of the characters to which they correspond. Prendick's character is both subjectively placed as the mediation between Moreau and the Beast Men, and correspondingly contains himself spatially between the two. The enclosure, as the form of Prendick's subjectivity, is situated at the intersection of the laboratory and Moreau on one side, and the Beast Men and the larger island on the other. The threat from beyond the scope of these boundaries is equaled, in a sense, by the haunting threat from the monstrosities at its center.

So, if we can tie Moreau to the lab, and Prendick to the enclosure, where does this leave the Beast Men? Not only do they live and exist freely on the island as a whole, they are laborers on the ship, servants in the enclosure, and test subjects in the laboratory. They exist in various subjective forms in all spaces of the island. This is one of the many reasons why these humanized animals pose such a categorical problem for the characters and readers of this novel. The Beast Men are malleable both mentally and physically, which is not the case with these recognizably "human" characters. So, how then are we to understand these "monstrous characters?"

These Beast Men put any recognizable figure of the human, such as we might see in Moreau (sovereign), Prendick (self-controlled subject), or even Montgomery (social deviant/drunk), into question. These creations of the laboratory are punctuated with a question mark, never definitively human, never entirely animal. They blur these

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<sup>27</sup> There is much to be said here regarding this structure. One may refer to Agamben's "Anthropological Machine," for example, in *The Open: Man and Animal*. There is also something to be said here regarding a certain subjective psychology that would see these various spheres as zones of consciousness.

boundaries so effectively that even Moreau is disturbed by his inability to put a conceptual form to these living beings. Of course, it is not difficult to make the claim that Wells's novel takes as one of its thematics what it means to be human. While such a question is clearly tied to the long tradition of literary references, the specific circumstances of Wells's novel renews the problematic in a powerful way. The unreadable creatures, throwing Prendick into a state of subjective uncertainty and ontological confusion, carries on, in fact, beyond the island into the rest of the world. Finally fleeing the island, he returns to England only to find the "cloud" of uncertainty produced by the Beast Men, "obscuring" his once more stable understanding of himself and his fellow citizens.

Though I do not expect that the terror of that island will ever altogether leave me, at most times it lies far in the back of my mind, a mere distant cloud, a memory and a faint distrust; but there are times when the little cloud spreads until it obscures the whole sky. Then I look about me at my fellow men. And I go in fear. I see faces keen and bright, others dull or dangerous, others unsteady, insincere; none that have the calm authority of a reasonable soul. I feel as though the animal was surging up through them; that presently the degredation of the Islanders will be played out again on a larger scale. (130)

The faith that Prendick once had in the stability of the modern subject is entirely shattered. Perhaps spurred on by the *fin-de-siècle* fear of social degeneration, Wells gives through the Beast Men a rupturing of the instinctual and affective body with the various forms of its enclosure. In sharp contrast to the perfect emotional, bodily control of Moreau, the Beast Men are prone to acting on desires and fears in spite of the "fixed

ideas” that have been instilled in their minds, and the oft-repeated “Laws,” which circumscribe their accepted behavior.

### **THE FACTORY OF THE HUMAN: THE LABORATORY AND THE CONTAINMENT OF EMOTION**

Moreau’s laboratory is a space in which the human can be investigated through producing the form of the human itself. The animal is characterized by Moreau as unthinkingly instinctual—driven by its emotions—and his ultimate goal is to finally eradicate these emotions entirely. The relation between Moreau and the Beast Men is that of a controlling mind to an unruly body. Such a split, which we can see in every other character in the novel, is not present in Moreau, who displays the utmost control over his own body and emotions. This may help explain why Moreau will need to experiment on the bodies of other creatures in order to question the humanity that is seemingly constitutive of his own character. Moreau, however, constantly fails in his attempt. Though he takes the “human” as his model, he operates with a very limited conception of what the human itself is. In other words, Moreau’s attempts to create a human could only be successful if he were to produce a replica of himself—a perfectly rational being, the body as empty receptacle for the controlling mind. In this attempt by Moreau, one may read the contours of an emergent yet undefined conception of the human—one produced by, though in tension with, the rational and sovereign figure of Moreau. If this is the case, then one of the central tasks in the production of the human would be the control and regulation of the animal’s instincts and desires, and our sketch of the laboratory would

not be complete without a further consideration of its relation to the “emotions” or “affects” that it ostensibly manages.

The laboratory is itself a non-descript spatial container, though it is unable to restrain the powerful emotions produced within. In a chapter titled “The Crying of the Puma,” Prendick explains his powerful affective response to the cries emanating from within the lab, which drive him from the enclosure, and eventually bring him into contact with the island’s “curiosities:”

The emotional appeal of these yells grew upon me steadily, grew at last to such an exquisite expression of suffering that I could stand it in that confined room no longer [...] The crying sounded even louder out of doors. It was as if all the pain in the world had found a voice. Yet had I known such pain was in the next room, and had it been dumb, I believe—I have thought since—I could have stood it well enough. It is when suffering finds a voice and sets our nerves quivering that this pity comes troubling us. (Wells 38)

At this moment, Prendick begins to grow sympathetic to the plight of Moreau’s creatures through his openness to be affected by the expression of pain. While, of course, Prendick’s response at this point is to remove himself from earshot, effectively ignoring these cries, he is irreversibly shaken by the emotional “appeal.” This passage draws out a position that recognizes the power of “giving voice” to suffering; it is, in other words, not enough to simply know, intellectually, that suffering exists. The knowledge of suffering does little to “move” one to sympathy—it can, in fact, be easily ignored without consequence. When the affective, bodily experience of such pain and suffering finds expression, infecting Prendick by setting his “nerves quivering,” when the same or

similar emotion is produced in him, a response is unavoidable (as it would be were the suffering not expressed outwardly).

Prendick is haunted by this animality, able to “feel” it within himself, though unable to understand it conceptually. This conceptual problem for Prendick is evident through the many different names given to these people. They are referred to at various times as “Beast men,” “creature,” “thing,” “man,” “it,” “monster,” “dark face,” “animal-man,” “black-faced man,” “deformed man,” and “mad devil.” The description we are given in a chapter called “The Evil-Looking Boatmen”—something of a cross between orientalism and mythology—further elaborates this uncertainty:

They seemed to me then to be brown men, but their limbs were oddly swathed in some thin dirty white stuff down even to the fingers and feet. I have never seen men so wrapped up before, and women so only in the East. They wore turbans, too, and thereunder peered out their elfin faces at me, faces with protruding lower jaws and bright eyes. (27)

The description of his encounters draws out, variously, the challenges posed to the conception of the human in a post-Darwinian world, the perceived evolutionary primitiveness of the “dark” other, who, at this time, was seen as animalistic, as well as the atavistic feelings that the encounter produced. The uncanny appearance of the beast men are enigmas that from the beginning blur the line between man and animal, and challenge Prendick’s very own sense of self. The encounter with these men trigger a forgotten, remote past—something that lies at the heart of Prendick’s very being, though remains locked from conscious awareness:

I had never beheld such a repulsive and extraordinary face before, and yet—if the contradiction is credible—I experienced at the same time an odd feeling that in some way I *had* already encountered exactly the features and gestures that now amazed me. Afterwards it occurred to me that probably I had seen him as I was lifted aboard, and yet that scarcely satisfied my suspicion of a previous acquaintance. Yet how one could have set eyes on so singular a face and have forgotten the precise occasion passed my imagination. (14)

The typographic choice of italics in this passage creates a visual sense within the text itself of the depth of personal shock this encounter has had on Prendick. Furthermore, the italicized emphasis is given not to the past participle “encountered,” which describes the type of action, but rather only the auxiliary to the verb itself. One could emphasize the complex temporality of this emotional sensation by drawing out the proprietary sense of the word “had.” Prendick’s encounter is experienced as one of a temporal disconnection from the present—emphasizing only the shock of pastness produces a sense of the untimely, of a relationship one *had* at one point, though one unable to be located in any historical timeline.

Slightly later in the voyage, Prendick catches an inhuman, greenish glint in the eyes of an animal-man on the deck. The repressed identification, or perhaps we could call it a “biological” memory, hinted at in the passage above emerges even more clearly in the following: “The thing came to me as a stark inhumanity. That black figure, with its eyes of fire, struck down through all my adult thoughts and feelings, and for a moment the forgotten horrors of childhood came back to my mind” (20). This type of identification with the animalistic, of course, resonates with a certain psychoanalytic belief at the time

which took one's instinctual drives as vestiges of a biological, animalistic ancestry.<sup>28</sup> For whatever reason, the animality of this being produces a memory of childhood, of an early moment in his individual life.

In all of this, however, Prendick can be read as somewhat obtuse. His naiveté is made even more pronounced when he finally learns the truth, and we are told that the Beast men clearly maintain the mark of the animals from which they were produced. In fact, they come to be referred to according to which creature they once were (“ape-man,” “leopard-man,” etc.). It may seem somewhat far-fetched to a contemporary reader, then, that the “secret” of Moreau’s was kept for such a long time, especially after knowing that Prendick ostensibly had such clear evidence before him.

The situation is further complicated, for his disgust, discomfort and suspicion of these creatures is ostensibly forgiven when the reader discovers that these feelings were well-founded, that there is in fact something suspect about these “men.” Is this the legitimation of the reader’s own racism, or an attempt to put it in question? The uncertainty is retrospectively justified by the fact that these human-animal hybrids are the product of Moreau’s scientific experimentation.

How might we understand such an obvious character trait, here so easily overlooked by Prendick? The fact that such manifest “marks of the beast” could be so easily misrecognized (or taken as simply odd racial characteristics), is because of the fact that this was how the colonized other was already perceived. In this sense, we could say that Wells literalizes, and therefore makes visible, a characteristic of Western racism at the time; that is, the perception of the racialized other as animal.

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<sup>28</sup> For a more in depth explanation of the atavism of Freud at the turn of the century see Seidler.

But there is more to this than simply the physical representation of the non-western other, as Prendick will discover. After returning from his first excursion on the island (during which he is terrorized by the leopard-man), Prendick resolves himself to the emotional stress of the puma's cries in exchange for the security of the enclosure, finding a contradictory solace in the tortured cries. Approaching the living space, he explains: "And presently, with a positive effect of relief, came the pitiful moaning of the puma, the sound that had originally driven me out to explore this mysterious island" (Wells 47). This sense of security, however, will prove to be unsustainable, for as I will show below, the challenges of the animal put to Prendick's "humanness" are unavoidable.

Shortly after his return, the cries emanating from the interior door of his room take on a qualitatively different timbre. The process of humanization is still, at this point in the novel, unthinkable for Prendick; he imagines no continuity between the puma's voice and this new expression of suffering, now distinctly human.

Presently I heard something else very faint and low. I sat as if frozen in my attitude. Though it was faint and low, it moved me more profoundly than all that I had hitherto heard of the abominations behind the wall. There was no mistake this time in the quality of the dim broken sounds, no doubt at all of their source; for it was groaning, broken by sobs and gasps of anguish. It was no brute this time. It was a human being in torment! (50)

This final exclamation marks the breaking point at which Prendick could no longer ignore the activity in the lab, and he immediately rises, rushes to the door, which happens this time to be unlocked, and flings it open. But what can we say about this sudden

inability to remain a passive observer to the mistreatment of another living being? What, as well, might be said for the qualitative shift that signaled unmistakably to Prendick the cries of a human being in torment? If the human, as Moreau will explain, is the overcoming of emotion, or the instincts, and the animal is the slave to impulse and instinct, isn't it quite odd that Prendick's reaction to this "human" suffering is variously stunned ("I sat as if frozen in my attitude"), and impulsive (the unthinking response to fling open the laboratory door, at the risk of his own peril).

And secondly, how exactly did Prendick know that this sound coming from the lab was human? On a less reflective level we could say that he simply recognized the particular quality of humanity in the voice (being himself human—something like an intuitive empathy with the sound) and moved out of pity to help. On a second take, however, the voice of the now humanized puma seems to convey a quality of self-awareness that leads Prendick to his conclusion. Rather than the instinctual howl of the puma—seemingly triggered at those moments of physical trauma—we have a "broken" sound, punctuated by "sobs" and "gasps." The torment no longer signifies extreme bodily pain, but rather the mental, restrained, self-aware "anguish" that comes with the newly built human psyche, exemplified by a "broken" voice, or, in other words, a voice which no longer expresses a working order or single whole, but rather one that expresses a fractured or split being. In short, what is registered by Prendick at this moment is the emergence within the animal of distinct signs of the unconscious in the process of formation.

Whether this is the case or not, there are several points to be made here regarding both the operation of the lab, as well as the image of the colonized. The first involves an

understanding of the lab's role in what might be called making nature speak. What I mean by this is that the laboratory is a space in which the voice of nature is forced to produce expressions that are symbolically meaningful to the human. We are to understand this as the moment at which the beast now becomes human through the introduction of recognizably meaningful human sounds—in other words, through the Beast's acquisition of language.

Secondly, if it were true that the beast men stand allegorically for the colonized, we would here have the argument that the very potential for recognition is itself a product of violence. The colonizer himself produces the primitive as human (via bodily reconfigurations in specific settings); the colonizer institutes the crisis or split between man and animal, the fractured, broken self which is the distinctive mark of Western man. It is through the untiring labor of Moreau that this transition is enacted. This would seem to suggest that there is from the beginning something unnatural or constructed about the biological form of the human—the human comes about through the manipulation of the corporeality of the body, through the taming of instincts and emotions.

In addition to a more fleeting sonoric encounter, the scene Prendick witnesses after throwing open the inner door is itself (surprisingly enough for that most empirically dominant sense, vision) obscure and affectively charged. Prendick's first glimpse of Moreau's lab is a gruesome one, and only short lived.

There was blood, I saw, in the sink, brown and some scarlet, and I smelled the peculiar smell of carbolic acid. Then through an open doorway beyond in the dim light of the shadow, I saw something bound painfully upon a framework, scarred,

red, and bandaged. And then blotting this out appeared the face of old Moreau, white and terrible. (50)

The room is described less in terms of architecture or geometry (of course, for the purposes of the lab its physical environment must be as non-distinct as possible), and is instead bathed in a full range of colors associated with the various stages of the coagulation and fluidity of blood; “red,” brown,” “scarlet.” This description is one more associated with affect (a particular relation to an object, within specific lighting conditions that registers as a certain color) than with a conceptual understanding of what was seen—it is the shock of blood, the acidic air. Even after seeing the shocking site, Prendick is still unable to solve the “secret” that the reader by this time has, most likely, already guessed. The reader is faced with the limits of Prendick’s narrative (and perhaps has already moved beyond them) at that moment when Prendick himself flees the enclosure.

Moreover, this scene is “blotted” out by the face of Moreau, who, we assume, moves into the frame of our narrator’s view. The image creates quite a contrast—the “white” and “terrible” face “blots” out the bloody terror that it has produced. But is the face a stain, as in a blot of ink? Is the white face stained by the blood that it has shed? Is the face a blotting out of a forgotten memory? Or is it, perhaps most arguably, a blotting out, as in a pad absorbing a puddle of liquid? If we follow this last notion, the face of Moreau symbolically takes the place of the laboratory and the horrors within. The association is both made through the metonymic substitution of the face for the room (as if his head were able, on its own, to encompass the entire space itself), as well as through

the association of Moreau with the laboratory, as has been made and solidified in the beast men, so that Moreau himself stands in for the “house of pain.”

Moreau, as Prendick will discover in a few chapters following the scene above, is in the business of producing the human form from living animals. Unlike Frankenstein who pieces together a human life from corpses, Moreau alters the flesh and mind of the already living beast, he is interested in exploring, as he explains, “the plasticity” of living beings.

Prendick, convinced that Moreau is animalizing humans, flees the enclosure in fear of being the next victim. Shortly, he finds himself among the island’s creatures, who take him in as one of their own. It is during this encounter that Prendick learns the “Laws” that are endlessly repeated and ostensibly upheld by the Beast Men. These laws make it clear that the production of the human involves more than merely the reconfiguration of the flesh. That is, the lab produces not only the biological human form, but also its social forms—laborer, worshipper, servant, and standing reserve for the reproduction of these creatures. It is the Law of Moreau that regulates the behavior of those on the laboratory’s exterior, and this law is substantiated by the fear of what occurs in the “house of pain,” the memory of suffering for the Beast Men, or the fear of being subjected to the same treatment by Prendick. While the Law is formative of the social structure of the beast men, the space that functions to uphold the law, Moreau’s lab, is itself beyond the Law. That which justifies the Law, and stands as the central force behind its influence is, oddly, beyond the bounds of the rules and regulations that it prescribes. This is a reiteration of the laboratory as that which exists beyond the forces of

the surrounding world—the laboratory on an isolated island, disconnected from the economic, social, and moral laws of England, or the rest of the globe.

Prendick, after a short stay with the Beast Men, is found by Moreau and Montgomery. The two pursue Prendick to the shore of the island, and Prendick wades out into the ocean, threatening to drown himself rather than be tortured. It is at this moment that Prendick plants the seed of revolt, almost, we might say, in spite of himself. In the context of the arc of the narrative, this is the moment when Prendick has the most sympathy for these creatures, and vocally takes their side over against Moreau. Literally outside the limits of the island, speaking symbolically from beyond the ideological scope of Moreau, Prendick appeals to the crowd of humanized animals lurking just beyond Moreau and Montgomery.

‘Who are these creatures?’ said I, pointing to them, and raising my voice more and more that it might reach them. ‘They were men—men like yourselves, whom you have infected with some bestial taint, men whom you have enslaved, and whom you still fear.—You who listen,’ I cried, pointing now to Moreau, and shouting past him to the Beast Men, ‘You who listen! Do you not see these men still fear you, go in dread of you? Why then do you fear them? You are many.’“

(66-7)

The response to Prendick’s attempt to incite the creatures in the background does not seem to be lost on them—they are described as trying to understand him. It is clear that the Beast Men are affected by Prendick’s cry, though in what way exactly remains unclear. This moment is crucial for the novel, situated exactly in the center of the text—page 66-7 out of 131 pages—it is the fulcrum of the action, and the turning point for

Prendick. The solidarity expressed by Prendick asks the Beast Men to recognize themselves, first of all, as a class—the interpellation of the address draws them away from the supplication to Moreau. The cry “You who listen!” places them on what might be called the passive side of a dialogue, but requires them to understand themselves in relation to Prendick as the group being addressed. Prendick’s speech also cuts through the ideological support for Moreau’s power, the creatures’ fears of him, by appealing to the power of the many, and the fear that the masses inspire in their oppressors.

The irony of the situation, however, comes from the fact that Prendick completely misunderstands the origins of these creatures, which turns out to be the basis for his shift in allegiance, and his ultimate disgust with the Beast Men. It is a false understanding of what these creatures are, and of where they came from, that allows Prendick to infer from their present state their affinity with him. This perceived connection is short lived and quickly dissolves after Prendick is told the truth—that these were once animals who have been humanized. Finally understanding the confusion, Moreau offers to reveal the secrets that he had kept hidden from Prendick, explaining all in the following chapter “Doctor Moreau Explains.” Once the secret “truth” of the matter is revealed, Prendick aligns himself—however reluctantly—with Moreau against the Beast Men. His alignment is not one of militancy, but rather a disgust with the idiocy of the animal men, an aversion to their perceived atavistic animality. So how are we to understand such a transition in Prendick? Why is it that exposing the truth—which most would uphold as a path to social justice (“speaking truth to power”)—only leads Prendick further from the solidarity he felt with these “travesties” of humanity?

I would like to begin by considering the specific shift in tone involved in Prendick's coming to awareness. Prendick, who would have most likely been read as the most recognizably "normal" figure, mediates the two extremes of Moreau and the Beast Men. Prendick is constantly torn between the godlike Moreau and the humanized animals, between the dictatorial sovereign and the criminalized, pathologized masses. While the Beast Men are characterized as bodily, instinctual, and driven by emotions (thus the need for Laws to keep them in line), Moreau is characterized by his dictatorial mind, practicing total control over his bodily affects.

This is the point at which the figure of Moreau's laboratory folds back onto the function of the novel as itself a laboratory for investigating the human. Shifting the focus from the diagetical level of the narrative to the novel, the figure of Moreau's laboratory follows the same function as Wells' imaginative experiment to see the island as a figure for England. The novel becomes a space in and through which one might investigate the contours and evolving landscapes of the human. In short, the figure of the laboratory in the novel provides a self-reflexive understanding of the work that the novel performs. If Moreau, Prendick, and Montgomery are easily recognizable forms to the reading audience, posing no serious problems for our understanding of the human, the Beast Men, as products of the laboratory, upset any stable understanding of what truly constitutes the human. It is on this point that the utopian potential in Wells's text comes to the surface. Just as Moreau's experimentation with the human could never be complete in that it would never be able to contain the excesses of bodily emotion, Wells's novel could not posit an answer to the human that is anything but ambiguous. So, what can we take from

the novel if not simply dystopian despair and resignation? How are we to understand the products of both Moreau and Wells, which adhere to no previously recognizable form?

### **NOVEL AS LABORATORY**

*The Island of Dr. Moreau* maps the emerging power relations of the early twentieth century, much as its often mentioned literary historical predecessors (More's *Utopia*, Shakespeare's *The Tempest*, Swift's *Gulliver's Travels*, Defoe's *Robin Crusoe*, among others). What distinguishes Wells's novel is its inclusion of an explicit understanding of its function within its own pages. As Prendick explains: "A strange persuasion came upon me that, save for the grossness of the line, the grotesqueness of the forms, I had here before me the whole balance of human life in miniature, the whole interplay of instinct, reason, and fate in its simplest form" (95).

Wells, through his laboratory novel, takes and manipulates the raw materials of a certain literary history and produces a new form or genre of literature that he called the "Scientific Romance", or what will later come to be known as Science Fiction. More interesting is a consideration of the novel as laboratory based not on what Wells gives through explicit conceptual formulations, but rather based on what he himself did not expect, and perhaps was unable to recognize. What Wells is unable to think, though in fact produces despite himself, is the possibility of a different type of totalization, one that does not involve the production of a rigid structure as much as an approximation of the tensions, flows, and trajectories of bodies and affects.

Moreau claims to have successfully contained his own bodily affects, though will fail to master the emotions and affects of the human beings he himself produced. This

failure is made explicit in an extended monologue in which Moreau explains his work to Prendick. After Moreau performs his vivisections, the living animal bodies must themselves do the work to heal, and in the process, grow human. Despite the astounding success that he has had, Moreau explains that there remain complications—it appears that the flesh is stubborn, and remains willful and given to emotion. This hyper-rational man relates this problem to Prendick in an uncharacteristically distraught and flustered tone, replete with broken and stuttering thoughts. Moreau explains that, “somehow the things drift back again, the stubborn beast flesh grows, day by day, back again...I mean to do better still. I mean to conquer that” (77). And furthermore “least satisfactory of all is something I cannot touch, somewhere—I cannot determine where—in the seat of the emotions. Cravings, instincts, desires that harm humanity, a strange hidden reservoir to burst suddenly and inundate the whole being of the creature with anger, hate, or fear.”

Moreau will not, after all, accomplish this seemingly impossible task, and that “stubborn beast flesh” he so intently attempts to conquer, erupts into a general revolt which results with the incineration of the laboratory, and Moreau’s ultimate demise. After Moreau’s death, the inhabitants of the island enter into a regressive state, leaving the narrator in a profound state of alienation and despair.

Clearly, *The Island of Doctor Moreau* is a dystopian text, and this ending might be read as an attempt to show the dangers of social, and in this case biological, degeneracy in the absence of any regulation and ordering of society as found in religion, the sovereign, “fixed ideas,” and so on. Though one could choose to focus, instead, on the unpredictable power for change found not in conceptual and formal systems, but rather in the body and affects themselves. From the perspective of this more immanent, material

level, one may say Wells exposes the body and affects as the effective grounds for resistance to overwhelming conceptual and biological control.

But ultimately, while I'm compelled by this argument, I think that it is too simple. And so I'd like to end here by complicating these two readings with a return to the laboratory. What produces such a sense of hopelessness in the end is that these Beast Men—they are incessantly called Beast “Men” after all—cannot sexually reproduce themselves without a marked degeneration. In other words, the human form that Moreau has stamped onto their bodies and minds is not passed down hereditarily, but was made possible only through the technologies of Moreau's lab. These creatures are a product of a certain mode of production, of a certain scientific condition—they have their conditions of possibility, and their conditions for material being in a particular set of relations, and a particular environment. With the loss of such environment, and the loss of such knowledge, they inevitably die off. They are entirely dependent on Moreau and the laboratory—not just for their social forms, but also for the very production and reproduction of their biological, material structure itself. The lingering question here, then, seems to be, how does one struggle against that which makes possible one's very existence?

### CHAPTER THREE:

#### The Genetic Engineering of Octavia Butler: Biocapital and the Laboratory in the *Xenogenesis* Trilogy

The genetic ‘writings’ of future biotechnologists ultimately may be new organisms.

-Sagan and Margulis, *Microcosmos*

Anthropologists of possible selves, we are technicians of realizable futures. Science *is* culture.

-Haraway, “The Biopolitics of Postmodern Bodies”

### INTRODUCTION

Fredric Jameson begins his book on science fiction (SF), *Archaeologies of the Future*, with an elaboration of its title as both an attempt to reconceptualize utopia’s relationship to the past, as well as a means of showing how the archivist’s tools might be useful for a study of what is to come. Even the structure of his text exhibits this reconfiguration by the atavistic inclusion of his writings on SF from past decades as a *part two*. More fundamentally, Jameson explains that what he is attempting to theorize, in and through utopian and speculative fiction, is an adequate conception of the temporality of being:

The presumption is that Utopia, whose business is the future, or not-being, exists only in the present, where it leads the relatively feeble life of desire and fantasy.

But this is to reckon without the amphibiousness of being and its temporality: in respect of which Utopia is philosophically analogous to the trace, only from the

other end of time. The Aporia of the trace is to belong to past and present all at once, and thus to constitute a mixture of being and not-being quite different from the traditional category of Becoming and thereby mildly scandalous for analytical Reason. Utopia, which combines the not-yet-being of the future with a textual existence in the present is no less worthy of the archaeologies we are willing to grant to the trace. (Jameson xv)

Appropriating the tools of archaeology, Jameson fishes the concept of the trace from the boglands of a historical present so as to show the creature in the stages of metamorphosis. Encompassing both sea and land, the “amphibious” nature of being, Jameson suggests, requires an understanding of temporality that would allow a concept like the “trace” to reach adulthood. Finding his creature still in the throes of metamorphosis, he brings the metamorph into his laboratory, and thus casts the trace into an unknown future.

In this chapter I deal with this temporal “amphibiousness” of being through a reading of both the figure of the laboratory in Octavia Butler’s *Xenogenesis*, as well as a reading of the trilogy itself as a laboratory space for creative production. Butler’s trilogy recasts the myths and cultural traces of a human past into a future register. In so doing, the trilogy seeks to imagine social relations that challenge contemporary regimes of global capitalism that emerged towards the end of the Cold War. In this sense, the questions of an ontology of the future are deeply imbued with the urgency to experiment with alternative ways of living. Similarly, Jameson begins his archeology of the future with this call to arms:

The consolidation of the emergent world market—for this is really what is at stake in so-called globalization—can eventually be expected to allow new forms

of political agency to develop. In the meantime, to adapt Mrs. Thatcher's famous dictum, there is no alternative to Utopia, and late capitalism seems to have no natural enemies (the religious fundamentalisms which resist American or Western imperialisms having by no means endorsed anti-capitalist positions). Yet it is not only the invincible universality of capitalism which is at issue: tirelessly undoing all the social gains made since the inception of the socialist and communist movements, repealing all the welfare measures, the safety net, the right to unionization, industrial and ecological regulatory laws, offering to privatize pensions and indeed to dismantle whatever stands in the way of the free market all over the world. What is crippling is not the presence of an enemy but rather the universal belief, not only that this tendency is irreversible, but that the historic alternatives to capitalism have been proven unviable and impossible, and that no other socioeconomic system is conceivable, let alone practically available. The Utopians not only offer to conceive of such alternate systems; Utopian form is itself a representational meditation on radical difference, radical otherness, and on the systemic nature of the social totality, to the point where one cannot imagine any fundamental change in our social existence which has not first thrown off Utopian visions like so many sparks from a comet. (xii)

This chapter is a response to Jameson's own utopian desire for an archaeology of the future. The various threads that I have brought into the argument all speak to the urgency to produce new forms of social organization. One key thread questions the tenuous position of utopia within the regime of what anthropologist and biotech theorist Kaushik Sunder Rajan calls "biocapital," which functions precisely through harnessing

radical utopian desire to the biotech industry so as to achieve new practices and modes of capitalism. Utopian visions in this sense become the motor for biocapitalist accumulation.

The two epigraphs above—the first by microbiologists Lyn Margulis and Dorian Sagan, and the second by Donna Haraway—provide a loose road map for my chapter that roughly lines up with Jameson’s “amphibious” configuration of the utopian traces and conversely the traces for the production of utopia. Margulis and Sagan are two scientists who focus on the processes of evolution as a symbiogenetic process before turning briefly to the speculative mode to conclude their book *Mircocosmos*; Haraway may collect the traces of the past, yet focuses primarily on her attempts to manifest the coming future. Both are explicitly related to Butler’s trilogy, yet from two different “ends of time”: the first as an explicit influence on, and the second as explicitly influenced by the trilogy.

Assuming Jameson’s “amphibious” perspective, my argument in this chapter is that Butler’s literary laboratory provides a medium—specifically that of genetic engineering—for the encounter between utopia and the trace. Approaching these terms as one within the other, I argue that Butler’s genetically engineered social totality should be taken, as Donna Haraway will suggest, as the new field for capitalist control over the production and reproduction of biological and social bodies. Secondly, I will attempt to think through the ways in which biocapital can be understood as a production and regulation of the traces of a utopian future. I argue that if the colonization of the future has begun, one must be vigilant to not mistake the sparks of a new machinery of biocapital for the sparks of the utopian comet.

After establishing Butler's trilogy as laboratory, I will discuss several conceptions of Butler's writing as symbiogenetic, and show how these "biologized" readings of the text fail in critical ways to recognize their own limitations. As in the history of the laboratory given in the first chapter, I will contextualize Butler's biotech laboratory by showing how the history of biotechnology from the very beginning made use of speculative and utopian discourses. Secondly, I will show how Haraway brings Foucault into Butler's literary laboratory through her use of *Xenogenesis* as support for her critique of biopolitics. She does this, however, only to miss the continued relevance of his genealogy of biopolitics for her own diagnosis of genetic engineering and its role in social and biological organization. While Haraway, I argue, critiques Foucault for not having an adequate conception of radically new forms of technology and their attendant bodies and subjectivities—the genetic engineering in *Xenogenesis* is presented as a key illustration—I will show how Foucault's work has been picked up by recent theorists as a way to understand the speculative and utopian logics essential to "biocapital." Finally, in light of my discussion of biotechnology and biocapitalism, I turn at the end of this chapter to a reading of the final novel of the trilogy, *Imago*, as the place or medium for a new encounter between Foucault and Haraway.

### **BUTLER'S "LITERARY LABORATORY"**

LARRY MCCAFFREY: What was it that drew you so strongly to the idea of breeding people? Was it the ideal of being able to control the direction of life?

OCTAVIA E. BUTLER: Basically, yes.

—Interview with McCaffrey

In *Xenogenesis*, the alien Oankali species have salvaged what remained of the human race after a global nuclear holocaust between the U.S.A. and the Soviet Union that would have led to the extinction of life on Earth. For the past 250 years, the aliens had been rehabilitating the planet as well as its many life forms. The first novel of the series, *Dawn* (1987), begins with the protagonist Lilith (a clear reference to Adam's first wife, according to Jewish folklore) waking from a deep hibernation to learn that she has been chosen to awaken and help acclimate the remaining human survivors to their alien surroundings. The Oankali are nomadic space travelers who enter into a genetic "trade" with all life forms that they encounter. Trading for the Oankali is not an exchange of goods but rather a process of symbiogenesis, where the form of life that emerges from the trade is distinct from those species who contributed their genetic material.<sup>29</sup> The trade aims to produce human-Oankali hybrids called constructs who raise an ethical quandary regarding an alien-human miscegenation. When Lilith discovers this *modus operandi* of the Oankali, she asks with some trepidation what their children will be. Jdahya, Lilith's first Oankali contact, replies, "Different, as I said. Not quite like you. A little like us" (Butler 42). Trading with new life is something of a biological need for the Oankali. They are "as committed to the trade as [Lilith's] body is to breathing" (42). From the first, then, the Oankali are shown to be a species who, at the largest social and biological scale, treat their environments, individual and collective bodies as spaces of experimentation, rebirth, and reinvention. This laboratory quality of Oankali social organization is not lost

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<sup>29</sup> Naomi Jacobs draws out the phoenix-like nature of the Oankali through an allusion made in their name to the "Hindu goddess Kali, emblem of creative destruction; adorned with skulls and dancing upon dead children, she kills in order to bring about renewal and rebirth" (Jacobs, 96).

on Lilith who somewhat despairingly realizes that “In a very real sense, she was an experimental animal” (60).<sup>30</sup>

The trilogy begins with the intense emotional recognition of one’s existence in a laboratory setting. And at the onset of the narrative, the relationships between bodies and spaces are well defined. The Oankali are the obvious experimenters, those who have unambiguous control over the procedures and processes of experimentation on the “experimental animal” of the human. As the interactions between Lilith and the Oankali proceed throughout the first novel, *Dawn*, we learn that the instruments of experimentation are, in fact, entirely biological: bodies themselves become biogenetic instruments, specialized “sensory arms” can make genetic and chemical alterations in test subjects, organs within bodies can splice, analyze, and alter biochemical compounds such as DNA. Even the spaces (themselves living organisms) become useful instruments in the Oankali experiment. Equally clear, at the start, are the products of these labs, the material inscriptions that result from the laboring process—living organisms. The process of inscription, via the mediations of their biological instruments, inscribe new forms of life into the genetic codes of their lifeworld, the totality of which is the living organism of previous biosocial engineering.

The trilogy takes this initial setup—Human as the object of study within the Oankali laboratory—and proceeds to mutate and complicate the structure. So, for example, while the human becomes integrated into the Oankali way of life, the spaces of experimentation are transformed, and the question of who or what controls the social laboratory becomes harder to decide. The trilogy begins in Lilith’s womblike holding

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<sup>30</sup> Christa Grewe-Volpp makes a similar point when she argues: “In the beginning of the trilogy [the humans] are treated like animals in a cage or a laboratory” (163).

cell. Later, the space of experimentation is expanded to kinship, where instead of an “experimental animal” Lilith comes to feel more like a family “pet.” Once Lilith has been altered and allowed access to life beyond the domestic space of the family, she finds herself incorporated into the Oankali social life of the ship itself, at which point she becomes enlisted as a participant in the Oankali experimentation as a type of ambassador or local informant for the processes of assimilation, which is rendered in the novel as a process of genetic hybridization controlled by the Oankali. At the end of *Dawn*, the Oankali have constructed a “training floor” on the ship for the humans, a space designed as a replication of the newfound conditions on the Earth so that the human survivors might themselves learn to live on their rehabilitated planet. Here the space of experimentation expands beyond the genetic makeup of the human individual to the human species itself. The replication of the Earth on the ship—in such great detail and genetic likeness that many of the humans refuse to believe that they are still within a controlled environment—circumscribes or makes visible a new object of experimentation: the entire population of the human survivors. Even within this space Lilith’s sense of her experimental relationship to the Oankali remains. As she begins to plant her own crops a thought occurs to her which illustrates the sense she has of her position: “And, perhaps, now it was time for the Oankali to begin to see what they would harvest in their human crop” (205). It is important to note that it was through practicing the proto-biotechnological practices of agriculture herself that she was finally able, only at the end of the first novel, to find a more appropriate figure for humanity’s relationship to the Oankali as a whole. To put this differently, it is only through her production of a crop garden—a space in and through which she provides herself with the means for

production and reproduction by growing her own food—that she is able to comprehend the new structure of human-Oankali relations.

The connection between the Oankali biotechnology and “writing” (reiterated here in the agricultural metaphor) is made explicit by Lilith when she explains to another survivor upon waking that “we’re in the hands of people who manipulate DNA as naturally as we manipulate pencils and paintbrushes” (Butler 167). Amanda Boulter, likewise notes that “As living texts the humans are not only ‘read’ by the Oankali, they are also re-written” (Boulter 175). And Christa Grewe-Volpp comments on a telling passage: “Their ‘texts’ are human bodies which they not only interpret but even ‘edit’: ‘It [Nikanj] had studied her [Lilith] as she might have studied a book—and it had done a certain amount of rewriting’ (D 135)” (Grewe-Volpp 163). Many have cited these and similar passages as a means to discuss the discourse of genetics, or specifically the discourse of the human genome project, which often spoke of the genome through the metaphors of reading and writing language (the genome as the “book of life” and so on). Using writing as a central metaphor to discuss genetic engineering, the prohibitions against human writing—with hands and utensils—becomes symbolic of the human exclusion from the genetic engineering of the Oankali. Much like Virginia Woolf’s question of women’s writing in *A Room of One’s Own*, this barred access to genetic writing signals a much larger social structure of inequality.

Bringing Woolf into the discussion raises the issue of Butler’s own status as a writer. In Butler’s own short bio, she describes herself in the follow way:

I’m a fifty-three-year-old writer who can remember being a ten-year-old writer and who expects someday to be an eighty-year-old writer. I’m also comfortably

asocial—a hermit in the middle of Seattle—a pessimist if I’m not careful, a feminist, a black, a former Baptist, an oil-and-water combination of ambition, laziness, insecurity, certainty, and drive. (Author bio *Lilith’s Brood*)

The fact that Lilith—so central to the narrative that the trilogy was renamed *Lilith’s Brood* in its 2000 republication—is also a black American should not be overlooked.<sup>31</sup> Butler’s own marked condition as a “black,” “feminist” author working in a genre so dominated by male authors and a masculinist sensibility brings to mind Woolf’s own strategies of inhabiting—even by simply understanding the walls of her enclosure—a male dominated tradition, and transforming it into a laboratory space of creation and invention. In this revision of Woolf’s thematic, Butler transposes the problematic into a sphere that articulates issues of gender and sexuality with issues of race and species relations, a problematic appropriate to the developments in biotechnology in the latter decades of the twentieth century.

Lilith’s cultivation of the crop garden—which involves her in the total process of production of food, and gives her access to the tools necessary for controlling the processes of growth and hybridization—allows her to better understand her lack of access to the codes of production and reproduction that she had been previously denied. As genetic engineers, the Oankali remain the sole group with access to the programming language—the knowledge and tools necessary to manipulate the genetic code—for all living beings in the world of *Xenogenesis*.

At the close of the first novel the perfect replication of the Earth within the laboratory space of the “training floor” prepares humanity for the return to their home

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<sup>31</sup> As an interesting side note, the cover image for the first edition of *Dawn* featured Lilith as a blond white woman. For more on this issue in relation to race and the science fiction market see Smith.

planet. The Earth, during this time, has been bioremediated and prepared by the Oankali as the space for a larger-scale continuation of the experimentation, one in which the Oankali themselves will be included. The outer boundaries of the laboratory in the novel continue to expand until the laboratory comes to encompass not only the entire Earth, but also the interplanetary totality of interaction between the Oankali and the Human. As this social laboratory extends to the horizon of the trilogy's diegetic lifeworld, the terms of the experiment become less and less clear. As the boundaries blur between the one who controls the experiment, managing the various apparatuses of experimentation, and the one experimented upon, the relations of power become harder to decipher.

While all Oankali can perceive material at the genetic level without the aid of extra-bodily instruments, and can manipulate or coax bodies to "heal" or alter themselves, the ooloi (a third neutral sex, neither male nor female) are "natural" genetic engineers, able to "weave" new forms of life using their own DNA, as well as the DNA of the life forms they have collected. The Oankali Jdahya, with whom Lilith has her first encounter, explains, "We do what you would call genetic engineering. We know you had begun to do it yourselves a little, but it's foreign to you. We do it naturally. We *must* do it. It renews us, enables us to survive as an evolving species instead of specializing ourselves into extinction or stagnation" (Butler 40). Thus, Oankali reproduction and evolution is guided in a determinate and necessary way by the ooloi, in consultation with the social unit, who combine the genetic material from various partners to produce and organize the next generation. Thus the laboratory practices of experimentation, invention, and transformation stand as the very condition of possibility for the continuation of the Oankali species.

Because the ooloi “perceive” with a sensory apparatus foreign to the human, not only do they have a markedly different epistemology, but the process of incorporation of new knowledge allows their body itself to act as a biotech laboratory. In place of the apparatus necessary for the human, or an externalized network of instruments, technics, constructed spaces, and deliberate regulation of flows of forces and materials, the ooloi have biological organs within their individual bodies in which the processes of genetic engineering occur. The production of ooloi knowledge is not predicated on the same regime of sight as Western science, and lacks even the metaphorical ways in which we speak of knowledge in terms of vision—i.e., “I see.” Instead the Oankali speak of “tasting” the human body, perceiving its molecular structure through a different sensory mode.

This commingling of various types of labor, produces synesthetic and orgasmic (or synesthetic because orgasmic?) bodily experiences for both ooloi and their partners. This isolation of the moment of interaction in production, the drawing out of, and intensification of contact between the scientist and its object of study not only creates a new type of relationship, but places in sharper relief a sensation that surely does exist in scientific labor, though is often ignored or repressed (most certainly so in the publication of scientific research in more scholarly venues). The genetic engineering of the Oankali, even if just considered in terms of a technological manipulation similar to a molding of clay, or a writing with pen on paper insists on the existence of the erotic in a manner not usually associated with technologized production.<sup>32</sup> The ooloi enable the communication

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<sup>32</sup> See Belk for further consideration of the erotic in *Xenogenesis*. While utopian in its own right, Belk’s essay falls into the trap of biocapitalist and neoliberal utopian discourse, and thus presents a reading that argues for the knowledge of the erotic body as primary to the knowledge of the mind, or of logic, that I find to be extremely problematic.

between bodies on both the genetic and molar levels and are often discussed as “wired” or “linking” into their partners. Whereas Frankenstein’s creature became a metaphor for the book *Frankenstein* itself, the ooloi as a whole become, as enablers of the vast systems of communication, the figures for communication media themselves. The ooloi as *medium* will play an important role in my final section, in which I will return to the trilogy’s own role as medium for an encounter between Foucault and Haraway.

### **BUTLER’S SYM BIOGENETIC WRITING**

While Lilith is finally allowed to write with pen and paper, and her genetic makeup is altered to allow her more control over her living environment (enabling her to, for example, open doors), she is still not given the ability to either perceive or manipulate biogenetic language. However, the formal structure of *Xenogenesis*—the “body” or “shape” of the novel, in the words of Woolf (*Room* 71-78)—has drawn attention to the metaphorical connection between genetic engineering and Butler’s writing. Scholars have discussed the construction and style of Butler’s trilogy in ways useful for reading *Xenogenesis* through the language of microbiology. Neocybernetic theorist Bruce Clarke says that Butler’s trilogy “is a meditation on evolution: the worlds she invented are populated by individuals and groups placed under evolutionary pressures” (Clarke 162). Just as the laboratory seeks to explore the potentialities of the evolution of certain forms of life within parameters and protocols (thus enacting a type of controlled evolutionary process in minutia), Butler herself, Clarke seems to suggest, has erected her own “worlds” as the containers for experimentation. As with Mary Shelley and Orson Welles, Butler “built up and extrapolated her posthuman biological scenarios...from specific

popular-scientific sources that were not only reliable but visionary in their own right” (167). Clarke is here speaking of the noted influence that Dorian Sagan and Lynn Margulis had on Butler as she was writing her trilogy. He explains the controversy surrounding Margulis’ Serial Endosymbiosis Theory (SET), now accepted as scientific fact, that “the evolution of new life forms out of the symbiotic merger of preexisting life forms” (168). While the theory began simply as a way to understand the emergence of nucleated or eukaryotic cells (from a symbiotic merging of symbionts with hosts), Clarke explains that the more expansive theory of “Symbiogenesis” suggests that important events in the evolution of new species might not have arisen, as Darwin suggests, through competition, natural selection, or in the Spenserian terms, “Survival of the Fittest,” but rather through cooperation.<sup>33</sup> “Symbiogenesis,” Clarke explains, “applies to all theories citing symbioses that ‘cross kingdoms’ in various ways between bacteria, protocists (such as algae), fungi, animals, and plants to explain further events of evolutionary speciation” (168).

In terms of these theories of symbiosis, Clarke cites Cathy Peppers’s “Dialogic Origins and Alien Identities in Butler’s *Xenogenesis*,” in which she suggests that a passage from Sagan and Margulis’ *Microcosmos* stood as inspiration for the relationships between the humans and aliens in the trilogy. In fact, the notion of the genetic engineering laboratory of Butler’s trilogy is further supported by Cathy Peppers who reads *Xenogenesis* as a dialogic blend, and thus rewriting, of key origin stories that ground the Western imagination. She explains that *Xenogenesis* “‘seizes as tools’ our culture’s most powerful origin stories, those stories which are at the origin of what it

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<sup>33</sup> Russian biologist Kropotkin in fact suggested a similar corrective to Darwin’s theory of evolution almost a century earlier, yet at a larger scale than Margulis, through his concept “mutual aid.”

means to be human in the Western order: the Biblical story of our genesis as ‘Male and Female, created He them’; the sociobiological story, which situates our identities in our genes; and the paleoanthropological story of our evolution from our Stone Age ancestors” (Peppers 48). While Peppers only speaks of the discursive allusions to symbiosis as Butler’s corrective to the discourse of eugenics, symbiosis as a description for a method lacks Peppers’ insistence on the gesture of “seizing” the tools for writing. Butler in this sense does not disappear from the writing process—as seems to be the case in a process that is purely biological as opposed to also somehow subjective—but rather becomes a genetic engineer of literary form, splicing genres one to another, incorporating mythical viral strands.

Clarke’s own inquiry into the connections between Margulis and Butler leads him to suggest that a specific rhetorical strategy used by Margulis and Sagan feeds directly into Butler’s narrative. Clarke cites a passage from the updated preface to *Microcosmos* in which the authors reflect on the negative reactions by some to their book, which they attribute to their shockingly anti-anthropomorphic view of evolution from the “bacterial perspective.” It is from the vantage point of “the bacterial counterperspective on prideful humanity,” Clarke argues, that Butler structures her narrative.

Clarke suggests that Butler’s Oankali are literary representations of the productions and reproductions of microbiological life writ large. To put it another way, key passages from *Microcosmos* resonate for Clarke all too clearly with the mutations and exchanges of the Oankali. If *Microcosmos* was intended to make a bacterial perspective of the evolution of life intelligible to a human audience, I would argue that, taking Clarke seriously, the Oankali are the speculative results of a posthuman writing

that viewed the world microbiologically, even while living and functioning at the level of the macrobiological. As a case in point, the first “construct” child, Lilith’s son Akin, is shown in his infancy exploring Lilith’s body with this inhuman perceptive ability, reminiscent of the performance of worlds within worlds one finds in *Microcosmos*:

Now *he* perceived, through the tendril of flesh *he* had extended into Lilith, expanses of living cells. *He* focused on a few cells, on a single cell, on the parts of that cell, on its nucleus, on chromosomes within the nucleus, on genes along the chromosomes. *He* investigated the DNA that made up the genes, the nucleotides of the DNA. There was something beyond the nucleotides that *he* could not perceive—a world of smaller particles that *he* could not cross into. *He* did not understand why *he* could not make this final crossing—if it were the final one. It frustrated *him* that anything was beyond his perception. *He* knew of it only through shadowy ungraspable feelings. When *he* was older *he* came to think of it as a horizon, always receding when *he* approached it. (Butler 257, my emphasis)

Clarke explains that this microcosmic perspective at play in Butler’s novels operates much differently than those narratives that contain stories within stories (such as in *Frankenstein* and *The Island of Dr. Moreau*). The trilogy does not display this type of narrative embedding. “Rather,” he claims, “Butler’s diegesis—the storyworld itself—has been biologized: instead of stories within stories, one has organelles within cells, cells within organisms, and bodily transformations welling out of symbiogenetic embeddings” (Clarke 176). As is evident in the readings by Clarke and Peppers, the admiration for Butler’s symbiogenetic writing style tends towards utopian affirmation of a particular process of production claiming to characterize *Xenogenesis*.

Yet even though my example above—which follows the construct human Akin through his microbiological explorations—proliferates with subject pronouns, it would be very difficult to read this as not the “story” of a particular subject. This cybernetic interpretive approach is marked by the desire to read into Butler’s novels a type of autopoietic process that I find to be untenable. Not only does the systems theory approach seem to lack the notion of “seizing” in Pepper’s reading—which requires a particular intentionality—it also ignores the body of Octavia Butler as tool bearer in the technological construction of the text. Rather than symbiogenesis, which indeed might be a useful concept for thinking about the processes of nonhuman evolution, no less because of the way they upend the long held Darwinian notions of evolution as competition, I would like to suggest that the processes of recombinant DNA, or rDNA, provide a more useful metaphor.

The field of biotechnology as it is commonly understood today begins with the discovery of a procedure that allows geneticists to splice and then recombine sections of DNA from different species. Recombinant DNA technology (RDT) was first discovered in 1973 by geneticists Stanley Cohen and Herbert Boyer. The patent for the procedure was submitted by Stanford in 1974 and subsequently awarded in 1980. Recombinant DNA technology, or genetic engineering, is possible through exploiting the genetic behavior of bacteria, which naturally exchange sections of their own DNA with other bacteria. Using bacteria’s ability to share and trade sections of DNA, genetic engineers are able to extract sections of DNA from disparate species, recombine the sections (since all DNA is composed of the same chemical building blocks), and then gestate the newly combined sequence to give life to organisms that would not have existed otherwise.

Furthermore, Recombinant DNA technology (RDT) allows scientists to collect certain useful strands of DNA, using the bacteria as a type of container, which further allows them to “bank” or “archive” certain strands, as well as patent the code. The “banking” of DNA is one more technology that facilitates the corporatization of scientific practice. As Sunder Rajan explains,

RDT allows the life sciences to become ‘technological,’ where the product that is produced is cellular or molecular matter such as DNA or protein. Some of the proteins could, in principle, have therapeutic effects (especially for diseases that are caused by, or have as a central symptom, an abnormal amount of that protein) and be produced industrially. This, in a nutshell, represented the possibility and the rationale for the biotechnology industry. (5)

Butler’s ooloi are the recording devices and genetic “banks” of the entire genetic history of Oankali civilization. As the genetic and social engineers of bodies, their roles as the repositories for cultural genetic memory raises another issue with a reading of Butler’s text through the terms of “symbiogenesis.” While the trilogy itself presents this ooloi quality in a sublime light, it is nevertheless important to note that it is contained and manipulated within the body of a subject. The description that Butler gives when the main character Jodahs in the final novel, *Imago*, receives the “bank,” so to speak, is telling:

Then the world around me seemed to flare brilliant white. I could no longer see beyond myself. All my senses turned inward as Nikanj used both sensory hands to inject a rush of individual cells, each one a plan by which a whole living entity could be constructed. The cells went straight into my newly

mature yashi. The organ seemed to gulp and suckle the way I had once at my mother's breast.

There was immense newness. Life in more varieties than I could possibly have imagined—unique units of life, most never seen on Earth. Generations of memory to be examined, memorized, and either preserved alive in stasis or allowed to live their natural span and die. Those that I could re-create from my own genetic material, I did not have to maintain alive. (618)

It is important to note here the fact that even with this rush of information—even at that most sublimely overwhelming moment—Jodahs does not get a glimpse of “god” or nature, but rather “could no longer see beyond myself.” And furthermore, the “banking” of the “generations of memory” of a civilization does not enter into Jodahs as memory, though is contained within immaterial memory and an archived genetic material that is made present within the body (even if Jodahs is not attentive to it), and becomes either a physical and material memory or an immaterial memory that will allow Jodahs to construct new forms of life using every trace from past life. Contrary to natural symbiogenesis, the exploitation of this process in genetic engineering vastly increases the potential the production of new life forms, specifically because the process is no longer limited to already existing genetic forms. The life that comes from rDNA technologies is no longer limited by species boundaries, by environmental limits, or by sexual division/reproduction. By analogy, Butler's writing is not simply a staging of literary symbiogenetic processes, but is rather an exploitation of these processes.

**FOUCAULT—BUTLER—HARAWAY**

In her essay “The Biopolitics of Postmodern Bodies: Constitutions of Self in Immune System Discourse,” Donna Haraway analyzes the figure of the immune system in 1980s scientific and popular discourse. The rhetoric of immunity as well as the conceptions of its networked structure provides Haraway with a useful instrument to diagnose newly emerging structures and processes of power through which both individual and collective bodies are organized and controlled. The essay concludes her 1991 book *Simians, Cyborgs, and Women: The Reinvention of Nature*, which also includes her highly influential “A Cyborg Manifesto: Science, Technology, and Socialist-Feminism in the Late Twentieth Century,” a version of which was first published in *Socialist Review* in 1985. “Biopolitics” returns to the figure of the cyborg, though now cast in the more amorphous light of the immune system as the godless “apparatus of bodily production” (208). Haraway’s rewriting of Foucault becomes audible through her concept of “techno-biopolitics,” suggesting that Foucault’s analysis of biopower fails to recognize the dramatic break instituted by new systems of communication (media of “engagement”) and forms of biotechnology (relating to the fields of public health and pharmacology especially spurred on by the rise of AIDS discourse). She argues that the cyborg body, through discourses of immunology, is better understood as an engineered communications system, and the control of postmodern bodies (be they the individual’s immune system or collective systems of communication) must be understood through a communications context or medium.

Haraway ends her essay with a lengthy reading of Butler’s *Dawn*, which provides an exemplary illustration for Haraway’s own diagnosis of network power. Haraway had

ended her book *Primate Visions* (1989) with a version of this reading of *Dawn*, though one that leaves Butler with the final word through a quotation from her novel. In contrast, “Biopolitics” seems to manifest the moral of Haraway and Butler’s shared story. The reading concludes with a short paragraph—that includes the epigraph above—which also stands as the final words in her book of collected essays: “From this field of differences, replete with the promises and terrors of cyborg embodiments and situated knowledges, there is no exit. Anthropologists of possible selves, we are technicians of realizable futures. Science *is* culture” (“Biopolitics” 230).<sup>34</sup> Haraway’s provocative collapse of science and culture—further heightened by placing the designator of predication in italics, questioning the positions of subject and predicate—is indeed what Butler attempts to show through figuring her alien Oankali as a species whose bodies allow them to not only perceive, but also to engineer the very genetic structure of an organism without the need for tools or instruments, which is to say, without a technological prosthesis.

Haraway’s reading of Butler’s trilogy within an essay that explicitly attempts to rewrite Foucault echoes a pointed yet unsupported critique of Foucault’s theory in her “Manifesto,” a text that likewise cites Butler’s fiction as a place to look for a “cyborg politics.” Haraway states that, “Michel Foucault’s biopolitics is a flaccid premonition of cyborg politics, a very open field” (“Manifesto” 150). Butler’s fiction, including the first

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<sup>34</sup> A similar move is made in her book *Primate Visions* (1989), which itself concludes with an even further expanded reading of Butler’s trilogy, this time, however, giving Butler herself, through the words of the main character Lilith, the final word:

In the narrative of *Primate Visions*, the terms for gestating the germ of future worlds constitutes a defining dilemma of reproductive politics. The contending shapes of sameness and difference in any possible future are at stake in the primate order’s unfinished narrative of traffic across the specific cultural and political boundaries that separate and link animal, human, and machine in a contemporary global world where survival is at stake. Finally, this contested world is the primate field, where, with or without our consent, we are located. ‘She laughed bitterly, “I suppose I could think of this as fieldwork—but how the hell do I get out of the field?”’ (381-2)

novel of *Xenogenesis* in the updated version, is then enlisted as a comrade in her project to construct heretical future traces from the disjointed pieces of a now broken history so as to erect a politics of the cyborg.

While it is clear that she was profoundly influenced by Butler's trilogy, and used *Xenogenesis* in several places to buttress her critique of Foucault, Haraway never extends her reading beyond the first novel of the trilogy, nor does she return to the last novel of the trilogy, *Imago*, whose title alone resonates with Haraway's own stress on the power of images. At the end of my chapter, then, I will return to the triangulation of Foucault-Butler-Haraway with Butler's whole trilogy in mind. In this regard, Jameson's attempt to reconceptualize the "trace" and "utopia"—in a type of chiasmic relation that echoes my own attempts to conceptualize the laboratory—provides a useful diagnostic tool that allows me read Butler's trilogy as a way to restage the encounter between Foucault and Haraway on the biocapitalist stage. What I hope to show through this encounter is how Butler's trilogy both gives shape to the more expansive networks of the biotech laboratory and, through its own genetic engineering processes, projects the traces of a hotly contested future.

Haraway turns to biotech and pharmacological discourses as an update on Foucault. She looks to Butler's fiction as a corrective—a fiction that shows the collapse of biotech with living processes—to Foucault's concept of biopolitics. I will return to this below, though first I would like to situate the debate within the history of biotech, which Butler seems to ignore or pass over in her attempts to capture the future. As in the first chapter where I considered the history of the laboratory in relation to Shelley, here I would like to return to the history of biotechnology in order to underscore the importance

of Foucault for understanding the history of the politics of biotech (namely its connection to capitalism), as well as elaborate the historical connection that had existed from the first between biotechnological processes and speculation. This somewhat lengthy digression will allow me to return to the question of biocapital in relation to both the genetic knowledge of the past, as well as the speculative traces of the future.

## **CAPITAL AND SPECULATION IN THE EARLY HISTORY OF BIOTECHNOLOGY: ANTICIPATING BIOCAPITAL**

[I]n its very structure, the word uniting “bio” and “technology” reflects persistent concerns of society right through the twentieth century. “Bio” suggests natural; it connotes all those living things whose lives, it often seems, would be better but for the human species. By contrast “technology” evokes human control over nature. The combination of the two has often seemed deeply disturbing, even monstrous, as amalgams of people and machines have been described. The menacing word “cyborgs” is used in the language of science fiction. In the history of biotechnology, therefore, lies the story of twentieth-century wrestling with the concept of life.

-Robert Bud, *The Uses of Life*

Some mark the beginning of the 1980s—if not the year 1980 itself, which saw the patenting of the processes of rDNA—as the decisive moment when the life sciences become indistinguishable from capital. This story has been documented by Science, Technology, and Society [STS] scholars, anthropologists, sociologists, and cultural theorists. While the 1980s will be of particular interest for my reading of biotechnology in Octavia Butler’s *Xenogenesis* trilogy, I would like to take a moment to consider the historical trajectory leading up to the emergence of “biocapital” in order to touch on some of the articulations between utopian and speculative discourses and biotechnology.

Furthermore, the history of biotechnological practices can be articulated to Foucault's history of biopolitics in such a way that the necessity of one for the other becomes more apparent. In making this claim I use Foucault's 1976 *The History of Sexuality, Vol. 1*, written just years after the invention of rDNA and published four years before its patent made the technological procedure available to a much wider group. I would like to begin this history with a single, but quite long, passage from Foucault's text that lays out several of the key historical and political features of what he calls "biopower." Foucault's characterization will then be a point of reference for an attempt to think of the biotechnological and the biopolitical as partners in the development of a discursive and non-discursive apparatus for the control of the organization of living beings and social collectives. I will quote Foucault at length:

One knows how many times the question has been raised concerning the role of an ascetic morality in the first formation of capitalism; but what occurred in the eighteenth century in some Western countries, an event bound up with the development of capitalism, was a different phenomenon having perhaps a wider impact than the new morality; this was nothing less than the entry of life into history, that is, the entry of phenomena peculiar to the life of the human species into the order of knowledge and power, into the sphere of political techniques. It is not a question of claiming that this was the moment when the first contact between life and history was brought about. On the contrary, the pressure exerted by the biological on the historical had remained very strong for thousands of years; epidemics and famine were the two great dramatic forms of this relationship that was always dominated by the menace of death. But through a

circular process, the economic—and primarily agricultural—development of the eighteenth century, and an increase in productivity and resources even more rapid than the demographic growth it encouraged, allowed a measure of relief from these profound threats: despite some renewed outbreaks, the period of great ravages from starvation and plague had come to a close before the French Revolution; death was ceasing to torment life so directly. But at the same time, the development of the different fields of knowledge concerned with life in general, the improvement of agricultural techniques, and the observations and measures relative to man's life and survival contributed to this relaxation: a relative control over life averted some of the imminent risks of death. In the space for movement thus conquered, and broadening and organizing that space, methods of power and knowledge assumed responsibility for the life processes and undertook to control and modify them. Western man was gradually learning what it meant to be a living species in a living world, to have a body, conditions of existence, probabilities of life, an individual and collective welfare, forces that could be modified, and a space in which they could be distributed in an optimal manner. For the first time in history, no doubt, biological existence was reflected in political existence; the fact of living was no longer an inaccessible substrate that only emerged from time to time, amid the randomness of death and its fatality; part of it passed into knowledge's field of control and power's sphere of intervention. Power would no longer be dealing simply with legal subjects over whom the ultimate dominion was death, but with living beings, and the mastery it would be able to exercise over them would have to be applied at the level of life

itself; it was the taking charge of life, more than the threat of death, that gave power its access even to the body. If one can apply the term bio-history to the pressures through which the movements of life and the processes of history interfere with one another, one would have to speak of bio-power to designate what brought life and its mechanisms into the realm of explicit calculations and made knowledge-power an agent of transformation of human life. It is not that life has been totally integrated into techniques that govern and administer it; it constantly escapes them. Outside the Western world, famine exists, on a greater scale than ever; and the biological risks confronting the species are perhaps greater, and certainly more serious, than before the birth of microbiology. But what might be called a society's "threshold of modernity" has been reached when the life of the species is wagered on its own political strategies. For millennia, man remained what he was for Aristotle: a living animal with the additional capacity for a political existence; modern man is an animal whose politics places his existence as a living being in question. (Foucault 141-3)

I would like to first point out that Foucault situates the emergence of biopolitics at roughly the same historical moment as the emergence of biotechnology. Furthermore, both of these practices and discourses arise as responses to the same historical concerns and issues. In addition, Foucault's analysis of the subsumption of life under biopower can, as Haraway would have liked from the start, be extended to other life forms such as the populations of animals and microorganisms. Finally, seeing biopower and biotechnology as components of a singular and more expansive historical development

compliments Haraway's revisioning of Foucault with the added benefit of providing a genealogy for Haraway's "biotechnopolitical."

Biotechnology, as Robert Bud, Melinda Cooper, Donna Haraway, Kaushik Sunder Rajan, Eugene Thacker, Nicholas Rose, among others, insist, must be understood as an interwoven territory of laboratory practices and prophetic narratives of future possibilities, a tangle of hype, investments, practices, public perceptions, visionary promises, and ethical debates about individual, public and environmental health. Despite such unimaginable overdetermination, I follow Sunder Rajan's claim, so eloquently argued in the introduction to his edited collection, *Lively Capital*, that these practices must nevertheless be understood as inordinately directed by capital. An expanded history of biotechnology not only compliments the more contemporary analyses, but helps draw out the gestation of the imbrications between speculation, capital, technology and biological life.

The life sciences may have begun with Aristotle, but the origins of a properly biotechnological theory, one tied to the discourses of political economy and natural history, traces back to Erasmus Darwin and Thomas Malthus. Biotechnology as a material practice, however, is as old as brewing and fermenting, of selectively breeding animals and hybridizing plant life. Robert Bud's history of biotechnology, *The Uses of Life*, from which much of the following has been taken, begins appropriately with zymotechnology, a practice usually associated with the brewing of beer, though also tied to fermentation processes from other areas of biology and agriculture. It was, he argues, the large industrial production of beer that played perhaps the most important role in the

transition to the industrial production of microbes, living cells, organic compounds, or tissue cultures useful for social, medical, and industrial applications.

While Bud's primary purpose is to provide a history of biotechnology, he is nevertheless attentive to the collusion of the emerging sciences with their exploitation by industry and commerce, and thus helps me trace a history of biocapital missing from those accounts (Haraway's included) that take the 1980s as the fundamental break into a new social configuration. In working through Bud's history, I pay close attention to those moments in which utopian thought and industry become articulated to these pre-genetic engineering biotechnical practices.

From the very beginnings of proto-biotechnologies, their uses were explicitly tied to practical industrial applications, and thus to commerce and economic value. Georg Ernst Stahl (1659-1734) first coined the term "Zymotechnia" in his 1697 book *Zymotechnia Fundamentalis*, in which he "argued that the study of practical fermentation...would be the basis of Germany's key industry of *Garungskunst*—the art of brewing beer" (Bud 9) Bud defends his contention that Stahl's work on fermentation be seen as a starting point for biotechnology due to his "bid for intellectual authority over related commercial processes." As he contends, "Stahl expressed, for the first time, the abiding hope that an understanding of the scientific basis of fermentation could be harnessed to the improvement of commerce" (9).

The history of biotechnology, of course, cannot be separated from the history of its space of practice, the laboratory, and those more technical scientific disciplines such as chemistry. For this reason, it is not surprising that one of the main figures in establishing a "public" and therefore highly visible laboratory space, Justus Liebig, was

also a major player in the attempts made in organic chemistry to synthesize in the laboratory lucrative natural products (such as rubber) that were otherwise difficult to extract for geographical and political reasons.

The biological science connection came with the German naturalist Gottfried Reinhold Treviranus, who was noted as perhaps the first to introduce the term “biology” in his 1801 manuscript, *Biologie oder Philosophie der lebenden Natur für Naturforscher und Aertzte*. As Bud shows, Treviranus begins his study of life with the observation that “Only the exploitation and not the occupation makes the value of a treasure” Bud explains that “[Treviranus] continued by emphasizing the value of biology when seen in conjunction with pharmacy and economics” (13). While the actual practices of laboratory life sciences had migrated from the private manor home to the public university, the life sciences, if not fully in practice, had already in theory been co-opted into a capitalist economy.

Here, then, we begin to see an opposite movement of laboratory labor. Instead of university professors gradually institutionalizing their private expertise for the sake of public research, there were simultaneously demands from industries for trained laborers who would be competent laboratory researchers and technicians to aid in the development of marketable products and procedures. While Sunder Rajan cites the Baye-Dole act of 1980 as one of the more significant forces that gave rise to biocapital through its facilitation of the transfer of University research to the biotech corporation, it would be important to note that the act codified in principle a practice that had been in process since the very establishment of the laboratory schools. Even so, the zymotechnology of the early 20th century, a mixture of chemistry, microbiology, and engineering, provided

biotechnology with a more intense focus on business applications. As Bud explains, “Zymotechnology therefore worked rather as biotechnology would at the end of the century, with a useful vagueness that both implied a particular focus to a company’s work and allowed it to cross conventional market boundaries” (26).

The word “biotechnology” itself first arrived in 1919 with a slightly different connotation than the word has today. It was Karl Ereky, a Hungarian agricultural engineer, who coined the term during a campaign focused on the industrialization of Hungary’s agricultural production. Much of his efforts went to increasing the commercialization potential of Hungarian agriculture, seeking to become a major supplier to contiguous states. His approach to agricultural production differed from the peasant’s due to its “scientific approach,” and the term “biotechnology” was in part meant to mark that difference. Bud explains that to Ereky, “the pig was a machine, converting carefully calculated amounts of input into meat output. Indeed, he described the pig as a ‘*Biotechnologische Arbeitsmaschine*’ [Biotechnological Workmachine]” (34). This perception of a living being as a work machine was, for Ereky, a sound capitalist solution to the problem of shortage.

While it is indicative of the period between World Wars to see a greater emphasis placed on the use of microorganisms in manufacture in place of chemicals, biotechnologies still struggled to compete with chemistry in the market place. One important shift here was the potential application of biotechnology to the human individual and to the population which bolstered the importance of biotechnological processes in relation to notions of health, and the regulation of the social genetic pool through sciences such as eugenics.

The connections between biotechnology and its political or economic applications were further advanced by the more utopian minded German sociologists of the twentieth century such as Rudolf Goldscheid. Goldscheid was an important social and biotechnological philosopher who was known for his Marxist commitments to human betterment, and was also known to be one of the key figures in the rise of German sociology in the early 1900s. Bud explains his particular philosophical perspective of society:

Goldscheid often used the analogy between factory production of quality goods, which increasingly employed science based technology, and society's production of people. The idea of Technik and references to the machine, was not to be taken as an insult—rather they represented his respect for the organic wholeness and functionality of machines which went far beyond the individual component's mechanism. Goldscheid suggested that *Biotechnik* was based on a respect for the living organism, the human being, and the wish to develop a complementary technology which was organic, spiritual, and ethical. (59)

With historical hindsight, Bud shows, one can see how these more utopian and socialist aspirations were too easily echoed by right-wingers who advanced the importance of a “zootechny” in terms that perhaps would sit uneasy with one who championed a respect for the living organism and the human: “Let us think of man as an industrial material, or more precisely, as an animal machine. The hygienist then is the engineer of the human machine” (60).

In the years following WWI, biology was fast becoming recognized as an emergent field that would replace the physical sciences as the primary model for

understanding the world. Lewis Mumford, for example, claims that the machinic organization of society, as ingrained through the rise of industrialization tied to capital, was in the late 1920s giving over to a technological complex that took biology and the life sciences as their points of reference. The biological embodied a level of complexity to which other scientific disciplines, as well as social and technological productions, should aspire.<sup>35</sup> It was as early as 1936 that Julian Huxley would claim that “biotechnology will in the long run be more important than mechanical and chemical engineering” (51). As Mumford charts the rise of the capitalist machine at the expense of the life of human populations and their environments, the reaction to the machinic was seen in those who hoped for a technology more closely in line with the qualities of life. Bud gives J.B.S. Haldane as yet another example of a scientist musing about the future potentials for the more “life-centered technology” (70).

The more pro-capitalist speculations clash with the real utopian hopes many biological scientists had for the new biotechnologies. The interwar period in Europe, as Bud shows, is vitally concerned with the promotion of human health and the direction of populations through advances in biotechnology. It is during this time that ideas began to emerge for the biological engineering of society itself, thus giving traction to the social biological movements in health, contraception, or social eugenics. In a very real way, the imagined future role of biology and biotechnology filtered into many aspects of social and cultural production.

Bud explains that through the more socially progressive figures such as “Geddes, Haldane, Mumford, Huxley, Goldscheid, and Hogben,” one could see what Hogben

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<sup>35</sup> See Mumford, especially chapter eight, in which he theorizes the shift away from the machine towards a more “organic ideology.”

advanced as a “‘Bioaesthetic’ utopia in which small-scale communities would be based on hydroelectric power, light metals, fertilizers, and the applications of biochemistry and eugenics to the control of population” (76). Beyond the chemical and physical sciences, there was a clear hope and vision for a world becoming more and more attuned to its biological foundation. With such utopian aspirations and dreams for a biological worldview, it’s no wonder practicing biological scientists have given fertile material to science fiction writers—sometimes, as in the case of Wells, becoming fiction writers themselves. The utopian strivings and high aspirations of scientists at the time for the science and technology of life gave much grist to the mill of speculative fiction. As Bud audaciously claims, Haldane’s little book *Daedalus, or, Science and the Future* (1924) “is one of the most influential stimuli of science fiction ever written” (72).

In the interim between the two wars, then, biotechnological sciences made much of the speculative mode. For one, there were the scientists themselves speculating on the future of biotech’s relation to human society, with aspirations for the foreseen revolutions in medicine, health and communal governance. There’s no doubt that the public reception of the more utopian aspirations for the future from biologists like J.B.S. Haldane, or cybernetician Norbert Wiener, lends a certain amount of cultural capital and supportive momentum to their respective projects, which in turn converted into wages and laboratory funding. In the post-WWII period even more utopian aspirations for the emerging biotechnology were put forth. The possible solutions to world scale issues included the production of microbes that would break down hazardous waste, the engineering and production of food sufficient to cure world hunger, or the treatment and curing of genetic disease, etc. British journalist and author Gordon Rattray Taylor

(perhaps best known for his 1968 book on biotechnology *The Biological Time Bomb*), for example, spoke approvingly of the “Biological Revolution” which would supersede the Mechanical Revolution and the Technological Revolution, bringing along the revolutionary potential promised by biotechnologies (see Taylor). Many in the decades before the 1980s, as Bud explains, saw biotech as providing solutions to world issues. “Heralding a new industrial revolution, it was a symbol of hope, and answer to the ‘Trinity of Despair’—hunger, disease, and resource depletion” (122). He further explains that at the time, biotechnology was seen as a response to urgent concerns of world population and starvation. It was hailed as an alternative to world damaging technologies. It was seen to hold the key to energy shortages and to the growing awareness of the non-sustainability of the world’s energy sources.

Although “biotechnologies” of various sorts had become solidified industries and practices, the real watershed moment was the emergence of recombinant DNA (or genetic engineering) in 1973 from the collaboration of Cohen and Boyer. Part of the fears and concerns with biotechnology, now “wedded” with genetics, as Bud will suggest, had to do with the notion that genetic engineering would be primarily directed towards the modification of human beings. The end result of professional and public concern was a sixteen-month moratorium which called for “a pause in research until it could be regulated in such a way that the public need not be anxious” (175), thus marking in the mid-1970s the government concern with, intervention in, and management of public fears regarding biotechnology. The historic shift is marked, Bud shows, by the meeting at Asilomar in 1974, which raised significant discussion regarding the need for regulation versus the benefits of successful use of biotechnology.

The public concern with genetic engineering would have been palpable to anyone familiar with popularizations of science or science fiction that took up the practice, and therefore most surely played into Octavia Butler's own science fiction as much as it had influenced other popular culture outlets such as television and films (Bud, for example, mentions *Star Trek* and the film *The Andromeda Strain*, as two more visible examples). Bud explains that 1974 became an important moment for the emergence of biotechnological speculation in the scientific community and government as much as in the realm of speculative fiction. This shows a connection between very different processes and discourses (scientific, political, policy, economic, literary, filmic) that all banked on the potentiality of the present for the future in different ways, and harnessed a speculative mode of thought to deal with the rapid changes in a technology that had profound consequences for "life itself."

The role of speculation in biotech, to draw out an example from Bud's history, came to prominence in a congressional hearing in the late 1970s. The genetic engineering company Eli Lilly, represented by Irving Johnson, was pressed regarding the ethical implications of their work, suggesting that the company might lose a way to distinguish good from evil in their work and unknowingly produce evil. The Congressional hearing, then, posited certain moral and ethical questions to a corporation that sought to profit from the invention of new forms of life. In response, Eli Lilly's internal magazine submitted a publication to congress featuring an interview with attorney Johnson, hoping to persuade congress to allow the company to pursue its own agenda. Johnson's interview ends with his elaboration of, as Bud says, "some of the more 'tangible benefits.'" Johnson explains:

The theoretical possibilities—and, remember, that’s all they are at present—sounds [?] like pure science fiction. Some of the things most frequently mentioned are: tailor-made microorganisms for energy production and pollution control; plants that are resistant to diseases, pests and drought; a whole range of hybrid plants such as a ‘pomato’ with tomatoes above ground and potatoes on its roots; beef cattle, swine and poultry designed for taste and efficient production; completely new species of plants and animals; and, finally, cures for genetic diseases through replacement of defective DNA. (180)

The list of possibilities could easily stand as either props in a sci fi text, if not inspirations for entire plot-lines.<sup>36</sup> Yet there were specific intentions for this utopia projecting speech. “[T]his list was not cited to raise money or to show the financial implications of the new tools. Its intention was to dissuade Congress from legislating against research that Lilly wanted to do” (180).

While biotechnology and capital grew ever closer, speculation remained in a sense beyond the realm of commodification. After all, speculation played an important and necessary role mediating the relation between everyday scientific work with both the population at large, as well as governmental regulatory institutions. With the public fears that emerged from the discovery of genetic engineering, and a further concern for the ecological ramifications, speculation and utopian discourse served as the social and ethical lubricants for the potentially extremely lucrative biotech research and development.

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<sup>36</sup> I’m particularly fond of the potential for the “pomato” as the killer cousin of its less monstrous yet no less homicidal tomato.

Before continuing the story with the more contemporary realm of rampant speculation (turning to theories of biocapital), I'd like to end with one last historical note that seems appropriate to a study of the intersections between biotechnology, capital, and utopian discourse attentive to the power of language. Bud tells the story of Nelson Schneider—an investment analyst who, in 1979, saw enormous potential in genetic engineering for the manufacture of insulin and new cancer drugs—drew an astounding amount of attention from investors to new fertile fields for risk investments. Schneider is cited by Bud as one of the key initial investors that brought the world of venture capital together with biotechnology. Indications that the shift to a corporatization of biotechnology could be seen in the fact that more and more U.S. biotech founders were coming from the business world, rather than from an academic background. Yet the most poetic sign of the subsumption of biotechnology into capital came from Schneider who strategically “recoined” a word as a means “to market the concept of an industry based on a new technology” (Bud 184). The word that Schneider used to function as this advertising tool was, of course, “biotechnology.”

## **THE UTOPIAN FACE OF BIOCAPITAL**

**Larry McCaffrey:** There has been a lot of SF in the last, say, fifteen years, by feminists working with utopian models.

**Octavia Butler:** Yes, and I have some major problems with that—personally, I find utopias ridiculous.

-Interview with McCaffrey

Butler admitted that she was unsure of the ethical implications of her novels. For one, her solution to the human resister-Oankali dilemma was to send all humans to their own planet (Mars) at the end of the second novel *Adulthood Rites*. Even more interesting is Butler's claim that she had hoped to produce a non-hierarchical community, yet came up with a rather different type of hierarchical system.<sup>37</sup> This admission, however, fails to resonate with many critics who wish to set free the subterranean utopian desires of Butler's fiction. Take, for example, the following celebratory discourse of the posthuman, a type of "networked" self that attacks the unified self:

Such a concept of subjectivity as multiple and fluid opens spaces for transformative encounters with difference. Difference may represent a threat to the unified humanist subject, who is defined in and exercises agency through opposition to some Other; but the posthuman subject, a location where differences intersect in unstable configurations, can always make room for more. If the boundaries of the self are permeable, selfhood can be understood as bearing endless potential for changes more fundamental than the organic 'unfolding' or realization of some essential self in the humanist model. (Jacobs 94)

While I would be tempted to agree with Jacob's assessment of the "unified humanist subject," when these fluidities become productive nodes within a network (like an immune system) that nevertheless involves regulation and inequality, the stakes for agency need to be approached in a different way.

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<sup>37</sup> Molly Wallace cites, in a footnote, Butler's conversation with Marilyn Mehaffy and AnaLouise Keating where she claims that she "wound up with a somewhat different hierarchical system" (54), which Wallace argues is the system of late capitalism.

In spite of the trilogy's ostensible embrace of the "Oankali way,"<sup>38</sup> the blind drive towards difference and change comes to sound all too similar to the utopian inflected rhetoric, as Molly Wallace has noted, of contemporary neoliberalism and biocolonialism, which present themselves as altruistic stewards of the environment and the concerned protectors of biodiversity. Acknowledging the previous critical work that affirms Butler's ostensible critique of the liberalism in the name of a more fluid "posthuman" subject, Wallace maintains that "it does so only to replace it with *neoliberalism*, which, as Nikhil Pal Singh explains, 'resurrects 'pre-Keynesian' assumptions that free markets automatically generate civic order and economic prosperity, even while it gradually eviscerates democratic norms of political participation by an informed citizenry' (144)" (Wallace, 97). While the genetic "economy" of the Oankali is presented as communal and egalitarian, she claims that it nevertheless distributes power in ways that are not equal. Oankali "trade," in Wallace's reading, comes to take on the characteristic of late capitalism, in spite of (or rather precisely because of) its naturalized symbiotic pretensions. She points out that the ecological harmony of the Oankali with the earth has as its limit, as the Oankali mention, the point at which the living cities on the earth will indeed become closed systems (that is spaceships, worlds in their own right), leaving behind a barren, resource-depleted planet to search for new life among the stars. Secondly, she shows how the symbiogenic merger with other life forms, or "trade" (a term that Wallace rightly highlights in its allusion to earthly economic practices), while

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<sup>38</sup> "'Human beings fear difference,' Lilith had told [Akin] once. 'Oankali crave difference. Humans persecute their different ones, yet they need them to give themselves definition and status. Oankali seek difference and collect it. They need it to keep themselves from stagnation and overspecialization. If you don't understand this, you will. You'll probably find both tendencies surfacing in your own behavior.' And she had put her hand on his hair. 'When you feel a conflict, try to go the Oankali way. Embrace difference'" (Butler 329).

perhaps mutually beneficial in some ways, operates in the last instance as a further strengthening of the Oankali's position in the universe. Not only are the Oankali named after the organelle that resides in each one of their cells, it is the Oankali organelle that remains the "medium" of the Oankali "trade," tenaciously retaining its colonization of living forms towards the further expansion of the Oankali life form.

While I admit that I am tempted to read the Oankali's life affirming becoming as a further realization of a utopian process, the contradictory nature of Oankali society makes the more utopian reading a little less tenable. The Oankali's actions, after all, have been read variously as biopiracy, bioprospecting, colonization, imperialism, eugenics, and, I would add, a continual revitalization of the processes of primitive accumulation. Wallace contends that "'Trade' in this case is not an ethical encounter with an other, not a respectful celebration of difference, but a manipulation of the other in the image and interest of the self." And even though the Oankali "Valu[e] biodiversity...their errant organelles...produce monoculture" (106), and their "egalitarian trade across the universe" comes to seem more like "the imposition of 'trade' as a dominant economy in which other species are forcibly compelled to participate" (111).

In a compelling and crucial moment in her essay, Wallace advocates for a particular analysis of neoliberal and life sciences discourse that critiques the rhetoric of "nature's language," which, as she puts it, provides "a logic not only to capitalize on nature but to naturalize capitalism" (Wallace 97). Wallace's reading of Butler's trilogy as allegorical of contemporary discursive modes is a productive way to "disentangle" the various other codes that "have been encoded into this natural 'language,'" (97) such as linguistic, economic, and sociocultural, so as to demystify the "dual process" of "nature's

language.” What the analysis of Butler’s text as “nature’s language” shows, according to Wallace, is a discourse amenable to (or even reinforcing) neoliberalist agendas which are more and more tied to the rhetoric and public discourse of the biotech industry.

Therefore, Wallace cautions readers who are too willing to side with the Oankali as the bearers of a better and brighter future. What could be added, based on the history of biotechnology, is that the “critical dystopia” of Butler’s trilogy (one that preserves the spark or the scrap of utopian hope even within the seemingly hopeless reality of the current situation<sup>39</sup>) has often been the tone and discursive mode for the biotech industry in general.

So, in addition to reading Butler’s artistic techniques as akin to biotechnologies, the ambiguous use of the utopian impulse in *Xenogenesis* becomes a critical tool for analyzing the use of utopian discourse in the biotech industry. In this sense, the ambiguous use of utopian aspirations for difference alter, in a chiasmic fashion, the relationship between literature and biotechnology. Rather than literature approaching something like a “genetic engineering” of social life, it is the rhetoric of the biotech industry that begins to appear more and more like speculative fiction.

If this is the case, then Wallace’s insistence on the need to develop an interpretive strategy attuned to, and on guard against, the rhetoric of “nature’s language”—a claim already explicitly made by Haraway through her reading of Butler in *Primate Visions* that Wallace seems to have missed—is an important contribution to the otherwise utopian readings that are all too easily hijacked by neoliberalist processes. Wallace’s reading ends with the dulled point that Butler’s trilogy, despite being duped by the utopian discourse

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<sup>39</sup> See Tom Moylan’s *Scraps of the Untainted Sky* for a discussion of Critical Dystopia, as well as his edited collection with Raffaella Baccolini *Dark Horizons: Science Fiction and the Dystopian Imagination*, in which Baccolini reads Butler’s *Xenogenesis* trilogy as a “critical dystopia.”

of neoliberalist capitalism, at least provides the critic with the estranged figure of our contemporary world.

The problem I have with this reading is not her accurate assessment that Butler figures a neoliberal global capitalism, but rather Wallace's blindness to traces of the future in Butler's text, traces that for Haraway, borrowing Jameson's formulation, are "thrown off" like "so many sparks from a comet" (Jameson xii). Even here, though, the instrumentalization of utopia for the biotech industry needs to be addressed. If the archeologists and anthropologists of utopia have now turned their attention to the future, it must be disappointing to find already well-ensconced the traces they weren't expecting. Here, then, I'd like to turn to anthropologist Kasik Sunder Rajan's assessment of the "visions" and "promises" of biocapital. Beyond the contingent overlapping of utopia with biotech and capital shown in Bud's history of biotechnology, Sunder Rajan shows how the traces of the future retroactively become themselves the conditions of possibility for biocapital.

### **SPECULATION, PROMISE, VISION**

Conceptualizing the traces of the future allowed Jameson to posit a temporality and ontology that recognizes the active role of the future, and not just the past, in the becoming of the present. Following Jameson allows one to recognize the utopian, speculative, and altruistic discourses of neoliberalism, venture capital, and the biotech industry as more than simply benign statements, but rather as actively participating in the construction of the present. It is for this reason that I find it extremely important to contextualize the battleground that lies ahead. One of the key factors in this shift of focus

to the future is the role of more socially expansive forms of the laboratory. Part of my intention below is to understand how this enlarged laboratory space plays into the attempts to harness utopian hopes and dreams.

With the advent of the biotechnological sciences, properly situated with the discovery of recombinant DNA in 1973, speculation becomes once again crucial to the practice and function of biotech work. If the alchemists search for the philosopher's stone was "short circuited," as I showed in the first chapter following Mumford, by the lack of a proper technique to match the dream to the reality, the biotech industry's own philosopher's stone becomes much more powerful in that human technologies have reached a point where the visionary possibilities (for cures, bioremediation of the environment, pharmaceuticals, etc.) are very much able to be actualized. Biotech venture capitalists, or the new figure of the "scientist-entrepreneur," are the neo-alchemists of contemporary life sciences.

Biotechnology, here elided with the technological procedure of rDNA, grew in tandem with its financialization; in fact, the industry would not exist if it weren't for the risks taken by early venture capitalists, and the industry often lauds them as the true heroes of the biotech revolution.<sup>40</sup> Sunder Rajan's excellent study of the capitalization of

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<sup>40</sup> One of the most useful and exhaustive resources for the history of biotechnology is the foundation that was established in conjunction with academics, entrepreneurs, industry leaders, and museums. The Life Sciences Foundation (LSF) was founded in 2009, associated with the already well established Chemical Heritage Foundation, whose explicit mission is to "record, preserve, and make known the story of biotechnology--that complex mixture of brilliant science, daring entrepreneurship, and socio-political realities that has become central to human hope in the new millennium." (<http://www.lifesciencesfoundation.org/mission.html>, 10:02am). The goal of the LSF is to be a clearinghouse for the oral and material history of the development of biotechnology, to serve not only as a cultural resource and archive for the future, but to also provide a resource for those in the industry itself. As the mission statement explains, "Looking back is a means of understanding the present and acquiring wisdom with which to move forward." This particular "heritage project" for biotechnology is explicitly told by the industry itself.

Within the archives of the website for the Life Sciences Foundation, of special note is the homage to Venture Capital in their historical blurb "The Origins of Venture Capital." Indeed, as the article begins,

the biotech industry in the U.S. and India points to an important quality of biocapital specific to the industry, though also indicative of a significant shift in one mode of capitalism. Attempting to make sense of the fundamental role of venture capital in the biotech industry, Sunder Rajan returns to Marx's distinction between various types of capitalisms, taking as a methodological principle the resistance to generalize or universalize the function of capital in all particular times and places.

He makes a point to return to Marx's attempts in *Capital Vol. 3* to distinguish between two distinct forms of capital: industrial capital and trading or merchant capital, or what Marx will call "commercial capital." Sunder Rajan writes, "Commercial Capital, according to Marx, does not create surplus value in and of itself but does so indirectly by constantly perpetuating the circulation of capital, and by providing it with its own self-perpetuating, self-sustaining logic that does not need to originate from the moment of production of commodity" (9). He maps these distinctions onto the biotech industry where one has both the production and sale of molecules along with the elaborate network of venture capital investments. Trading capital, then, cannot be seen as independent from industrial capital, but must rather be seen as a branch of it.

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the history of the field cannot be written without shout-outs to the major venture financiers of the early stages of biotechnology. Just after WWII, the U.S. government made it clear that their hopes for the future lay in the advances of science and technology. However, the investments needed for certain project came almost entirely from public sources, for private investors were not yet willing to take the risk. The article continues to provide a short history of risk capital, beginning with the Rockefeller Brothers Co., investment group, whose investments were labeled by the family's advisor as "irresponsibly speculative." Shortly after J.H. Whitney & Co. was founded, which dedicated itself to fund risky ventures. These risk capitalists were distinguished from the pre-war venture capitalists because they took on staff members who were trained in the scientific and technological fields ripe for investment opportunities. Although it was Georges Doriot who would consolidate the American Research and Development Corporation in 1946, often called the "original venture capital firm," and Doriot the "father of venture capital." The Foundation's purpose for giving this brief overview of venture capital, ostensible, was to simply show how the influence of these early venture capitalists provided the conditions of possibility, for both academic laboratories and private projects, for what would become the major corporations of the biotech industry as a whole. What in the early years following World War II was seen as irresponsibly speculative would now be seen, even by the industry's own storytellers, as risks worth taking.

Furthermore, Sunder Rajan sees in Marx's own discussion of commodity fetishism a dual operation of capital that will later be elaborated more fully in Althusser. That is, Capital is not only determined by the base, by the material level of production, but also importantly includes ways of seeing the world, belief structures, or particular epistemologies. In this sense, Sunder Rajan claims that biocapital is not only a system of exchange, but also the epistemology of our time. In this vein, the biotech industry still operates as a commodity capitalism, with its industrial manufacturing and selling of tangible products such as drugs, "immortal" cell lines, microorganisms, and genetically modified crop seed. This process still resembles in many ways a Fordist production model, usually taken on by larger biotech or pharmaceutical corporations who have the ability to take a developed product to a consumer market (what is known as downstream production).

In parallel to this, however, is the initial "upstream" research and development of the product, usually consisting of some form of information produced largely by biotech startups that rely almost entirely on financial or venture capital. This world of financialization, a dizzying and delusional whirlwind of speculation and risk associated with public stock trading and start-up IPOs (initial public offerings) is a capitalism that Marx only began to analyze in *Capital, Vol. 3*, which he called "commercial" capitalism. With the establishment of the Bayh-Dole act in 1980 (which facilitated the transition from academic research to commercial industry) the biotech industry was even more fully co-produced by these two forms of capital: the first operated on a material level of production; the second operated on an epistemological level that did not extract surplus

value from the exploitation of labor-power, but rather generated surplus through the perception of a potential value.

While it is unavoidable to speak of the biotech industry without also speaking of the speculative mode, Sunder Rajan's chapter on what he calls the "grammar" of biocapital perhaps brings the discussion of biotechnology the closest to speculative fiction. His object of study in this instance is the futuristic rhetoric of the biotech industry related to the narratives, stories, press releases, and corporate updates that are followed by and heavily influence possible investors. He explains that the biotech industry functions through promissory statements and the production of a "vision" of the future. These statements, importantly, do not involve statements of truth or falsity, for this type of judgment can't be passed, obviously, on an event that has yet to occur. At the base of these promissory statements are the scientific facts—the production within a laboratory of a certain type of information (a new drug, a new organism, etc.) upon which speculation rests. So while the categories of truth don't apply to the speculations and extrapolations on certain "facts" in the present, the question of credibility becomes crucial. Thus, future visions are intimately attached to "hype" in the biotech industry.

The temporality of the promissory statement, or the future potential of a discovery comes to have a particularly fascinating relationship to valuation and the product of exchange. Sunder Rajan explains: "First, to generate value in the present to make a certain kind of possible future, a vision of that future has to be sold, even if it is a vision that will never be realized" (Sunder Rajan 115). While the discussion of hype points perhaps most explicitly to utopian discursive modes such as the manifesto, it is fairly clear that the language of the biotech speculative market can be easily articulated to the

temporality and poetics of science fiction. Darko Suvin's characterization of science fiction as "cognitive estrangement" is useful here, in that the literary discourse of science fiction projects into a future or foreign context a situation that has a rational basis in contemporary science and technology such that one can follow, from the present to that fictional future, a cognitive and logical trajectory. In many ways, Sunder Rajan's definition of the speculative discourse of the bioeconomy can almost readily be applied to the literary discourse of science fiction. The promissory statement, he writes, is "a discursive mode of calling on the future to account for the present" (Sunder Rajan 116).

Even before the speculative mode of finance capital in the biological sciences, the applications of biological study to society were themselves a speculative discourse masquerading as "scientific fact." As social theorist Paul Rabinow suggests, sociobiological and eugenic programs were always social projects—not based solely within scientific practice—and thus were motivated more by class and racial interests in regulating the poor and "degenerate," and operated not through the "speech acts" of biology, but rather through biological metaphors mapped onto the social. The metaphors that were woven into the discourses of "truth" came to have real social effects that "ranged from public hygiene to the Holocaust." (Rabinow 241). This was, it seems, a function of presuming that one's epistemological understanding of the biological was an objective truth, outside of social, subjective, and political influences.

The speculative practices of the biotech industry and the bioeconomy operate differently in the sense that the claims being made for the biological are grounded in preliminary laboratory practices, yet cast in a subjunctive tense that promises without guarantee that what is speculated will come about. Also, the speculations that are geared

towards making the deal, luring in investors, or proving the salience and ethics of the new technology to the government and the public, need not only provide statistics and research results (these are already in some sense established), but must also primarily speculate on the incorporation of the product into social, cultural, and economic processes that would ensure its profitability.

In *Life as Surplus: Biotechnology and Capitalism in the Neoliberal Era*, Melinda Cooper's analyzes the melding of biotech and capital explaining that speculation and finance have become "the very generative condition of production." Because the biotech industry (especially the petrochemical and pharmaceutical companies) internally reorganized itself when facing the limits to Fordist production, the new bioeconomic terrain "makes it impossible to distinguish between the so-called economic fundamentals and the perils and promises of speculation." She continues: "Indeed, 'Promise,' it might be argued, is the one fundamental of post-Fordist production: promise is what enables production to remain in a permanent state of self-transformation, arming it with a capacity to respond to the most unpredictable of circumstances, to anticipate and escape the possible 'limit' to its growth long before it has even actualized" (Cooper 24).

Speculative and capitalist hype are similar discursive modes—they both posit a world that could be were important changes made in the present. In this case, it is the influx of time, energy, but most important, money that is the condition of possibility for the actualization of the speculative vision. It is one, furthermore, that involves the promise of surplus at some point in the future. The promise of the cure plays an essential role as that which confers credibility to the promise of a return. Another way to think of the promissory market, in which the “vision” or “promise” of the future is itself the

product that is purchased and sold, is to say that this is a type of capital that operates almost entirely in a virtual realm. Investors and venture capitalists must be excellent students of the present, must know not only the science and technology involved in the company, but should also have a certain amount of knowledge regarding the founders, the management team, the staff, the instruments and spaces, or the sum total of social, political, and ethical relationships emanating from and surrounding the biotech laboratory, in and through which these traces of the future are generated and exported so as to reconstitute the laboratory at a larger scale.

The rift in these two levels, the technological industrial, and the epistemological speculative, in many ways expresses the particular multi-determinations of the biotech industry, and its “co-production” by a complex interrelation of both. But if speculation and visionary promises of the possible futures were set aside in the modern laboratory, or at any rate were contained within the space of the laboratory in a more immediate circuit, here we see once again the speculative hopes for the future escaping a present and embodied form. And while the futures market for the biotech industry might not always guarantee the fulfillment of the promise (in fact, the futures market depends on the legal protection from any liability for failing to meet the expected goals), it is that absent future in the present that “grounds” the decision to risk an investment. If the alchemists desperately tried in vain to transmute semi-precious metals, rocks, or other minerals into gold, how truly fantastical an illusion or conjuring trick they would have thought venture capital to be to materialize gold from out of thin air, materializing value from the dream alone for value.

The place of the laboratory and its role in the production of credibility become harder to pin down when the laboratory offers as evidence “visions” or “images” that cannot be traced back to tangible, material objects. In place of what has actually been inscribed within the world, investors are presented with the images of what could or might be produced. This particular temporality evokes Jameson’s transposition of the trace into the future that began this chapter. Taken in the context of the biotech industry, and the speculative realm of finance and venture capital that subtends it, the notion of a “not-yet-being of the future with a textual existence in the present” being “no less worthy” of a trace or “inscription” from the past here becomes an understatement (Jameson xv).

RDT, or the procedures of genetic engineering still must occur in “labs” that make “visions” or “inscriptions” possible, but the labs can be as mobile now as needed. In some sense, their spatial position, or internal make-up become less important than the affective relationships, progress reports, or speculations the laboratories must make within a much larger political, moral, social, and economic structure. Scientific practice has transformed over the past few decades. Laboratories have not disappeared, but have rather become nodes within a much larger, more immaterial network of production. In a certain sense, the laboratory—as a space subsumed by capital when science and capital came to be indistinguishable from one another—must now be understood as the more ephemeral space of the global futures market and the spaces of the production and circulation of speculation and promissory visions. If one expands the boundaries of the biotech laboratory to correspond to the space of its capitalization or financialization, then the final product, a drug let’s say, finds its conditions of possibility, first of all, in the

“performative” creation of a promise to investors of a possible future. As Sunder Rajan explains:

The product of a genome company is the creation of (some form of) information that is in turn a condition of possibility for the creation of a drug. The conditions of its *own* possibility (and thereby the actual conditions of possibility of the drug) can only be created by the *performative* creation of the condition of possibility of the drug, that is, through a vision. This is, however, a vision whose realization is not communal but, in the first instances at least, the responsibility of the company. Further, while not contractual in a legal sense, this is a vision that functions as a direct plea to the investor to make possible its (possible) realization by investing capital in the company. This is why the promissory vision of the future creates the conditions of possibility for the existence of the company in the present.

While this does not guarantee the realization of the vision in the future, it is a necessary condition for such a realization. (Sunder Rajan 122)

Sunder Rajan rightly points out that the corporate visionary discourse is akin to a messianic discourse. This adds once again to the revised temporal processes of the lab—the early alchemical drive for the secrets of life have returned in the contemporary biotech industry as the search for not only the secrets to life, but for the ability to transform a vision itself into surplus.

Sunder Rajan after all began his fieldwork in a genetics laboratory, a move that made sense for an anthropological study of genetic sciences. However, as he reports anecdotally, he found himself immediately led to an encounter with an employee at GenBank, where DNA sequences were not only archived, but were also made available

to the scientific community as soon as they were coded. He tells this story as a way to introduce his entrance into the massively complex and overwhelming circuits and networks of biotechnology and its collusion with global capital, from the lab as a starting nodal point for the production of information to an entire global political economy of “life itself.”

While the fundamental material practice of rDNA technology requires labor within the space of a laboratory, a restricted view of the practices and processes within the laboratory is no longer sufficient. The lab has always been a point through which various forms of life and value have flowed, and the drive of the lab to maintain its public credibility, both for continued financial support, but also for the investments of the public’s interest in and acceptance of the work itself. As Latour has shown, in order for the lab to become such a powerful space, one able to change the entire social structure, a series of moves have to be made, translations and transpositions from the field to the lab, back to the field now transformed into a lab space of a sort, transforming external spaces into mobile spaces of scientific labor with the intent to convince the public through successful demonstrations that the claims being made about the discoveries or inventions are sound. In all of these movements in and out of the lab, the place remains a central point of focus, the essential and necessary place of production, with the support of the more political and social interactions merely to buttress the real determining, material process.

Sunder Rajan’s own experience, beginning in the lab, leads him to a recognition that the context of “labor” extends far beyond these architectural and built environments called “laboratories.” He writes, “The object of bioscience, the practice of bioscience,

and the locations of bioscience have all been changing rapidly over the past thirty years, and one of the major directions this change has taken has been toward more corporate forms and contexts of research.” He continues by claiming that “biotechnologies cannot simply be analyzed by studying them ‘within’ laboratories. Rather, all science needs, as Emily Martin (1998) has argued, to situate changes within scientific and technological worlds in larger social and cultural contexts” (Sunder Rajan 4).

Subtending these flights of fancy and financial teasers, however, are the laboring practices of bodies, inscription devices, and machinic assemblages in the laboratory. If the laboratory itself is an attempt to produce the conditions of possibility for the emergence of new biological forms, then that level of the biotech industry that operates through visions, through future promise, might perhaps be seen itself as furthering the "function" of the laboratory in a larger socio-political space. Latour analyzes the process that takes the lab out to the social, and then, conversely, brings the social back into the lab. This process, he claims, demonstrates the power of the laboratory, as a space of experimentation and empirical "proof," to enact such a powerful change in the social, so much so that Latour is not shy to proclaim that from the laboratory, one can change the world. This process for Latour relied on demonstration, on transplanting the laboratory conditions out into "field" where the product developed within the laboratory walls would eventually find its consumer.

The most productive spaces of production, then, move from the petrochemical factories into the spaces of invention and innovation, that is, the laboratory spaces which “had until then remained an area of basic science research” (Cooper 23). This very active production and reproduction of life, the production of the “new” new thing, and the

generative potential of the laboratory itself becomes intimately tied to the extraction of surplus value. Venture capital and financialization have become so integrated into the biotech industry as to become practically inseparable. As Cooper explains, “Here, it would seem, the financial markets have become the very generative condition of production, making it impossible to distinguish between the so-called economic fundamentals and the perils and promises of speculation.” This role of “promise” in production is central, and for Cooper is “the new fundamental of post-fordist production.” She explains that promise allows production to be forever flexible, and in a state of “self-transformation,” enabling it to respond to contingency, as well as anticipate and preempt possible “limits” to growth even before they have been actualized. This does not do away with mass production, of course, but has rather been “demoted as the principal source of surplus value and subsumed within a higher-order mode of production” (24). While Cooper’s analysis of the concomitant shifts in both the “spaces of production” as well as in the turn to financial modes is an important historical recognition for any contemporary reading of speculative discourse, I would add that the risk and financialization is precisely the “tone,” or “tense” of the space of the laboratory from the beginning mapped onto a larger social configuration.

### **UNCONSCIOUS TRACES OF THE FUTURE**

When the ooloi Nikanj seduces Lilith’s lover, Joseph, in spite of his spoken protest, Nikanj explains that “ ‘Your body said one thing. Your words said another’ ”(190). As Nikanj advances, Joseph finally relaxes and gives in to the seduction as Lilith makes this observation: “Lilith saw Joseph’s body stiffen, struggle, then relax, and she

knew Nikanj had read him correctly” (190). The Oankali make sexual advances on otherwise unwilling humans, treating the human body as a self-guided network—much like the discourse on immunology diagnosed by Haraway, as well as the neoliberalist insistence on the self-regulation of a free market—to the exclusion of the self-possessed subject of symbolic communication. Thus, the violence made possible is of another, much more complicated kind; it is a forced healing, or a coercion into pleasure (which is not to say an absence of violence). One way that these forced moments of pleasure are made possible is through “drugs” produced by the ooloi genetic engineers to calm and subdue the human partner into submission. Yet these unions did not always go so smoothly, as is evident from a following scene where another survivor revolts against his ooloi, inadvertently triggering the ooloi’s automated self defense that delivers a fatal sting.

[T]he ooloi-produced drugs could be potent. Under their influence, Peter might have laughed at anything. Under their influence, he accepted union and pleasure. When that influence was allowed to wane and Peter began to think, he apparently decided he had been humiliated and enslaved. The drug seemed to him to be not a less painful way of getting used to frightening nonhumans, but a way of turning him against himself, causing him to demean himself in alien perversions. His humanity was profaned. His manhood was taken away. (192).

Thus, the return to a type of masculinist subject position (most commonly read to be the target of attack in *Xenogenesis*) here functions as a position antagonistic to the forced assimilation to the Oankali system. This insistence on the language of the body as a type of primary truth that trumps one’s own self-image and symbolic self-expression gives rise

to a very problematic disregard for the important role played by the relation between an expression of “self” (the control over one’s own subjective totalization) and the biological body. Along these lines, in her reading of “immune power,” Haraway considers a future looking discursive mode as an ambiguous terrain for contests of power that anticipate her reading of *Xenogenesis*. At the end of the same essay “ ‘Imaging’ or ‘visualization,’ ” she writes, “has also become part of therapeutic practice in both self-help and clinical settings, and here the contradictory possibilities and potent ambiguities over biomedical technology, body, self, and other emerge poignantly” (225).

The Oankali have the ability to read the networked structures of the human body itself—that is, read the whole range of information that composes the individuating body, and thus act on the human in ways that counter what one may expressly say they want. The ooloi control human actions without much consequence through an apparent *a fortiori* justification—much like, one could point out, the justifications for either unilateral or multilateral humanitarian interventions at a global scale. Thus, Butler here imagines precisely the type of control shown at a “micro” scale of non-discursive technical interaction between bodies in which the “individual” is treated (at one and the same time) like an individual and a collective, thus figuring at the level of the human body the processes of control the ooloi exert at the largest systemic level.

Humans thought the ooloi were promising that they would do nothing until the Humans said they had changed their minds—told the ooloi with their mouths, in words. But the ooloi perceived all that a living being said—all words, all gestures, and a vast array of other internal and external bodily responses. Ooloi absorbed everything and acted according to whatever consensus they discovered. Thus

ooloi treated individuals as they treated groups of beings. They sought a consensus. If there was none, it meant the being was confused, ignorant, frightened, or in some other way not yet able to see its own best interests. The ooloi gave information and perhaps calmness until they could perceive a consensus. Then they acted. (553)

The processes of control described above so efficiently manipulate the economies of bodily desire that, after all is said and done, the victim never once had a say in the matter. There is no need in this arrangement for the discursive acceptance of the hegemonic interest. Rather, the non-discursive systems of bodily organization and production become the sole focus of the ooloi who disregard the discursive utterance or actions of the human. Additionally, and quite importantly for my consideration of biocapital, “decisions” regarding the human and their best interests are only made after the ooloi have themselves created a totalized image of the human. The “consensus” of the body as a totalized image of body-as-network is not only produced by the ooloi alone, it also fails to take into account the self-image that the humans may have already created for themselves.

The difference here between a hegemonic or interpellative action and control can be seen in three different actions on the part of the ooloi. One is the attention given to the non-subjective and non-discursive “system” to be controlled. The ooloi “perceived all that a living being said.” But the ooloi understand speaking to mean more than simply articulated linguistic statements; not just “all words,” but also “all gestures, and a vast array of other internal and external bodily responses.” The ooloi “absorbed everything,” and retained all information, present and past, in anticipation for how to proceed. Ooloi

forms of control, in other words, involve registering the full complex range of expression (the discursive as much as the non-discursive), while at the same time disregarding the discursive as supplementary, a prosthetic addition that is not involved in the “true” will of the already simply living body of the human as organism. Secondly, the ooloi “gave information” to the living being, information that we’ve seen to be verbal, gestural, or even chemical (as in the form of the ooloi-produced drugs). In this sense, the introduction of more information into an already complicated or “confused” network seems contradictory in that one would expect there only to be an increased proliferation of the already catalogued responses. Yet the ability of the ooloi to perceive the entirety of the responses in a body (much like the computer is used to collect and process what would be an overwhelming quantity of information for the human), and to produce their own a “consensus,” is precisely what allows the ooloi to manage and control the processes of an interaction. Finally, they give “calmness” through first constructing and then managing the place of interaction. While *Xenogenesis* leaves the ethics of these issues undecided, the production of consensus of the body, not only justifies the ooloi’s disregard for what the human’s expresses through words as their wants and desires, but also captures human subjects through definitive interpretations of the non-discursive, visceral reactions of the human.

### **A PSYCHOANALYSIS OF THE FUTURE?**

While postmodern theories embraced the fluid and amorphous processes of constant subjective transformation, the critics of neoliberalism that I have cited above show how neoliberal capitalism functions most effectively and efficiently through

initiating and maintaining these processes of desubjectification. Before turning to a reading of *Imago*, which will conclude this chapter, I would like to consider Constance Penley and Andrew Ross' *Social Text* interview with Donna Haraway, "Cyborgs at Large: Interview with Donna Haraway." The interview is crucial for my reading of *Imago*, as well as for the critique of a certain type of cybernetic utopianism, or postmodern subjectless process. Most important will be the question raised in the interview concerning the relationship between the cyborg and psychoanalysis. Haraway's relationship to psychoanalysis is raised as one central issue for which the interviewers take Haraway to task. When Penley asserts that the cyborg "wants to have no truck with anything as nineteenth-century and archaic as the unconscious." Haraway responds:

Well, I think that might have been true in 1985; I was more of a fundamentalist about psychoanalysis than I am now, partly having been worn down by all my psychoanalytic buddies. (laughs) But my resistance to psychoanalysis is very much like my resistance to the Church. I really think I've been vaccinated.

Precisely because of understanding the power of a truly totalizing dogma that can include all stories, and my sense that the psychoanalytic narratives as they have been developed in the human sciences and in feminism, have a potential that I recognize with my vaccinated soul... (14)

This conversion to a type of psychoanalysis anticipates the shift in the conversation to Haraway's understanding of the role of dogmatic stories (the power of Oedipus), and of the unconscious. She explains that her "hostility" to Oedipal narratives was a result of being "*too convinced*" of their power. Being "*too convinced*," I would say, was the lock on the tool cabinet that kept Haraway from realizing the potential to inhabit and produce

within these otherwise imposed structures. She characterizes her altered relationship to psychoanalysis as the problem:

of being in the belly of the monster and looking for another story to tell, say, about some kind of creature with an unconscious that can nonetheless produce the unexpected, that can trip you, or trick you. Can you come up with an unconscious that escapes the familial narratives; or that exceeds the familial narratives; or that poses the familial narratives as local stories, while recognizing that there are other histories to be told about the structuring of the unconscious, both on personal and collective levels.

Rather than exhuming the unconscious (she admits that “the ’85 cyborg is a little flat, she doesn’t have much of an unconscious”), or shattering the subject, Haraway instead calls to a kind of psychoanalytic theory (here, it seems, she’s not referring to the practice) that would function much differently than the “cannibalizing” psychoanalytic discourses she claims came before. She continues:

The figures that we've used to structure our accounts of the unconscious so far are much too conservative, much too heterosexist, much too familial, much too exclusive. Much too restricted, also, to a particular moment in the acquisition of language; I think there are many kinds of acquisition of language throughout life; coming into history in different ways that isn't the same thing as coming into the familial. This all sounds very utopian, but I end up wanting a psychoanalytic practice—which I don't do myself—that recognizes the very local and partial quality of the Oedipal stories. (14)

Penley brings Octavia Butler into their discussion of psychoanalysis, recognizing that Butler's fiction is often used by Haraway as a preeminent example of a "new order of difference" that produces a "subjectivity that's hybridized, mixed, and plural, rather than split." To which Haraway replies simply, "That's exactly right." But when pressed about the importance of the "split subject" in psychoanalytic accounts of race, Haraway changes her tune. She agrees that one needs a concept of splitting, but criticizes the psychoanalytic treatments of race and sex for precisely their limitations to imagine an "account of any set of differences that work other than by twos simultaneously," which leads her to claim that, "Our images of splitting are too impoverished" (16). Haraway ends the discussion on psychoanalysis, before moving to another topic, by venting an issue with Butler, while also recognizing the important contributions that Butler's fiction might in fact make regarding these matters.

Octavia Butler is a very frustrating writer in some ways, because she constantly reproduces heterosexuality even in her poly-gendered species. But I am drawn to the "non-originality" of her characters: as diasporic people, they can't go back to an original that never existed for them, and therefore they are not embedded in the system of kinship as theorized by Freud and Lévi-Strauss. Too much of Anglo feminist theory has started out from Freud, Lévi-Strauss, and Lacan. And I think that's unfortunate. (16-7)

To bring the summary of this conversation to an end, I will return to perhaps the most cogent and incisive moment of the conversation—and a point of critique by Penley and Ross that resonates with all of these questions of race, sex, and psychoanalysis. Having already been taken to task for her removal of any trace of Oedipus from the cyborg,

Penley suggests that removing the Oedipal and the unconscious might have other crucial implications:

CP: Well, it doesn't have the unconscious of the Oedipal stories because you've removed that. But, perhaps too it doesn't have that which in the unconscious resists...

DH: and that's a bigger problem...

CP: precisely the imposition of those Oedipal narratives...

DH: In some ways, I tried to address this in my notion of "situated knowledge" which, with the Coyote, brings in another set of story cycles, where there is a resistance and a trickster, producing the opposite of - or something other than - what you thought you meant. Some kind of operator that tricks you, which is what I suppose the unconscious does...

CP: Maybe a trickster cyborg!

DH: Something like that

Haraway's interjection into Penley's critique should be noted, for it seems a nerve was struck. The "bigger problem" with removing a concept of the unconscious, or insisting on an unstructured subjectivity is the loss of resistance to "precisely the imposition of those Oedipal narratives"(15). So rather than jettisoning entirely the apparatus of psychoanalysis, Haraway suggests that it is the field of these narrative cycles, of the personal and collective images, that remains the task for a psychoanalysis yet to come. It seems to me that throughout the interview, Haraway begins to collect the scraps for that "utopian" sounding desire for "psychoanalysis" that she herself does not do. Octavia Butler's fiction is not simply one place where one might look for a type of

psychoanalysis that Haraway might support, but rather seems to be an exemplary case; after all, it was the only example given. Along with the archaeologies and anthropologies whose practitioners have turned their gaze, could it be the case that Haraway was calling for a psychoanalysis of the future?

## ***IMAGO***

**Volume title** An imago is (i) in biology an insect in its sexually mature adult stage after (final) metamorphosis, in winged species able to fly; the plural is ‘imagines’ [i-ma-gin-ēs]; (ii) in post-/ Freudian psychology, an idealised image of someone, typically a parent, persisting into adulthood to influence behaviour; and (iii) in Jungian psychology, an archetype, a pattern of the collective unconscious, from whence (iv) in literary theory, an archetype, a pattern so widely disseminated in texts as to be considered a universal element or form.

**Dedication Irie Isaacs** The song ‘Feeling Irie’ by Jamaican reggaeman Gregory Isaacs (b. 1951) was not released until several years after *Imago* was published, though it is conceivable he is meant. Irrespective of actual identity, the name has a frisson: Irie is a Rastafarian-Jamaican patois term, perhaps from ‘I Respect I Eternally’, subject to variant definitions, including (i) respect, in the fullest sense, (ii) a state of rightness, (iii) being high on marijuana (considered a form of communion), and (iv) simple approval or endorsement. Isaacs is a Jewish name (Hebrew, ‘laughter’) but biblically associated with God’s demand for sacrifice, so Irie Isaacs summons Rastafarianism and Judaism, their respective histories and resonances in slavery, endurance, coming transformation, and diasporic survival.

-Lennard, John. *Reading Octavia E. Butler*

Octavia Butler was a trickster wordsmith. *Xenogenesis* is populated with allusions that evidence her deliberate and calculated choice of character names, the names of cities, as well as chapter and book titles. Part of her literary genetic engineering involves this cutting and splicing of historical and mythical materials whose transformed symbolic

connotations became generative forces in the trilogy's narrative.<sup>41</sup> The final novel of Butler's trilogy, *Imago*, is a particularly interesting case of the important function that symbols and archetypal figures play in *Xenogenesis*. John Lennard's detailed and meticulous annotations for the trilogy, cited above, unravel the multiple threads woven into simply the title and dedication (to an imaginary figure), which more directly impress this front matter into the coded field of her novel.

The final novel of the trilogy is told from the first person perspective of Jodahs, the first human-Oankali construct ooloi. This new construct has such transformative power that it often causes mutations in the living beings around it, as well as within itself. After its struggle to find a place in the town of Lo, Jodahs is cast into the uninhabited forests of the Amazon basin as a type of precautionary measure against the unintended consequences of the unconscious transformations occurring in itself and, through Jodahs, the world around it. Learning to eventually control aspects of its ability, Jodahs requires contact with other beings so as to retain its form. It explains that, "I can change myself...But it's an effort. And it doesn't last. It's easier to do as water does: allow myself to be contained, and take on the shape of my containers" (612). Left to its own devices in the absence of a social relation, the body of the construct ooloi will by necessity, it seems, move towards its own death. Jodahs' sibling Aoor, a construct ooloi as well, makes visible the tendency of the ooloi construct's body by transforming into a living state (a type of "slug") just short of completely dispersing its organic material out into the wider world.

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<sup>41</sup> As Cathy Peppers has shown, *Xenogenesis* is a mash-up of Christian mythology, American slave narratives, sociobiological, eugenic, and symbiogenenic discourses.

It had no control of itself, but like a rock rolling downhill, it had inertia. Its body “wanted” to be less and less complex. If it had stayed unattended in the water for much longer, it would have begun to break down completely—individual cells each with its own seed of life, its own Oankali organelle. These might live for a while as single-cell organisms or invade the bodies of larger creatures at once, but Aaor as an individual would be gone. In a way, then, Aaor’s body was trying to commit suicide. I had never heard of any carrier of the Oankali organism doing such a thing. We treasured life. (682)

Yet this “treasuring” of life, in the case of a melding of human and Oankali in the figure of the ooloi medium, becomes, as Butler suggests, untenable in the absence of the structure provided by social relations. With this new level of possibility for bodily transformation, *Imago* presents the continual transformation, and the fluidity of bodies as precisely the danger of a total and irrecoverable loss of not only the “individual” as named, but also the biological body.

The solution to this dilemma, central to the novel, is found in a discovery by Jodahs of fully human siblings in the jungle. The brother and sister, Tomás and Jesusa, explain that they were raised in a town begun by a human woman who, despite the wholesale sterilization of human survivors by the Oankali, had through error or lucky mutation remained able to reproduce. Thus, the society was established through the mother giving birth to a son, who in turn incestuously fathered his own siblings so as to continue the human race.

This reunion of a humanity who had miraculously retained its own reproductive freedom, unbeknownst to the Oankali-human communities, is played out by the

encounter between Jodahs and these siblings. Their meeting replays, though in a different manner, the fraught and ethically ambiguous first encounters between these two species. Because of their incestuous inbreeding, Jesusa and Tomás (as with their town in general) suffer from genetic defects that populate their bodies with cancerous growths. These congenital defects, such as blinding, immobility, pain, and so on, while not fatal, significantly impact the lives of these humans. The encounter and subsequent romance of these three figures becomes a mutually beneficial exchange (in more apparent ways than the so-called beneficial “trade” at the beginning of the trilogy). Jodahs needs the pair of siblings to continue to exist as Jodahs; the siblings need the ability of Jodahs to heal and control their genetically unstable bodies. In previous novels, humans were given as problematically essentialist, refusing to enter into the genetic trade with the Oankali, and holding on to a static species identity. At the end of the second novel—seemingly taxing Butler’s own sense for how to resolve the Oankali penchant for difference and the human resolution to the one—the humans are given the planet Mars as the place to continue life as untarnished human. This original humanity, transported to an entirely different world and practically forgotten, surprisingly returns at the end of the trilogy as a salvational figure for Jodahs who would dissolve without the stability of the human pair.

As partners, the issue of the sibling pair entering into a sexual and reproductive relationship is noted in passing by Jodahs—“Brother? Not mate—or husband, as the Humans would say” (621)—and becomes a question as well for the siblings who would themselves become lovers. Jesusa and Tomás agree with one another to accept the partnership, which offered a more desirable option than having to be paired—within the small community’s economy of kinship—with the villagers they assumed would be their

mates. Yet the realization that they would be, through the neutral ooloi medium, having children with one another takes Jesusa off guard. “‘You’ve known Human beings all your life,’ she said. ‘But we’ve never known anyone like you. And ... you want me to have children with my brother?’” This initial moment of concern, however, leads to a sex scene that further demonstrates the ooloi’s role as medium, as well as eases the siblings’ concern. Through sharing the body of Jodahs, Jesusa loves Tomás:

I took their hands, rested each of them on one of my thighs so that I would not have to maintain a grip. I linked into their nervous systems and brought them together as though they were touching one another. It was not illusion. They were in contact through me. Then I gave them a bit of illusion. I “vanished” for them. For a moment, they were together, holding one another. There was no one between them.

By the time Jesusa finished her scream of surprise, I was “back,” and more exhausted than ever. I let them go and lay down. (621)

Within this loving partnership, Jesusa and Tomás discover that, pairing with Jodahs, their direct contact becomes not only undesirable, but physically difficult. Yet, with Jodahs as medium, Jesusa and Tomás are given the “illusion” of an unmediated and loving contact. *Imago* ends with the union of the rediscovered human with the construct ooloi—a subjective medium made possible through the indistinction between human and Oankali. In the final scene of the trilogy, Jodahs plants a seed that will grow to be the living village of a new Oankali-human civilization.

I am now in a position to return to the beginning of this section, and work through the imago that Butler offers to close her lengthy experimentation with the human and

Oankali throughout *Xenogenesis*. I have already mentioned the Biblical connotations to the name Jodahs/Judas, though the sibling lovers are perhaps even more strikingly and heretically engineered with the pieces of Christian mythology: Jesusa as the feminization of the Christian savior; Tomás the doubter of the resurrection until seeing the proof with his own eyes. Both names are importantly transposed into their Latin American counterpart, bringing to mind the origins of the New World through Spanish conquest, and drastically reframing that originary moment. Beyond a colonial relationship, the encounter is presented as one of an alien appearance that made visible and reproductively sustainable the loving relationship between a brother and a sister. The challenge to the universal incest taboo produces a new origin, a new primal scene pointing towards what might be, which gives substance to Haraway's own utopian desires for a psychoanalysis of the future. Furthermore, Haraway's critique of psychoanalysis as limited in its images for splitting finds in Butler's incestuous trio a possible alternative.

There is one final structuring logic to Butler's trilogy that I would like to consider—the structure of the imago itself. As quoted above, imago refers to both a biological process of metamorphosis, as well as a concept in psychoanalysis and literary theory. In psychoanalytic theory, for Jung, the “imago” was the image that gave shape to a pattern for the collective unconscious. In fact, the “imago” was Jung's explicit attempt to rewrite the Freudian “complex.” In biological discourse, imago designates the final stage of an insect's metamorphosis (winged or otherwise), and thus marks the arrival at sexual maturity and adulthood. This biological reference is an explicit structuring principle for Butler's characters, who proceed through three stages of metamorphosis before reaching sexual maturity, though also maps the structure of the trilogy as a whole,

the final novel being the “imago” of the historical process of Oankali-human miscegenation. The final stage is then, as in the insect, marked by the achievement of a final state at the end of a process—in this case both Jodahs as construct ooloi, and the partnership Jesusa-Jodahs-Tomás. In biological discourse, the imago stage is a period that lasts long enough for the mature insect to lay its eggs before dying, and thus marks the end of a living, bodily transformation.

There is, however, another use of the word in psychoanalytic discourse, and that is Lacan’s use of “imago” in his description of the “mirror stage” as that moment when the body of the child is recognized within a much larger field as (incorrectly) whole, self-affected, and individuated. Thus, in contrast to the imago of the insect, Lacan’s imago launches one into language, into that moment of subjectivity that, ostensibly, will be carried with one as subject throughout the course of their life. I offer Butler’s imago here as the “amphibious” concept which echoes Haraway’s own utopian desire for a psychoanalysis of the future. Unlike Jameson’s future trace and past utopian impulse, Butler’s imago manifests the approach from both “ends of time” at one and the same time.

## CHAPTER FOUR:

### Ridley Scott's *Prometheus*: The Ambiguous Place of Labor and the Global Laboratory

#### INTRODUCTION

In a May 2<sup>nd</sup>, 2012 interview with director Ridley Scott—anticipating the June release of his upcoming *Alien* franchise salvaging prequel, *Prometheus*—Denis Overbye relates that “Mr. Scott described [*Prometheus*] as ‘*2001* on steroids.’ He said he liked Stanley Kubrick’s notion of ‘a police agency in the universe that will give a ball of dirt a kick.’ ‘God doesn’t hate us,’ Mr. Scott added ominously. ‘But God could be disappointed in us — like children’” (Overbye). The reference to Kubrick’s *2001* immediately suggests that Scott’s film raises similar questions, such as the origin of the human and humanity’s relationship to technology. The qualifier, “On steroids,” clues one in to how Scott understands how his film revises Kubrick’s—that is, *Prometheus* recreates *2001*, as steroids modify by intensifying biological processes in the body. I will begin this chapter, then, with a close reading of the two opening scenes of these two films to show how Scott extends the question of anthropogenesis and technogenesis to a more immanent field appropriate to that of biocapital.

This more immanent field is nevertheless populated with transcendent symbols that capture the desire to know human origins within a theological and anthropocentric register. This is seen even in Scott’s descriptions of the film above; he lists as influences the idea of a “police agency” in the universe and the idea of a God who could be “disappointed” in humanity. Thus the film’s narrative is driven forward by this

disconnect or clash between the immanence of microbiological processes (steroids), and the transcendence of a directing force (police agency, God). The film considers the material immanence of human origins even while it suggests that the human was in fact “engineered” by an alien species. This contradiction will remain unresolved. Even so, reworking the myth of Prometheus, and injecting it with “steroids,” allows for moments in the film that might be seen to displace the contradiction altogether between the human and its technology.

### ***2001***

Kubrick’s *2001: A Space Odyssey* begins with a Prelude. A black screen is shown for close to three minutes as highly dissonant orchestral sounds produce a composition of formlessness or chaos. I will refer to this musical score, for clarity’s sake, as chaos music. As the prelude ends, Richard Strauss’ “Thus Spoke Zarathustra” begins with the opening shot. From a vantage point beyond the moon—whose black semicircular shape covers most of the field of the frame—the spark of light from the sun (famously punctuated by the gropingly triumphant opening chord of Strauss’ tone poem) emerges in the distance at just the moment the faint outline of the Earth becomes visible. The long take continues to record the path of the sun as the moon shifts out of view. As the full solar circle becomes visible above the Earth, the planet’s sun-lit crescent shape only alludes to its spherical form. While this originary moment of creation is visually in step with Strauss’ piece, the visual structure will be separated from the tone poem, both of which will be repeated at different moments in the first full scene whose intention is explicitly named by its title credit, “The Dawn of Man.”

From the emergence of life more abstractly, Kubrick stages the origins of the human species by reconfiguring the chaos music from the Prelude and the elements of the opening shot mentioned above in two distinct moments. Leading up to the first moment, the otherwise idyllic lives of apes are ruptured by the sudden appearance of the alien monolith. The psychic function of this mysterious symbol is made clear through the shot that ends the encounter between the apes and monolith. This shot mirrors the opening shot of the solar system by repeating its structure in reverse, this time from the perspective of the proto-human primate looking up at the monolith from its base. The monolith, metaphorically taking the place of the Earth from the opening shot, now occupies the majority of the frame. The sun is shown rising just above with the crescent moon in the distance (the arch of the crescent now facing down). During this encounter, one might expect the echoed shot to be matched with Strauss' tone poem so as to signify the birth of the human. Instead, the chaos music plays throughout the encounter. It would seem, then, that the birth has not yet taken place, even while, paradoxically, the conditions (visually at any rate) have been established for the emergence. Whereas the moment of creation in the opening shot is continuous, the monolith shot—beginning as a long shot of the frightened primates approaching the mysterious object—is punctuated with a cut to a first person shot from the perspective of an ape.

The monolith shot is followed by a sequence of long shots of the open desert, and then a return to the scavenging apes. The camera centers on one in particular, surrounded by the skeletal remains of an anteater (an animal who had been living freely alongside the apes). “Zarathustra” begins to play for the second time in the film, echoing the creation of the solar system. Importantly, the tone poem begins just as the film cuts once again to the

monolith shot, as if this image itself cued, and shares a deep affinity with, the musical piece. This brief and almost subliminal cut to the monolith shot—a shot, it should be stressed, from the perspective of the ape—suggests that the flash be read as the flash of a memory of the first encounter. The return to Strauss’ tone poem signals the process of the “Birth of Man” alluded to in the title of the scene. As opposed to the first encounter with the monolith, which based on the use of the music from the prelude asks to be understood as pre-creation, Kubrick places the shot of the first encounter in a new context. The ape centered in the shot takes a femur into its hands: the first tool. “Zarathustra” continues its gradual build as the ape, now becoming Man, taps the femur on the bones surrounding him. The intentionality of this tentative tapping with the tool continues to become more coherent in tandem with the music. As the violence of the strikes upon the bones of the anteater intensifies, Kubrick cuts in shots of the living animal falling to the ground, thus indicating the growing awareness of the bone as a weapon for hunting.

Thus, the film argues that “The Dawn of Man” involved, first, the animal body, followed by the first encounter with an alien symbol of the whole, which only later sparks the “Birth of Man” as tool-bearing hunter through the repetition of a memory of the monolith as itself a sort of tool for thought. This presentation of the origin, then, is given through a sequence of individuation that requires, only at the end, the simultaneous collusion of the animal, the monolith, memory, and tool/weapon. The figure of technology is given through the instrumental use of the bones of a once living past—using the remains of the dead becomes technology. This is made explicit through exploiting the effects of a graphic match as a cut is made between a femur thrown into

the air by the primate and a satellite, itself mirroring the shape of the bone, orbiting the Earth.

The human emerges, according to the film, in two moves: first, through the emergence of a symbol—an imago—produced in the mind of the primate through the encounter with an alien mystery; second, through the repetition of this first encounter in memory as the condition of possibility for technology as both tool and weapon, which marks the definitive and fraught conclusion to “The Dawn of Man.” Redrawing this argument, Kubrick’s claim would be that the origins of Man are first theological, mental, or spiritual (the alien monolith—the imago), and only secondly technological, given as the repetition of the mental origin as the source or condition of possibility for the production of tools and weapons. Technology, coming here logically second, is taken to be a supplement or prosthetic addition to the human while still, paradoxically, involved in the essence of the human. While I think the concept of technology as the “bones of past living” is profoundly important, I will show why this split between the theological and the technological poses problems that (as in *2001*) both motivate a desire to discover the “truth” of human origins (embodied by the monolith), while simultaneously barring the human from this knowledge (the reason for the monolith). This reading of *2001* anticipates in several ways the work of French philosopher of technics Bernard Stiegler. Particularly relevant for my dissertation is his reading of the (mis)conceptions of the myth of Prometheus that I will address in the following section before turning to the opening scene of *Prometheus* as a revision of Kubrick.

## THE MYTH OF PROMETHEUS

In the first of his three part *Technics and Time*, a volume titled *The Fault of Epimetheus*, Bernard Stiegler turns to the myth of Prometheus after a lengthy discussion of technical evolution and anthropology in which, much like my reading of *2001*, he attempts to disclose an implicit anthropocentrism in conceptions of the technical. At the beginning of his critique of French anthropologist and theorist of technology André Leroi-Gourhan, Stiegler explains that “The prevailing understandings of contemporary technics, caught up in the workings of oppositions inherited from metaphysics, are by the same token hampered by the false alternative of anthropocentrism and technocentrism—and are reduced to opposing the human and the technical” (Stiegler 95). Stiegler shows that, even despite Leroi-Gourhan’s best intentions, a metaphysics resurfaces when Leroi-Gourhan splits the origin of the human into two moments. The “first origin” of the human is the more spiritual acquisition of a proto-symbolic, yet nevertheless coded, form of communication (which, for Stiegler, is technics, yet remains ambiguously proto-technical and spiritually human in Leroi-Gourhan). Stiegler seeks to posit one moment that should be understood at the co-origin of the human and human technics. This is the moment of the exteriorization of the human into technical objects (into non-organic yet organized structures). Thus, in my reading of *2001*, for example, Kubrick’s recasting of the origin myth splits the origins of the human between the sudden appearance of the monolith as the catalyst for a type of “proto-symbolic” form of the human. The “second origin” of the human, for both Leroi-Gourhan and Kubrick, comes from the acquisition of the tool (first given by the freeing of the hands as tool). Kubrick’s own “second origin” remains problematic in that the “first origin” of the monolith flashes momentarily on the screen

just before the acquisition of the bone as tool, and thus, as in Leroi-Gourhan, places this proto-symbolic object as a type of metaphysical (alien) precursor to the fully technical human. At the start of part two of *Technics and Time*—which begins his discussion of the Prometheus myth—Stiegler summarizes his critique of Leroi-Gourhan’s conception of a two part human origin:

Leroi-Gourhan appears to say that exteriorization precedes socialization, but then he proceeds to identify them. In the same move, he remains ambiguous concerning the relation between language and technics, both maintaining that the one implies the other and returning to a metaphysical position with the hypothesis that true (spiritual) language can become free of (the) motricity (of technicity).  
(Stiegler 185)

The freeing of a truly originary or spiritual symbolism (as a return to a pure origin, so to speak) seems to be Kubrick’s answer as well (via Arthur C. Clarke) to the inherent problem of the collapse between tool and weapon (arising in a type of technoparanoia of a technology, HAL, that has now taken control of the human). In order to strengthen his case against Leroi-Gourhan as well as his claim for the co-origin of technics and the human, Stiegler returns to what he takes to be the origin of this misconception—the myth of Prometheus as the bringing of technicity (as fire) to humanity.

As a central motif in the history and philosophy of science and technology, Stiegler turns to the myth of Prometheus as a way to reconceptualize the relation between anthropogenesis and technogenesis as one of co-origin, rather than the common understanding of the technical as prosthesis, or merely an addition to the already (spiritual) human-animal. With a closer consideration of the myth of Prometheus—the

origin of the West's conception of technology—Stiegler attempts to show that the interpretations of the myth (as the source for the West's mis/conceptions of technics) forget the crucial role of Epimetheus, Prometheus's brother, in the story. In his rereading of the myth of Prometheus Stiegler attempts to restore Epimetheus to the subsequent Western conceptions of technicity. Stiegler argues that a reintroduction of the forgotten Epimetheus provides the necessary corrective for our understanding of human technicity, and thus our understanding of the originary relationship between technology and the human.

As Stiegler retells the story, Zeus (after creating the world and its beings in their essence) left it to Prometheus to distribute qualities to all creatures on the Earth. Epimetheus, however, begs Prometheus to allow him to assign the qualities, which Prometheus allows him to do. The sum total of qualities, however, is limited, and when Epimetheus finishes distributing every last one, he realizes that he has forgotten to allot any at all to humankind. In order to solve the problem, Prometheus steals fire from Zeus, and gives it to humanity in compensation for the forgetfulness of his brother. This latter element of the narrative, the fact that "fire" as technicity is added to the human after the fact is generally how the ontology of technology is understood. However, Stieger argues that this understanding is only possible if one "forgets" the beginning, or "forgets" what happened with Epimetheus. This myth is, one must remember, an origin myth intended to explain the origin of being, the ontological origin, of all things. The ascription of qualities for all things was a task designated by Zeus as the precondition, the fundamental operation or necessary supposition of existence itself. So one must not think of all living things as somehow existing before they were given qualities; the ascription of qualities

(the myth explains) was the very act that constituted the living existence of beings. It is what, in the thing that existed, made the thing “be” in the first instance. The designation of quality was what supposed or constituted being itself. Therefore, it makes no sense to speak of a “human” that existed before technicity, for if technicity (in this case Prometheus’ gift of fire), is the “quality” of the human according to the story of Epimetheus, it is the very giving of this “quality” (technicity) that constitutes, in an originary way, the being of the human. Stiegler’s claim is that the human and technicity are co-originary.

One of the central and more provocative claims that this allows Stiegler to make is that Anthropology and Technology (that is the study of humanity and the study of technics) are one and the same thing. The study of human origins runs into trouble, or is led astray through its separation from, or its forgetting of, the technicity at the very origin of the human. Forgetting this co-origin while attempting to discover the ontological (as a mask for the metaphysical) truth of the human (that is, attempting to determine what it is about the human that makes it so human) by repressing or forgetting technicity is the foundational “fault” at the very center or origin of anthropology. Restoring technicity to its co-originary position, then, allows for a reconsideration of the relationship between the human and technics more appropriate to the analysis of the contemporary world.

In terms of the trajectory of my dissertation, I am now in a position to ask, are the texts that I’ve considered thus far guilty of the forgetting of Epimetheus? In other words, is the “fault” of Epimetheus at play in *Frankenstein*, and *Moreau*? (*Xenogenesis* is perhaps another matter.) And if so, then how is it expressed? What are the consequences? In both of these novels, the co-origin of the human and technology is given or made

visible (the creature is produced by Frankenstein in and through the laboratory use of technology), only to be shutdown, foreclosed, or repressed. These stories work paradoxically by positing the human as a being that is co-originally technical and anthropological, though only as cautionary tales against actually believing it to be true. These tales, in that they are presented as tales of horror, push the reader to reject the postulation of humanity's co-origin, as if acting under this very assumption leads to turmoil and ruin. *Frankenstein* and *Moreau* in a sense say to their readers: here is what you are, now resist being it. Or to put this another way, the narratives say to readers, here is what you desire (to act on the presupposition that the human and technicity are co-originary, a very awe-inspiring and potentially dangerous recognition), now restrict yourself from acting on it.

### **“2001 ON STEROIDS”**

I would now like to show how Ridley Scott revises Kubrick's framing essay on the figure of the human in his own opening scene to *Prometheus*. The film begins with a sweeping aerial sequence of a world that appears to be barren, with no signs of flora or fauna. Yet the waterways that have cut through the lifeless terrain begin to take on the appearance of bodily viscera, the veins of a world lying in wait for a transfusion of life. In contrast to Kubrick, the opening sequence, even though soaring above the terrain, is nevertheless confined to the planet itself. On the precipice of a majestic and spectacular waterfall, we see a human figure clad in a monkish robe. A massive disk floats in the distance as we watch the robed creature make its way to the edge of the torrential flow of water. The shot tightens to the figure's face, peering up to the space ship from where, it is

assumed, the figure came. Disrobing, we see that it is human, yet the hue of white marble (porcelain-like in its appearance) and exaggerated in size. The body appears to have been chiseled by a master sculptor—the ideal human yet unmistakably alien. As the alien removes a small ornamental bowl, he moves through the methodical acts of a ritual or ceremony, yet one whose purpose or meaning remains unclear. He moves with steady deliberation, his actions infused with an intensity of veiled meaning, yet his somber sobriety suggests a moment of homage or sacrifice. Watched by the space ship above, the now crouched figure proceeds to open the container, lifting its contents to his lips as, in the distance, the ship departs.

His torso now framed by the shot, the alien sighs deeply as his skin begins to crack and fissure. He lurches, doubling over in what appears to be pain. The exterior of the idealized human form continues to split, cuing the movement of the shot into the creature's own body, zooming in like a surgical scope. This more microscopic perspective soars through the figure's veins, which mirror the river-cut surface of the world, while the pulsing surge of the body's interior processes overpower the roar of the waterfall without. The flight into the body is matched by the constant zoom to an even smaller scale, the shot pausing on a strand of DNA whose structure appears to weaken and then rupture. Instantly, we are back again to the full body, which now snaps back violently as the interior breaches the skin in an explosive spray of blood and viscera. The disintegration continues as the body tumbles over into the waterfall and plunges, now in an irreversible state of decay, into the pool below. Sinking under the water, the body continues to liquefy, the organic codes—the building blocks of life—breaking down into a now decoded flow of organic, chemical matter as the ghost-like image of a human face

dissolves into the water. Microscoping back in, the shot returns to show the bioinformation beginning to reform, building up once again the code of life. This process leads to the production of a cell—the protective self-built enclosure of DNA—allowing for the processes of growth and reproduction. As if in a Petri dish, cells begin to divide and populate the frame as life takes hold in the otherwise barren world. Exploded out into the vast waters, this planet itself becomes the laboratory of these alien “Engineers” for the production and invention of new life (which the viewer is led to believe will evolve to human life).<sup>42</sup> The scene ends with the emergence and replication of what appear to be the eukaryotic cells of advanced organisms as the film’s title materializes onto the foreground.

With the dissolution of the “ideal” human body, and the departure of the saucer, what remains is the radically decoded and deterritorialized organic material of the body that gradually recombines and reasserts itself as DNA. This perseverance of DNA acts as a stand-in for the monolith of *2001* in the sense that what is left as a symbol or sign of a possible metaphysical truth of the human is not monolithic, but rather complexly patterned. The homogenous and uniformed consistency of the perfectly machined monolith is replaced by a highly complex networked, biochemical structure that was sown onto the Earth by the alien engineers of humanity. The protagonists after all speak about the “Engineers” of humanity, and shift the rupture of the metaphysical back to the emergence of DNA itself, taken to be both the genetically engineered product of the

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<sup>42</sup> It is worth noting here that H.G. Wells, in *The War of the Worlds* (1898) had in the very first sentences of his book anticipated the collapse of the view of humans from the other side of the moon (which was the angle for the *2001* opening shot) and the view of the human at the microbiological scale in *Prometheus*:

No one would have believed in the last years of the nineteenth century that this world was being watched keenly and closely by intelligences greater than man’s and yet as mortal as his own; that as men busied themselves about their various concerns they were scrutinised and studied, perhaps almost as narrowly as a man with a microscope might scrutinise the transient creatures that swarm and multiply in a drop of water. (*War of the Worlds* 1)

arche-human aliens, as well as, at one and the same time, the origin of biological existence. The new key to understanding the origin and meaning of life is found in the complex patterns (the by now highly contested concept of the gene, for example, as interpretive code) of DNA. Rather than the seemingly eternal perseverance of the monolith, DNA is an object that must constantly reproduce itself, is subject to genetic mutations, and is the code that initiates the processes that constitute what the biological sciences refer to as life.<sup>43</sup> Taking the alien-planted DNA molecule as the monolith of *Prometheus* locates the film not only firmly within the biotechnological, but also reworks the problematic of Prometheus espoused by Stiegler. This is no longer, like *2001*, an issue of the mis/recognition of the co-origin of the human and the technological. In reframing the opening scene in Kubrick's film, *Prometheus* also reframes the terms of Stiegler's argument, thereby transposing the question of Prometheus into the era of biotechnology.

The implications of DNA replacing the monolith are elaborated in the following scene, a scene that explains the reasons behind the space voyage that comprises the narrative of the film. It begins with the paleoanthropologist Elizabeth Shaw cracking into a long forgotten cave whose walls contain the oldest known paintings on Earth. Calling her partner and lover Charlie Holloway into the cave, the two gaze upon the ceiling where the image of human figures point to what appears to be a constellation before a cut to the spaceship Prometheus. The cyborg crewmember David is shown moving through

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<sup>43</sup>The first photograph of the entire globe was taken in 1967, which anticipated the infamous "Blue Marble" image (by far the most iconic image of the Earth as a whole) taken by the crew of Apollo 17 in 1972. Of course, the structure of DNA was theorized as the double helix by Watson and Crick in 1953 (made possible, it is often ignored, by the x-ray photos of DNA taken by Rosalind Franklin), but the capability to not only render the molecule, but also represent its processes of combination could only have been made possible by the processes and graphical imaging capabilities of contemporary computer technologies.

his daily routines when he is interrupted by the ship's computer, which announces their arrival at the destination. Echoing the opening scenes Scott's *Alien*, the crew members awaken from their cryogenic sleep, to learn that venture capitalist Peter Weyland, of Weyland Industries, has hired them to explore the moon of a distant planet that may contain clues to the origins of human life. The holographic projection of Weyland, who explains that he must by now be long dead, hands it over to the paleoanthropologists who explain that a repetition of a specific pattern had been found in ancient artifacts from various locations around the globe. The "pattern" is rendered clearly when Dr. Holloway collapses a sequence of projected images into one, thus drawing out the precision in the repetition of the same configuration. With the entire world as her laboratory, Dr. Shaw has produced a compelling network of connections from disparate times and places that can all be presented at once in the single image of her "pattern." The discursive weight of this image has convinced not only the two paleoanthropologists, but also the venture capitalist Weyland, that the "pattern," as they call it, is in fact a "star map," which points to the "engineers" of human life. The explorations of the moon designated by the map prove their suspicions correct, and the Prometheus discover the desolate remains of an ancient alien biotech laboratory that appears to have been abandoned abruptly. From the traces of alien life within this space, it remains unclear what had happened to the engineers. It is slowly revealed, however, that this laboratory space is in fact an alien spacecraft filled with a cargo of virulent black goo, designed as a bioweapon for the destruction of the human species.

I will return to the consequences of this biotech weapon of the engineers, but for the moment I would simply like to highlight the importance of the network of traces from

around the globe that gave rise to the single image of a “pattern” that served as the impetus for what much have been an astounding capital investment in a highly risky endeavour. As the simplified single image resulting from the extraction and redrawing of information from a massive quantity of data, the “star map” serves the same function as the computer generated image of the double helix (an image, I would point out, that still today has not been photographed at any level close to its iconic rendering). Not only does the pattern allude to the networked nature of DNA, it is also metaphorically collapsed with the question of DNA’s origin, in the sense that the map leads the human back to the “Engineer” who had first deposited the genetic material on the Earth (as opposed to, say, the belief that the map proved the depositing of the human as somehow special or separate from life onto the planet fully formed). The star map also conjures up the visions, promises, and utopian desire that first became entangled with the drive to fully map the human genome. The billions of dollars given to the Human Genome Project, driven by the desire to obtain a totalized knowledge of the human being through a completed map are figured quite well in the star map and its function within the film. However, what is often forgotten is that the publicly funded Human Genome Project had its private counterpart in the firm Celera Genomics. Celera was late to the game though nevertheless intended to complete the genome much faster than the publicly funded project, and sought upwards of thousands of patents on its findings (which it was ultimately denied). The knotting of these multiple lines in Scott’s film—from the references to one of the largest undertakings in recent history to understand the genetic heritage of the human, to the role of speculation, belief, visions, and desires—situate

*Prometheus* within the field of concerns that I attempted to chart in my last chapter under the designator biocapital.

### **LATE CAPITALISM IN *ALIEN***

Understood within the problematic of biocapital, *Prometheus* could be read as revisiting the engagement with the capitalist corporation, and its various avatars, in Scott's franchise-launching 1979 film. *Alien* has spawned an impressive body of critical work on the posthuman body through an analysis of the film's "body horror," its presentations of male anxiety of female sexuality, or its posthuman representation of the human body as permeable, dismembered and violated. The unavoidably sexualized symbols of the alien antagonists constantly place the male body under threat of penetration, impregnation, and a violently fatal birthing process. The chest bursting scene from *Alien* (the peaceful domestic moment of a shared meal is shockingly punctuated with the convulsions of a male crew member's body as the alien parasite bursts from his torso, splaying open his chest) remains one of the most haunting and terrifying scenes of the entire series. The *Alien* franchise has from the beginning dealt with the tropes of bodily transgressions, infections, implantations, or male rape (by a hand-like creature whose mouth appears vaginal, yet contains an unambiguously phallic organ for penetration, which up-ends the abduction narratives of anal probing, while also implanting the anxieties of forced impregnation into the male body). There is no doubt that these films play with the idea of sexual violence as the very meat of their body horror, and articulate the sexual appropriation of the body to a sexual politics of control over reproduction. *Prometheus*

recasts these sexualized dynamics within the place of labor in ways that I will return to at the end of the chapter.

The place in and through which these bodily and sexual dynamics are experimented upon in *Alien* is the spaceship of a large mining corporation, and thus the film's crew are explicitly given as workers within an otherwise domestic space. The *Prometheus* is also a space of labor, though its mission is "scientific" and "exploratory." Subtending the entire enterprise is the capitalist investment of the Weyland Corporation that enables the mission in the first place. In addition to the depiction of the characters as workers in *Alien*, the figure of the alien itself is clearly marked by corporate interests who, one learns, desire the alien organism for use as a bioweapon to ensure company security. The attempt to capture this alien life form in fact turns the entire crew of the *Nostromo* (a clear reference to Joseph Conrad's novel titled the same) into the testing ground, or the experimental animals who—through the company's indifference to their bodies in the pursuit of the bioweapon—transform the ship into the incubator for the alien life form.

The corporate interest in obtaining the alien at the expense of the human body is made explicit. The *Nostromo*'s mission was to retrieve mined ore for the company. Their jobs, while they do each serve a specialized function within the ship, depict the condition of the late capitalist service worker—sedentary, laboring within what is closer to a domestic space of labor than a factory or mining shaft. The domesticity is further accentuated by the name of the computer that controls the ship itself, "Mother." Thus the home as space of domestic labor, handicraft, culinary arts, reproduction of the family, etc., becomes fused with the space of labor itself. With the introduction of the biological

alien into this otherwise domestic space, there's a transformation of the ship from merely a space of domesticity to one of biomedical and scientific study, an already latent function of the ship. This complex confluence of forces, spaces, bodies, and interests becomes indicative of the biotech laboratory, even while the crew realizes (as did Nostromo in Conrad's novel) that they were merely instruments within the grand designs of the corporation. The crew moves from willing employees of a mining company, to unwitting pawns in a company ploy to capture and transport an organism known to be potentially deadly. Thus, the ship's function itself mutates, from an industrial transportation vehicle, in which the crew maintain a set of hierarchical relations and stable roles, to the ship as "womb" or "incubator" for the biosecurity weapon of a late capitalist industrial corporation. Nostromo becomes the place in which corporate interests seem to have the upper hand, yet where the living beings within struggle to counter their position as expendable and experimental bodies, even while these bodies becomes the very sites of the film's radical experimentations on the human body.

James Kavanagh in "Feminism, Humanism and Science in *Alien*," unravels the imbricating lines of alliances and resistances within the film through the lens of feminist theory. I'm less concerned with determining whether the film is sexist or advances a feminist reworking of the scifi horror genre. However, I do find Kavanagh's concern with the spaces and topographies of power given through the dehumanized sexual violence of the alien and the company compelling. Kavanagh describes Ripley "making her own stand against a threatening phallic power [the alien] pressed on her through the agency of apparatuses called Mother [the ship's mainframe computer] and Company as much as by any particular man or group of men" (Kavanagh 77). His reading ultimately works

towards the presentation of a highly overdetermined terrain that gives way to many different types of interpretation and gives voice to many ideological positions while at the same time confounds an easy unification of these elements into a final ideological value judgment of the film itself. He writes, “If it appears that all these narrative and ideological threads do not finally coalesce very well, that is because they do not. The film organizes a complex set of heterogeneous ideological and cultural senses into an overdetermined visual text that produces disparate, even contradictory, ideological effects, making it a terrain of potential ideological struggle” (80). Even though Kavanagh presents this ambiguity as a type of open terrain of struggle, I would suggest that it is precisely this confluence and conjunction of disparate forces, subjects, actants, etc., that come to constitute the space of the laboratory apparatus. This apparatus, then, can be seen to incorporate Company interests, libidinal economies and sexual encounters, biological and social experimentations, military interests, questions of the nature of the human, the inscription or gestation of new life forms (the alien), all within a laboratory space designated Nostromo (literally “our man”). Within this laboratory apparatus emerges new inscriptions and forms—Ripley as female hero (thereby mutating the received conventions of action films), threats to masculinity, the human as instrument of corporate interests, and so on.

Like *Prometheus*, *Alien* could already be understood as reframing *2001*'s concern with technology through the character Ash, an android programmed from the beginning to bring the alien back to the company for its “weapons division.” Only well into the film is it discovered that Ash is, in fact, an android, and that this unknown corporate agenda is facilitated by this avatar for the company who has sole access to the classified nature of

the mission. The directives that were only known to Ash read: "Investigate Life Form. Collect specimen. Priority one /ensure return of organism for analysis. All other considerations secondary. Crew expendable." Shortly after Ripley discovers this objective, she is attacked by Ash. In the struggle, the crewmembers decapitate the robot and rewire his now disembodied head in order to question him. He becomes practically no more than a voice. The now revealed agenda of the android allows one to recognize how Ash had facilitated the "infestation" of the crew, which he accomplished by overriding Ripley's refusal to allow the alien organism on board the ship in a parody of human altruism that masks the true incentive to "ensure return of organism." It becomes difficult, viewing this decapitated machine, to read the sentiments and emotions of this now dehumanized figure as that of a human individual (even though the sense of its individuality persists through the tone of voice, the face, the bathos of his sympathy). His seemingly singular understanding of the alien, as with his actions, gives voice to the Company itself. "A perfect organism. Its structural perfection is matched only by its hostility." Another of the crew interjects, "You admire it." Ash continues, "I admire its purity. A survivor...unclouded by conscience, remorse, or delusions of morality." As Judith Newton says of this assessment of the alien, "It is in fact a kind of ultimate Company Man" (82). Newton reads the film as an allegory for corporate labor in a late capitalist society, and thus takes the alien figure to be a type of foil for the female hero's anticorporate and feminist positions. "The alien, like Ash," Newton remarks, "is a piece of Company property, and in its later transformations it resembles a mechanical person" (83). If Ash is the human face of capitalism, then the alien organism becomes the true deterritorializing, parasitic force of capitalism, that which invades the machinery of one's

own body, transforms the entire body itself into its womb, and emerges in a spectacular destruction of the body in which it had gestated. She reads the alien organism as perfectly enmeshed with the Company such that she is able to read the alien as that repository for “all the anxieties which the film evokes about the dehumanizing force of late-capitalist labor” (83). *Prometheus* returns to many of these issues, but revising them for the biocapitalist era. One character in the film that stands at the nexus of these issues is David. As “robot,” David facilitates the agenda of Peter Weyland, much like his predecessor Ash (who, within the *Alien* cosmos is actually his successor).

### **THE EIGHTH GENERATION DAVID: THE MODEL WORKER OF BIOCAPITAL**

David helps unpack the ways in which *Prometheus* might diagnose the condition of labor under biocapital. Returning to Stiegler’s insistence on the co-origin of the human and the technical, David is given as a type of reversal of priority, in which the technical is posited as primary to the fully human. This reversal, just as any simply reversal of a binary, does not lead to a deconstruction of the metaphysical, but rather emptied the human of the metaphysical altogether. I claim that this experimentation upon the human, through the figure of a technologically manufactured human whose “humanness” only comes second, produces an extremely insightful figure for the contemporary worker in an age of biocapital.

In the months leading up to the release of the film, the *Prometheus* ad campaign produced several videos with the intention for them to go viral. One of these videos was a commercial for the eighth generation David, celebrating his “birth” into the human

workforce. The video begins with a question voiced by David himself, “What makes a robot so robotic?” The question is not only central to this ersatz commercial for Weyland Industries, producers of the 8<sup>th</sup> generation David, but is also played out through this character in the film, and thus deserves a pause for consideration. As a viral video released on the world wide web, and circulated widely throughout social media networks and the blogosphere, one might first look to the network itself for an answer to be found there. And what better source to access in this case than the collectively written entry in Wikipedia for “robot,” whose hyperlinks, underlined below remain as a trace for otherwise active hyperlinks to other Wikipedia entries. With the marks of the entry’s connections with other information within the Wikipedia archive, this passage alone demands to be read as itself a node (much like David) through which one might access the entire apparatus in which it is contained. The entry follows.

The word *robot* was introduced to the public by the [Czech interwar](#) writer [Karel Čapek](#) in his play *R.U.R. (Rossum’s Universal Robots)*, published in 1920.<sup>[39]</sup> The play begins in a factory that makes artificial people called *robots*, though they are closer to the modern ideas of [androids](#), creatures who can be mistaken for humans. They can plainly think for themselves, though they seem happy to serve. At issue is whether the *robots* are being [exploited](#) and the consequences of their treatment.

Karel Čapek himself did not coin the word. He wrote a short letter in reference to an [etymology](#) in the *Oxford English Dictionary* in which he named his brother, the painter and writer [Josef Čapek](#), as its actual originator.<sup>[39]</sup>

In an article in the Czech journal *Lidové noviny* in 1933, he explained that he had originally wanted to call the creatures *labaři* (“workers,” from [Latin labor](#)). However, he did not like the word, and sought advice from his brother Josef, who suggested “roboti.” The word *robota* means literally “[corvée](#),” “serf labor,” and figuratively “drudgery” or “hard work” in [Czech](#) and also (more general) “work,” “labor” in many [Slavic languages](#) (e.g.: [Bulgarian](#), [Russian](#), [Slovak](#), [Polish](#), [Macedonian](#), [Ukrainian](#), archaic [Czech](#)). Traditionally the *robota* was the work period a serf ([corvée](#)) had to give for his lord, typically 6 months of the year. The origin of the word is the [Old Church Slavonic \(Old Bulgarian\)](#) *rabota* “servitude” (“work” in contemporary [Bulgarian](#) and [Russian](#)), which in turn comes from the [Indo-](#)

[European](#) root *\*orbh-*. *Robot* is [cognate](#) with the German word *Arbeiter* (worker). (Wikipedia)

So, the question that begins the video can be reinterpreted in light of this entry—one that makes explicitly clear the root connection between the term robot and worker—as “What makes a worker so workerish?” Or, in other words, if a robot (worker) is not first “human,” what makes it different from the human, or what makes a human as worker different from a human that does not work? Isn’t a human that “doesn’t work” already clearly a human that is “broken,” as the phrase implies? In Spanish, one says about something that is broken *no sirve*, which is literally translated “it does not serve.” A human that “does not work” is a human that does not serve. But serve what? Serve any purpose? Robot already contains in its etymology the notion of “work,” as well as that of “servitude.” This etymological tie, to return to the commercial, can be seen at play in the video where it is clear that what makes David “so robotic” among other things, is that he will serve in whatever way one chooses.

As robot and worker, David has a particular relationship to his boss/creator. When Mr. Weyland, in holographic form, addresses the crew of the *Prometheus*, he refers to himself as their “Employer.” The employer presenting himself to the group as a prerecorded holograph is quite a compelling metaphor. Mr. Weyland, as employer (who is also a god, who is also a father), explains to the group that he is “long dead,” thus he is employing the crew from the dead. And if the employer is dead (and only presents himself as a specter or an image, which is in fact not quite an image but a holograph), there is no longer room to complain, to dialogue with the boss, or to resist one’s exploitation by making demands. Mr. Weyland introduces David thus: “There’s a man sitting with you today. His name is David, and he is the closest thing to a son I will ever

have. Unfortunately, he is not human. He will never grow old, and he will never die. And yet he is unable to appreciate these remarkable gifts, for that would require the one thing that David will never have. A soul.” But what is the soul? Mr. Weyland’s speech provides the implicit answer through negation; he cannot appreciate his gifts. And what are his gifts? Never growing old, and never dying. To appreciate is to be grateful for, or to realize the full value of something. Taking this into consideration, and positing a positive construction of what it would mean to have a soul, the soul would paradoxically indicate the ability to realize the full value of never growing old and never dying. Yet, in order for the already living human to achieve this fully spiritual condition, it must itself first die as a living being. Can the human die in life while continuing to live, and thus achieve a soul?

To make sense of this paradox, one could say that Weyland’s concept of a “soul” becomes the totalizing image of the individual human produced in and through oneself—a figuration of the totality of one’s life, and therefore a view of life from a point outside life. It is precisely the denial of his ability to produce the image of his total life—the image or anticipation of his own death—that is denied to the ideal worker. The “soul” here is a momentary positing of a perspective beyond, which is immediately taken back into the living processes of the human. A paradoxical view from the grave on one’s life as it is being lived. The human is allowed to anticipate its own death through the positing or figuring of a “soul” as a self-image that not only collects one’s entire history, but also would include the anticipation of one’s entire future. It is this positing of a point beyond one’s own death—positing a momentary point of view from the outside in—that David as worker is denied.

Whether the robot anticipates its own death or not is a question left open by the film. However, as I have been arguing about the figure of the laboratory in literature—that is, the lab as the enclosure of a place of labor that makes visible the structure and processes of the novel as a whole—David is denied a figure or image of totality. The specific nature of the laboratory in this case could be understood as the condition of possibility for the momentary imaging or presentation of one’s total life (reaching back through one’s entire past and stretching out to one’s own death), which is then brought back into the processes of production. In this sense, the model worker as David is definitively denied access to or use of his own body as laboratory.

Mr. Weyland tells us what makes David not human—he is the ideal worker who is barred access to the laboratory, who is denied a soul, and thus denied the perspective point from which he may totalize himself as a willful subject. But what makes David “so robotic?” This is the question that the video will answer. The commercial begins with the “unpacking” of David. We see the robot in a plastic bag, packaging materials stuck to his skin. A tube hanging to his right starts to flow with white liquid. Shortly after this fluid, his robotic blood, enters the body, it twitches—David has been born.

In a sense, this figure of the robot functions as Dr. Frankenstein’s creature, or Moreau’s beast-men, in that it represents something essential about the human (perhaps even makes visible something that could not be seen otherwise) while it simultaneously denies the reader or viewer identification with figure as human. While David is supposed to be almost indistinguishable, this opening scene precludes the viewer from fully identifying with him. For one, the “white blood” could just as easily be red (motor oil, for instance, takes on the rusty color of old blood after use), but this level of mimetic

similarity to the human might counter David's function, which is to make his coworkers comfortable.<sup>44</sup> Moreover, witnessing the "birth" of the robot (the video ends with the narrator's well-wishes: "Happy Birthday, David") definitively separates David from a "real" human—this birth scene looks nothing like the birth of a human being. In essence, the commercial makes visible certain truths about labor under biocapital, while making it impossible to actually recognize them as relating to "real" human workers. It is as if the commercial says to its viewer, "Look. He's exactly like you, but you don't have to worry about being just like him because he's only 'almost' human." Watching David's birth as a grown "adult" reminds the viewer that while he may appear to be a real living human, David is in fact not.

The narrator asks, "What can you do David?" David responds, "I can do almost anything that could possibly be asked of me." The interview, framing David as "talking head" cuts to a pair of "Davids" sitting at a table in a cubicle-like, corporate space, playing chess with one another. The worker here, who can do almost anything, is performing a task that is usually associated with leisure, he is playing a game of chess. Work, here, is represented as a game in which the worker is put into competition with another worker, a competition that really only amounts to a game, and turns out to be a competition in which one is only competing against themselves. David continues his answer, "I can assist your employees. I can make your organization more efficient." The commercial cuts to a medium "talking head" shot. "I can carry out directives that my human counterparts might find [short pause, with a quick zoom into a tight shot of David's face] distressing, or unethical. I can blend in with your workforce effortlessly."

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<sup>44</sup> Indeed, at the end of the film, David is decapitated by the alien "engineer." Yet with the white blood, the violence acted on David, an otherwise gruesome and potentially traumatic event for the witness, becomes much easier to stomach.

David is then asked what he thinks about, to which he answers, “I think about anything.” As an example of this “skill,” we are shown David responding spontaneously to Rorschach images in a quick series of cuts from image to face: “Children playing. Angel. The universe. Robot.” A third question is asked: “David, what makes you sad.” The soothing ambient harmonies hit a slightly discordant tone and fade out. The shot moves slowing in on David’s face, as we notice his eyes beginning to water. Tears roll down his cheeks as he answers “War. Poverty. Cruelty. Unnecessary Violence.” The performance by Michal Fassbender is powerful (perhaps more so than any of his scenes in the film proper), giving the sense of an authentic expression of intense feeling that reaches the point of being profoundly moving to the spectator, until he says, “I understand human emotions, although I don’t feel them myself.” The video quickly cuts to David at a desk with what appears to be a computer mouse, controlling a screen of abstract dots and lines that serve no discernible purpose. The music resumes in a triumphant and light cadence, signaling the importance of David’s skills (to express emotion without self-feeling). “This allows me to be more efficient, and capable,” he explains, “and makes it easier for my human counterparts to interact with me.”

The narrator has one final question for David, “Is there anything *you* would like to say, David?” To which David replies, “I would like to express gratitude to those that created me.” With the emphasis in the narrator’s questions on the word “you,” it is implied that his sentiment of gratitude is something proper to David himself. Gratitude is, of course, a term associated with the service industry. It is not an agreed upon amount, set by law, but rather a matter of custom—the “earnings” that one receives as a server, for example, vary in relation to the perceived quality of one’s service. Gratitude is “given

freely,” not demanded of the person giving, yet is not entirely a gift given of one’s free accord. There are expectations that services are rewarded. Nevertheless, David’s gratitude is not forced from him—it is not the repayment of a debt owed. One, in fact, can only give a gratuity after the debt (or the bill) has been paid in full. Gratuity is always in excess of the amount owed. But what does it mean for David to be grateful? We have just been told by him that he will do anything, be anything, think anything, and have any emotions demanded of him—he will serve any function his employer desires—but he will not “feel” them in and through himself. Therefore, the expression of gratitude rings false. He may express gratitude, but he does not “feel” gratitude. Answering this final open-ended question in this way gives the impression that the answer was unsolicited, unprogrammed, and authentic. As a model for the service industry worker, David’s expression of unfelt gratitude, this “empty” gratitude, discloses within the subjectivity of the service industry the foreclosure not only of a true gratitude (since gratitude is no longer “given freely,” but rather demanded), it also reveals a crucial truth about the nature of what has been called “affective labor.” This video, in fact, is a compendium of precisely what makes the ideal affective laborer. Returning to the shot of David in his packaging, the android body is again shown as inhuman, reminding the viewer once again that he is not like them.

In the film proper, while David had been understood to be somewhat self-motivated, the viewer learns that Peter Weyland is still alive and giving David orders from his cryogenetic sleep. In this sense, David becomes an instrument for the biocapitalist. David acts in place of the boss, has no feelings of his own, and no ethical qualms about performing the tasks asked of him. After the crew has stumbled upon the

“black goo” (as I will call it)—yet before they are aware that it is in fact a bioweapon, and highly virulent—David returns to collect a sample. Playing a similar role as Ash in Scott’s *Alien*, David initiates an experiment, ostensibly asked of him by Weyland, to introduce the black goo into the body of paleoanthropologist Elizabeth Shaw’s lover, Dr. Holloway. David does this secretly, sliding a simple drop of the goo into a celebratory drink for Dr. Holloway—the celebration is somewhat bittersweet; they are elated to discover the existence of the Engineers, yet remain disappointed that the world has been abandoned. After the viral bioweapon is introduced into his body, Dr. Holloway returns to his room to find his lover. “Apparently anyone can create life,” he sardonically says to Dr. Shaw, who with a forelorn tone replies, “I can’t.” Recognizing his insensitivity, Holloway tenderly apologizes, and they make love.

Working its way through his body, the bioweapon in Holloway begins to manifest through visible physical symptoms. Mysterious in its function, the black goo had previously infected the body of a tiny worm, unbeknownst to the crew. The worm mutates into an unambiguously phallic snake-like creature that subsequently attacks the crew’s biologist, forcing itself down his throat in a manner reminiscent of the hand-like “face hugger” aliens in Scott’s first film. When David infects Holloway with the black serum without his knowledge, the infection is passed on to Dr. Shaw through consensual heterosexual intercourse. Holloway’s condition continues to worsen until, his body seemingly transforming or breaking down, he dies. Shortly after, Dr. Shaw learns that she has been impregnated, which highlights something about the products of this biomaterial. In general, the biomaterial appears to generate random mutations in the bodies that it infects. Via the insemination of Dr. Shaw with the mutated genetic material from

Holloway, the bioweapon transforms the reproductive machinery of Shaw's body, which she had believed to be sterile, into a functional space of reproduction. There where it seemed life could not be reproduced, the alien bioweapon forces the machinery of female biological reproduction into motion, making fecund what once lay fallow. Similarly, the alien forces bodies that otherwise would not function as spaces of biological experimentation, transformation, and reproduction (the male body), into nothing more than incubators, which are violently and gruesomely destroyed when gestation is complete. If the alien from the previous films became a figuration of late capital, it would make sense that this bioweapon, which the viewer learns is the source of what will be the iconic alien antagonist, is a figure itself for biocapital. In this sense, the function of biocapital is viral and unseen. It becomes apparent that one has been infected when it is already too late. As weapon, this biological substance is posited as created by the genetic engineers of human life. Thus, the knowledge and practices that led to the possibility to create life, also lead to the possibility for the production of weapons. As biocapital, this weapon that stands as the very counter biotechnology to that which first gave life to the human is truly frightening. It functions behind the scenes, without one knowing. It becomes a contagion, moving from body to body, parasitically reproducing itself, and through this reproduction becoming more and more ferocious. Having appropriated the non-functioning reproductive machinery of Dr. Shaw's body, one anticipates her violent death through the "birth" of the biocapitalist growth, perhaps in a scene not unlike the chest bursting scene from *Alien*. Yet Shaw does not die, and discovers a way to salvage her own life. It is this particular moment that I will return to at the end of this chapter.

## NETWORKS AND VIRAL INFECTION

In February 2012, a video address by Peter Weyland was presented at the annual Technology, Entertainment and Design, or TED conference. In the video, a much younger Peter Weyland speaks to an enraptured audience about his “unlimited ambitions” for the future. In this speech he alludes to the Titan Prometheus, who had given humanity its first true technology. He then rapidly moves throughout the history of known human technology, marking the dates of the most significant technological advances of the past, until reaching his present, 2023. With this masterful rhetorical flourish, he then announces that within a few months they will be able to create “cybernetic individuals” that are indistinguishable from the human, thus concluding: “we are the gods now.” This fictional address functions not only as a type of promotional narrative to generate excitement for the film, but also, within the filmic world, provides the background and biography of the venture capitalist with “unlimited ambition” who ends his speech asking for the support of his audience to achieve his goals. “I am Peter Weyland,” he says, “and if you’ll indulge me, I’d like to change the world.” Weyland’s talk presented as a legitimate TED conference contribution with little contextualization marks the beginning of a complex and highly strategic marketing campaign for *Prometheus*, which was to be released four months later. According to the *LA Times*, TED organizers themselves were directly involved in making the video, allowing them to advertise their vision for the future of the TED talks.

This first leak from the marketing campaign works, obviously, as a means to generate excitement for the upcoming film, yet also sets a precedent for the further “viral” marketing strategy. It does so through a challenge to the boundaries between the

speculative future of Weyland Industries, and our own present. Following the release of this viral strand, and as if promised by Weyland's talk, another video was leaked two months later in April 2012: an advertisement for Weyland Industry's promised "cybernetic individual," David (discussed above). Without clear framing mechanisms that would indicate these to be trailers for an upcoming major motion picture, these promotional videos take the gamble of bypassing the already established means of distribution by hoping for a dissemination via word of mouth, blogs, and social media networks. In April 2012, the press had already taken an interest. *Forbes*, for example, praises the campaign for getting viral marketing right. "With *Prometheus*," the article claims a full two months before the release of the film, "Fox has scored a major viral victory."

Within this larger marketing apparatus, the *Prometheus* ad campaign included a highly elaborate website for Weyland Industries. The website deploys a range of media (archives, videos, web games, immersive interfaces) as components of a strategy to capture and intensify its users' interests. This website acts as a local approximation for a much more extensive apparatus, one that makes visible a highly networked laboratory of experimentation on the consumer. The massive array of detail and intricacy of the site produces a type of reality effect; the believable virtual representation of Weyland Industries makes it seem as though the company truly exists. To achieve this effect, the videos and website themselves parasitize the forms of media representation most readily associated with the biotech industry, or the corporatized life sciences in general. The play on the line of indistinction between the real world and the fictional (a problematic made explicit in the film through the figure of David, the almost human robot) estranges these

representations, opening to question not only the figure of the human, but also the strategies deployed in the biotech and high finance industries themselves.

Furthermore, experienced gamers might find interacting with the website similar to playing the more immersive styles of role-playing games. For example, the website allows the visitor to participate in the application process for employment, for which he or she must accomplish various “training” assessments to become a Weyland Industry Employee and to advance his or her rank in the Company. One’s training not only includes prerecorded videos presented as real-time interactions with trainers, but also incorporates assessments of agility, mental skills, and so on. These are all tested through the types of mouse and computer skills that one would be expected to develop for a job involving long hours spent in front of the screen.

Moreover, there are pages with information highlighting the divisions of Weyland Industry, giving accounts of each in detail: electronics, energy, health, security, terraforming, transportation, cybernetics. One can navigate to the paleoanthropological research and data compilation of Dr. Shaw (one of the main protagonists of the film), whose materials come from around the globe (it is even possible to download the documents to one’s own computer). Additionally, there is a section for investors in the corporation, complete with a plethora of figures and graphs relating to the financial solvency and growth of the corporation. This section’s two main banner headings read, “Invest in your future: A better world begins at home,” and “Financial Highlights: As we build a better world, you build a better portfolio.” The website even offers the ability for the user to create their own ID badge (complete with webcam or personally uploaded headshot) as a crew member of Prometheus. After its creation, one may download his or

her badge, or post to an array of social networking sites. As a willing emissary for the promotion of the film through the virtual networks of the World Wide Web, one's crew member status is quite appropriately listed as "holography supervisor."

Now, stepping back to survey this massively networked and immersive ad campaign a distinct form of investment emerges. I have already mentioned Peter Weyland's fictional speculative capital, which funds the Prometheus mission. Taking into consideration all of these various strands of the fictional and real flows of desire and capital, the Prometheus ad campaign helps delineate a qualitatively different, yet equally important form of speculative investment—namely, the libidinal investment of the potential consumer of movie tickets. The TED talk, even when recognized to be fictional, nevertheless aims to produce hype and procure investment in order to draw the consumer audience to purchase a ticket so as to realize the economic, monetary return, which was the initial goal. This immersive viral campaign produces in the fan a type of infectious investment in the film, leading to the production of monetary profit through the purchase of movie tickets, movie merchandise, DVDs, as well as potentially rekindling interest in the franchise itself, leading to the potential for future revenue.

In some sense, traditional movie advertising has this same goal, and uses some of these same strategies to achieve it. Yet the Weyland corporation website takes this even farther by allowing the fan to "virtually" join the crew of the Prometheus. Thus, the target audience of this viral campaign is positioned at one and the same time as potential consumer, "investor," and "employee." This is no doubt a complicated jumble of positions that at times come to bleed from the speculative fictional world of the website into the material reality of the fan. So, once again, the consumer really does invest,

though this is not an investment of money (at least not yet), but rather an investment of attention, time, and identification. Here you have a complex intersection and blurring between the capital investment necessary to produce the film *Prometheus*, the viral marketing campaign whose intention is to infect potential film goers, and the production of the libidinal investments of consumers, all functioning within a strategy whose main objective is the actual box office return.

To make this process clearer, one could mark out a series of progressions involving the production and directing of both libidinal and financial investment. In a first move, there is the initial speculative collapsing of “fan” and “investor” produced through marketing savvy. Yet potential movie goers, in a second move, maintain the distinction between, on the one hand, their identification as investors/employees in the ersatz corporation, and on the other hand, their own assured sense of the “real world.” Because this website is offered as entertainment, users may willingly desire, and freely offer their own labor in promoting the film via the potentially extensive networks of social media without actually having the sense of being exploited. Finally, the use of the free interactive and entertainingly immersive promotional site (as an uncompensated form of labor) leads to the monetary realization of fan as investor, when the viewer pays money to watch the film. These are complicated dynamic processes of the various conjunctions and disjunctions of a desire for and pleasure in the speculative narrative with the social relations of production and consumption of commodities in the marketplace.

Just as the workforce of an industry forms part of the “capital” of a corporation (as “variable capital”), the production of the fan’s willingness to work for Weyland

Industries (now seen as a type of screen for, or prosthesis of the production houses and advertizing firms of the film) can be understood as a type of biocaptial infection. For one, this is the consumer capital of a devoted fan base, or faithful, loyal customer. But this is also the exploitation of labor from a consumer base who have not yet become consumers of the product (by buying a movie ticket or film merchandise). As I explained, the potential consumers invest their own time, attention, desires, and energy into the promotion of the film, putting their own social networks to work. The website and the ads turn the target audience, each one individually, into speculative investors in the film, willing to invest their own attention, as well as to instrumentalize their own social connections, in the hopes of profiting from the investment (in the form of entertainment, both from the website as much as from the adventure of the film itself). From viral infections of an ad campaign that finally got “viral marketing right,” the users of the Weyland Industries website, much like Holloway and Shaw, discover that they have been put to work in precisely the place where labor seemed impossible. Without their knowing, the viral campaign has put the consumers to work in their own private and domestic space. The viral campaign furthermore has potentially moved through the consumers’ own places of labor, and has infected the much larger body that composes their private social media networks, transforming the machinery of twitter, facebook, and google+ into an unwitting marketing factory.

## **CONCLUSION**

After this otherwise bleak confrontation with the consumer and the apparatus of the *Prometheus* ad campaign, I would like to return to Dr. Shaw having just learned of

her pregnancy through infection. The film ends with the discovery of a single living Engineer. Upon finding the alien, Peter Weyland, on the brink of death, is revived to do what Shaw had promised him: to “meet his maker.” After he is revived, he explains his ultimate reason for the trip and his massive influx of capital that made it possible. He explains that “If these things made us, then surely they could save us,” and after a short pause, “well, save *me* anyway.” Confused, Dr. Shaw asks, “Save you from what?” To which the venture capitalist, who has saved his final few days of life, waiting patiently in cryogenetic sleep for precisely this moment answers, “Death, of course.” The search for more life becomes the driving force for Peter Weyland, and the return that he hopes to gain—first for an “us,” but quickly revised to a stressed “*me*”—is more life. In the end, he does get what he asked for; he “meets his maker.” The mutations of biocapital continue, and the film ends with the recognizable figure of the alien emerging from the recently infected corpse of the original human Engineer. Through all of this, there is one scene in particular that stands out as perhaps the only moment in the film that drew a real sense of urgency, and staged an encounter between the human, technology, and biocapital that suggests an alternative to the capture of one’s body as the forced place of biocapital reproduction.

Tended to by David in the infirmary, having just been told that an alien life is growing within her, she asks him to remove it. David attempts to calm her and explains through a maliciously caring tone that she will be placed in cryogenetic sleep and tended to when they have access to better instruments. It slowly becomes clear that he is not giving her an option. At the right moment, Shaw lashes out at those who had forced her into their care, and escapes into the ship. Making her way to an automated surgical

apparatus that had been shown to her earlier, Shaw doubles over from the biocapitalist organism now throwing her body into forced labor.

Arriving at the machine—a domed coffin-sized apparatus reminiscent of the devices used to care for premature infants—Shaw initiates the emergency procedures. A robotic female voice asks Shaw to state the nature of her injury. She screams, “I need cesarean!” Yet the apparatus returns with an error, “This med-pod is calibrated for male patients only.” Now desperate, Shaw moves to the manual interface, calibrating the procedure herself based on the options available.

With her body not her own, but rather the laboratory for biocapital, she climbs into the technical apparatus, which closes in on her and begins the process. As the surface of her abdomen ripples from the parasite within, the machine cuts into her flesh with a perfect precision, its pincers and metallic appendages hovering over her stomach, before slowly drawing the placental sack before her eyes. The circular membrane bursts, dousing Shaw in amniotic fluid as the pale gray squid-like body gesticulates wildly. With the biocapitalist organism held just above, removed successfully from her torso, the apparatus tilts and splays its mucus and blood splattered glass ribs open as Shaw slides past her hideous progeny to safety.

Appearing three-fourths of the way into the Promethean adventure, there is still much to see, and much more to come. In Scott’s prequel, the emergence of biocapital is only the beginning to a long and fraught series of encounters with the alien that we already know. If this is the case—when the future has already been written, scripted, acted out, recorded, projected, and consumed—I find it entirely appropriate to end my reading of the film here in the middle, in the place of the most intense bodily encounter

between a surgically excised biocapitalist organism, flailing its blood stained tentacles towards the woman whose body has brought it into the world. With the laboratory of Shaw's body restored, perhaps this scene should remain as an image of the menace of biocapital—the mercilessly virulent organism suspended between the human body that has been forced into reproductive labor, and the recalibrated medical apparatus that holds before the human that which had almost killed it.

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