"'The difference between science and imagination'? (Un)Framing the woman in Charles Howard Hinton's *Stella*"

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> "All great men like Dante and Rafaelle [sic], who have had a great and glorious idea, have tried to represent it in some woman's form, like the Madonna or Beatrice. And Michael has done so too. They only made their image in a picture or a poem. But Michael has made me like I am, being real; that is the difference between science and imagination."[1]

As the title of this essay suggests, I will be examining the relationship between science and the imagination. Ludmilla Jordanova, Gillian Beer, and others have highlighted ways in which these epistemologies are linked, and I will be building upon such work to explore their effect on the construction of the female form.[2] My exploration will be specifically concerned with the way that Charles Howard Hinton treats these issues in his "scientific romance", *Stella*, and its application to feminist theory. My own approach is influenced by what Elizabeth Grosz describes as the "sexual difference" perspective, in which, "the body is crucial to understanding woman's psychical and social existence, but the body is no longer understood as an ahistorical, biologically given, acultural object."[3] It is, rather, as Grosz explains, "a constitutive of systems of meaning, signification, and representation." (18) From this position of "sexual difference", the body is a locus for the interplay of various cultural and "scientific" modes of thought and perception. Hinton's work, though often overlooked, offers valuable insight into how such modes were already being questioned at the end of the nineteenth century.

Although Hinton was not primarily concerned with gender issues, his treatment of his invisible heroine in *Stella* indicates an awareness of the possibility of such issues to engender yet another crack in the edifice of nineteenth century conceptions of social and natural order. At the heart of all of Hinton's works lies a concern with the manufacture of what is taken to be the nature of "reality," and the ways in which various discourses attempt this construction. Hinton's main point of entry into this debate was the concept of the fourth dimension, and his project of popularizing this concept problematizes the opposition of categories such as science and imagination, and material and spiritual. In the following pages, I will argue that Hinton's *Stella*, as a literary artifact of transition—between the nineteenth and twentieth centuries, and between science and imagination—provides fresh insight into questions of gender, subjectivity, and science during the *fin de siécle*, which as Jordanova has noted, "is helpful … if only to examine more closely the continued legacy of long-established modes of thought in our own times" (15). Hinton's work aids in the examination of this legacy by highlighting the limitations of perception embedded within its framework.

Context I: Hinton's fourth dimension and *Stella*

There is not space here to offer a detailed history of the rise of non-Euclidean geometry during the nineteenth century, but in brief, this event opened up new vistas for mathematical, philosophical, and speculative investigation.[4] For my discussion, it is only important to understand that by the middle of the nineteenth century, mathematicians were beginning to realise the limits of Euclid's flat, three-dimensional geometry placed upon measuring and explaining the phenomena of the universe. In her book, *The Fourth Dimension and non-Euclidean Geometry in Modern Art*, Linda Henderson writes: "the proof of the fallibility of Euclid could only add to the growing recognition in the nineteenth century of the relative nature of the mathematical or scientific 'truths' that man [sic] can discover" (6). Some *fin de siécle* thinkers who were weary of the rigidity of nineteenth century positivist dogma eagerly seized upon the newly expansive nature of non-Euclidean mathematical reasoning. The contemplations of these physicists and philosophers, painters and writers, and mystics and socialists converged in the concept of the fourth dimension.

As a popularizer of this concept, Hinton's work on the fourth dimension was based less on "hard" mathematics than on analogical reasoning. Briefly, Hinton's concept of a fourth dimension can be imagined by referring to the relationship that beings on a two-dimensional plane would have to the three-dimensional world that we inhabit. These beings, having length and breadth but no thickness, would experience a solid, three-dimensional object simply as one section of surface lines that define its boundaries. Hinton uses a three-dimensional piece of thread passing through a two-dimensional sheet of wax to illustrate this idea. The thread would appear to inhabitants of the surface of wax as a series of points occurring over a period of time. Thus, by analogy, Hinton reasons, if there is a fourth dimension, we would only be able to experience it as slices of a three-dimensional object, appearing over a duration of time. This conception of dimensionality conflates the categories of time/space, inside/outside, and cause/effect. Hinton writes that in such a reality, "there could be no cause and effect, but simply the gradual realisation in a superficies of an already existent whole. There would be no progress …."[5] There would similarly be no inside or outside, as everything is always already encompassed within the higher material space of the fourth dimension. Time in the third dimension, also, is merely an effect of our inability to comprehend the fourth dimension. Although Hinton's positioning of the fourth dimension as an "already existent whole" generates problems in its own right as a metatheory, as a radically different representation of the nature of reality, it does open up new perspectives on the constructedness of what are often taken to be *a priori* elements—space and time—and therefore is a productive theoretical tool.

Hinton's fourth dimension was a revolutionary project. Inspired by Kant, he expanded his writings on space from the realm of geometry into everyday lived experience. Kant established space and time as the *a priori* elements that

precede even the possibility of thought, arguing that every human experience is filtered through the ideals of space and time. Hinton's expansion of space and time into an extra dimension is an attempt to explode the boundaries of what is conceivable to the human mind. Thus, Hinton writes, "speculations of this kind … have considerable value; for they enable us to express in intelligible terms things of which we can form no image. They supply us, as it were, with scaffolding, which the mind can make use of in building up its conceptions" (31). Greater "space" for imagining offers the possibility of developing broader and more fantastic theoretical scaffolding. Theory, Hinton reminds us, is in turn the scaffolding of reality (3).

Although the Hinton text that I will be discussing, *Stella*, does not explicitly discuss the fourth dimension, the ideas within it are all of apiece with Hinton's expansion project. *Stella* was first published in 1895, an eventful year on many fronts. The cinema was born, x-rays were discovered, and Oscar Wilde was tried and convicted for homosexuality. It was also the year that H. G. Wells's first novel, *The Time Machine: An Invention*, was published. Wells's novel, which he also described as a "scientific romance," was a proto-science fictional text that combined four-dimensional mathematics, time travel, evolution, and socialist politics; it achieved immediate acclaim, and continues to be widely read today. The term "scientific romance" apparently originated with Hinton, who began publishing a series of stories, essays, and cube exercises under the title *Scientific Romances* in 1884. These pamphlets were collected into one volume in 1886, and a second volume in 1898. *Stella* was reprinted and included in this second volume, but had first been published with another story, *An Unfinished Communication*, as a single volume with the subtitle *Studies of the Unseen* in 1895. It is likely that Wells was familiar with his work. Hinton's *Stella*, a story where the female protagonist is invisible, is a fascinating text on many levels. It precedes Wells's scientific romance of invisibility *The Invisible Man* (1897) by two years, it anticipates the resurgence of interest in optics and chemistry that resulted from the discovery of x-rays, and—especially relevant to my reading of it here—it engages in complex ways with issues of the construction of femininity and subjectivity.

In brief, *Stella* is the story of a young woman who is made invisible by an older man, a scientist and proto-socialist philosopher called Michael Graham.[6] Graham is a wealthy bachelor, and after his death the invisible girl, Stella, is left alone in his house with the servants. The main narrator of the story, Hugh Stedman Churton, arrives at Graham's house to settle his estate as a favour to Graham's nephew, who is a close friend. It is Stedman who discovers Stella's existence, which was hitherto unknown to Graham's relatives. He first mistakes Stella for a ghost; after he discovers that she is a live, invisible girl of seventeen, he immediately calls for his friend's mother, Graham's sister, to come and collect her. Before this can happen, a fraudulent spiritualist kidnaps Stella and tricks her into performing at his séances. Stedman tracks down Stella and "rescues" her,

marries her, and they travel to China. While in China, Stedman feels increasingly dissatisfied with Stella's invisibility and upon learning that she only maintains her strange optical status by regular consumption of a chemical compound, he becomes obsessed with convincing her to return to visibility. In the end, he triumphs, Stella becomes visible, and they return to England and have a son. It is at this point that Stedman is reacquainted with another, unnamed old friend, who relays Stedman's narration of this story.

Context II: Hinton's personal and intellectual history

Although my concern in this essay is not with Hinton's psychological or biographical background, as he is a relatively unknown figure, it will perhaps be helpful to contextualize his ideas by momentarily touching upon his personal life. Like his texts that straddled the line between science and fantasy, Hinton's own life oscillated between middle class respectability and scandal. Hinton was the son of James Hinton, a famous surgeon and sexual revolutionary during the second half of the nineteenth century.[7] Although he is virtually forgotten today, James Hinton's metaphysical writings on self-renunciation and sexual liberation were notorious in his own day. James Hinton's followers, usually female, were called "Hintonians," and were rumored to be practitioners of polygamy. James Hinton's own life ended controversially in 1875 after years of mental instability, when he died from a brain hemorrhage, the cause of which many of his critics such as Karl Pearson assumed to be undiagnosed syphilis. One of his followers, who became a familiar of the Hinton household only after James Hinton's death, was Havelock Ellis. Ellis's journals and correspondence with Olive Schreiner reveal that they were both acquainted with the more sordid affairs of both James Hinton and his son, and that James Hinton's writings were a major influence on Ellis's own desire to study sexuality.[8] In 1886, Hinton was tried and convicted for bigamy. He was sentenced to three days in prison, and after his release, he and his first wife fled to Japan, later settling in the United States. Hinton's bigamous affair and conviction seem to have permanently stunted what appeared to be a promising career: he had recently received his M.A. at Oxford, and had just finished a draft of his first book-length philosophical treatise, *A New Era of Thought* (1888). He had published other works, such as his *Scientific Romances* (1884-86), a textbook, and had given a paper at the Physical Society in London.[9] The public disgrace of his arrest and conviction, combined with his father James Hinton's ignominy, made it impossible for Hinton to find academic work in Great Britain. Even after he settled in the United States and took up a post at Princeton University, Hinton seemed to have kept a low profile, probably to avoid the possibility of the news of his public disgrace travelling across the Atlantic.[10]

Although Hinton and his father were both infamous for their treatment of women, they were also public supporters of greater liberation for women. Hinton was close to his father, and it is apparent that they shared philosophical insights. James Hinton's philosophy is reflected not only in Hinton's lifestyle, but also in

his writings, such as "The Persian King," and "Casting out the Self."[11] In *Chapters on the Art of Thinking* (1879), a posthumous collection of James Hinton's papers edited by Hinton, James Hinton remarks that the main idea behind his book is "that our sufferings really are a giving to others and serving others."[12] James Hinton wrote extensively on the need to sacrifice the physical wants of the self in order to please others. This idea is not remarkably unique to James Hinton, but according to Ellis:

> the conception by which [James] Hinton sought to supplement it may be described, … in a single word, … as *service*. By sacrifice he had meant the willing acceptance of pain, all thought of self being cast out; by service … he meant the acceptance of pleasure also.[13]

It is not surprising that James Hinton's philosophy was popular amongst his contemporaries who were feeling the strain of Victorian asceticism. Ellis himself was drawn to James Hinton's ethical outlook, which allowed a space for pleasure, treated morality as "a relation which must be fluent, which cannot be rigid" and "permitted that tendency to impulse and the free play of passion."[14] This allowance for passion played a major part in inspiring Ellis himself to become, as Jeffrey Weeks has described him, one "of the first of the 'yeah-sayers'" of sexual reform at the turn of the century.

Hinton's explanation of his decision to surrender himself as a bigamist, and indeed, his given reasons for committing bigamy, seem to be related to his father's philosophy of "service".[15] Ellis's journal also offers evidence that Hinton's marital infidelity was directly parallel to James Hinton and his philosophy. It is therefore not surprising that it is possible—as will become apparent—to detect hints of dissatisfaction with James Hinton's ideas in Hinton's *Stella*. Thus, I will begin my discussion of this text by examining the invisible Stella as a product of Michael Graham, a man whose ideas are presented as being similar to James Hinton's.

After Stedman's discovery of Stella, and his realisation that she is not a ghost, Stella explains to him the cause of her invisibility. Through his experiments "in the border land between chemistry and physics," Graham discovered a way to render the body transparent, which is possible "'if the coefficient of refraction were unity, that is, if light didn't bend at all in entering the material of which the body is composed.'"[16] Light always bends when entering the body, Stedman explains, because it "'is made of a multitude of parts, each turning the light as it enters it'"(34). However, Stella explains, Graham "'found out how to alter the coefficient of refraction of the body. He made my coefficient equal to one'" (35). Stella, as an invisible woman, is Graham's creation, by means of his somehow changing the angle at which light enters the body. Besides mentioning chemistry and physics, Stedman notes the existence of optical instruments in Graham's workshop. Such discussions of making the body invisible would be reprised and

slightly updated in Wells's *The Invisible Man*. However, while Wells's protagonist makes himself invisible to achieve personal aggrandizement and liberation from social responsibility, Hinton's Graham makes Stella invisible in order to liberate her from being a female self/object and achieve perfect compliance with his Hintonian proto-socialist ideology.[17]

Stella's explanation to Stedman of Graham's reasons for making her invisible is reminiscent of James Hinton's philosophy: "'Don't you see … being is being for others. Michael [Graham] used to say that true life begins with giving up'" (35). Stella is thus an emblem for Graham's philosophy of self-sacrifice, taking her place alongside other female bodies that, as Ludmilla Jordanova explains, have "been extensively represented in public places; statues, monuments and decorative friezes all teem with women, who are, as often as not, standing for something else."[18] Stella quite explicitly confirms this idea when she compares herself as Graham's product to Madonna and Beatrice in the quotation at the beginning of this essay. Stella's opposition of science to imagination here is an interesting one. While, as Jordanova has illustrated and Stella herself acknowledges, Graham's decision to experiment upon a specifically female subject is the result of his own imagination, which is framed—like James Hinton's—by a tradition of discourse that assumes that the female self is naturally constructed in relation to the male subject. By opposing science to imagination in this statement, Hinton also implicitly draws our attention to another process that was well underway at the turn of the century: the rendering of cultural assumptions about femininity into scientific "fact" through the developing scientific field of sexology.

Man and Woman, sexology, and socialism

Havelock Ellis and his 1894 publication, *Man and Woman: A Study of Human Secondary Sexual Characteristics*, offers insight into the text of *Stella*. As I have mentioned, Ellis was an admirer of James Hinton's work, and was intimately familiar with the details of Hinton's bigamous marriage and conviction.[19] Ellis also considered himself an advocate for the rights of women, and he strove to abolish ignorance and prejudice about "the woman question" by subjecting it to scientific inquiry.[20] His writing, although open and explicit for its time, is also limited by his scientific methodology, with its ontologically-based, exclusively interpretational bias. A more balanced and "honest" approach, according to Kathy Ferguson, would combine both interpretative and genealogical strategies. Ferguson writes that both approaches "need" one another because "the interpretivist holds up for us a powerful vision of how things should be, while the genealogist more cautiously reminds us that things could be other than they are."[21] In his *Man and Woman*, Ellis unconsciously accepts the framework of dichotomy between masculine and feminine that Jordanova has described as linking the male with culture and the female with nature, writing:

> While women have been largely absorbed in that sphere of sexuality which is Nature's, men have roamed the earth, sharpening their aptitudes in perpetual conflict with Nature. It has thus come about that the subjugation of Nature by Man has often practically involved the subjugation, physical and mental, of women by men.[22]

Ellis reinterprets this dichotomy, positioning women as the victims of men and therefore morally superior, but he still accepts the original opposition that equates women with nature, tying them to their passive bodies that he renders in terms of a space that must be colonized by men disguised as progress, or time. The result is also a separation of masculine experience from embodiment, which results in their projection of that experience onto the feminine other.

Sociologically speaking, for "feminist" writers such as Ellis, these essentialized differences between the sexes actually highlight inherent female superiority in the areas of ethics and political governance. Females, according to this line of reasoning, are more closely aligned with nature, and therefore exhibit "organic conservatism." In applying these "zoological facts" to politics, Ellis finds that "organic conservatism may often involve political revolution."[23] In an important connection for this analysis of *Stella*, Ellis then links female nature to socialism: "Socialism and nihilism are not, I believe, usually regarded by politicians as conservative movements, but from the organic point of view of the race they may be truly conservative, and as is well known, *these movements have powerfully appealed to women*" (370, my emphasis). While this can be read as a positive or negative attribute, Ellis makes his standpoint clear in his conclusion:

> The wisdom of Man, working through a few centuries in one corner of the earth, by no means necessarily corresponds to the wisdom of Nature, and may be in flat opposition to it. Taking a broad view of the matter, it seems difficult to avoid the conclusion that it is safer to trust to the conservatism of Nature than to conservatism of Man. (397)

The "wisdom of Man" is gender-specific for Ellis; earlier he writes that "woman is more in harmony with Nature than man, … and she brings man into harmony with Nature. This organically primitive nature of women, in form and function and instinct, is always restful to man" (371). Ellis's argument, that the female is more attuned to natural processes and is thus able to act as a moral touchstone for the male, is a scientific refiguring of Ruskin's ideas on womanhood expressed in "Of Queens' Gardens." Ruskin writes: "Now their separate characters are briefly these. The man's power is active, progressive … his energy [is] for adventure, for war, and for conquest." The woman's place lies in the home, Ruskin continues, where "her great function is Praise." The "true nature" of that feminine

realm—the home—is "the place of Peace," where the man can seek refuge, assuming that his wife has been educated to nurture her supposedly inherent ability to be "enduringly, incorruptibly good; instinctively infallibly wise—wise, not for self-development, but for self-renunciation."[24] Thus the peace and safety of the home, the nation, and even the entire human race, relies on the careful and successful cultivation of women's sympathy with the "natural" world. Ellis's approach to re-examining femininity is similar to attempts of twentieth century schools of feminism, such as the Greenham Common collective, to establish a positive female identity by seeking what Jordanova describes as "other values in nature with which women could more aptly be associated, such as nurturance or healing powers" (15). Monique Wittig, among others, has challenged this approach by warning that "by doing this, by admitting that there is a 'natural' division between women and men, we naturalize history, we assume that 'men' and 'women' have always existed and will always exist."[25] In addition to adding legitimacy to biological determinism, such a reversal of values also leads to the idea of woman as saviour of *man*kind, which continues to crop up even in "radical," genealogical theories. Annie Potts cites such an example in her work, *The Science/Fiction of Sex*, when she notes how Deleuze and Guattari's theory of sexual liberation through "'becoming-woman'" is flawed because, as she claims, it "involves the necessity for women to "become-women" *first* so that man may also be transformed." This imposition of responsibility for male salvation upon the female, Potts explains, "maintains woman's position as 'other', and renders women primarily responsible for change."[26]

The acceptance of this original opposition is also what leads to Graham's decision to make a female rather than a male subject invisible, as Stedman explains:

> Michael Graham had resolved to try practically what direction the activities of the soul took when the *self-regarding impulses* were denied the opportunity of existence. A boy cares about eating and drinking and getting things. You could not deprive him of these self-centred activities of his, without [killing him] …. Instead of a boy he experimented on a girl, for a girl's self-love is concerned with being looked at—it is in producing an effect on others that her self-love is gratified. By taking away visible corporeality from Stella, he took away the means of living for herself.[27]

Graham's desire to obtain experimental validation of his proto-socialist ideas is combined with his acceptance of the traditional assumption of male with externalised activity and female with internalised passivity, leading him to decide on invisibility as a remedy for female social and moral imperfection. Stedman also accepts this dichotomy as easily as Graham, however, he interprets in a more capitalistic way. For Stedman, Stella as a female is primarily her body, as

a surface upon which to reflect and define himself. Ironically, Stedman's insistence that Stella's visible corporeality is her only "means of living for herself" reduces her to living for another: him. While Graham would have the invisible Stella live for all others, as a shining example of "service", Stedman demands that his companion be privatised and live only for him.

Reversing the values of the traditional male/female dichotomy can be used as a critique of the political and social establishment that is founded on "Man's wisdom." In this interpretivist line of critique, the acceptance of such a dichotomy is not seen to be as problematic as its traditional interpretation. Ellis, although championing "social readjustment" that allows for what he describes as "the development in equal freedom of both the masculine and feminine elements in life," actually offers scientific legitimacy to an already existing cultural dichotomy that always defines women as the other, the exception to man. Simply reversing the values of this dichotomy is the result of the "Me too!" approach that Ferguson identifies as characteristic of early feminist response to the woman question, and that Grosz describes as "egalitarian feminism."[28] It is here that the limits of the interpretative approach appear, as it neglects to remember that it is functioning within a metatheory. The question is one of framing: Stella, whether she remains invisible or gives into Stedman's wishes for her to become visible, continues to have her corporeality defined by male desire.

In referring to "framing," I have Luce Irigaray's work in mind. Woman, Irigaray writes, has always been framed by the male subject as the Other. She is unable to love herself as a self because "no space-time is available for experiencing it. Traditionally spacing is created, or occupied by man, child, housework, cooking.… When she is placed as an object by and for man, love of self is arrested in its development."[29] Developing this self-love is not in stark opposition to James Hinton/Graham's concept of sacrificing the self for others as it may seem at first. James Hinton uses the term self in a very specific, and confusing, manner. According to Hinton the sense of self that a subject feels is in fact a sense of negation.[30] This self is physical, and for James Hinton the "'physical is but the way in which the non-perception of the spiritual is expressed.'"[31] For Irigaray, Cixous, and other critics of Freudian psychoanalysis, female sexuality is perceived as a *lack*, as the absence of the male sex organ. James Hinton's desire to drive out the self is perhaps one way of getting around this sense of negation. Stella's invisibility could thus be understood as a way of releasing her from definition as a lacking self/object in the framework constructed by the male subject. In a "specular" economy of sexuality, Stella's invisibility would free her from being a mere object of transaction because, as Irigaray writes, "vision is effectively a sense that can totalise, enclose, in its own way. More than the other sense, it is likely to construct a landscape, a horizon" (Irigaray, 175). Removing Stella from this frame is not so straightforward, however; her invisibility is the product of Graham's imagination, which is in turn shaped by a discourse in which "the entire speaking body of the subject is in

some way archaeologically structured" (176). As Grosz notes, Irigaray does not seek to create "a new language", but "to overburden existing forms of language and dominant discourses with their own ambiguities."[32] Hinton's text not only draws attention to this kind of framing, but he also offers multiple frames for *Stella*, which draws attention to the ambiguities involved in any narrative/discourse.

Hinton's foregrounding of the concept of the fourth dimension in most of his writing illustrates his concern with destabilizing the way in which such framing constructs what is commonly taken to be possible and natural. Ferguson notes, "the questions we can ask about the world are enabled, and other questions disabled, by the frame that orders the questioning. When we are busy arguing about the questions that appear within a certain frame, the frame itself becomes invisible; we become enframed within it" (7, emphasis removed). How, through this story of an invisible girl, does Hinton work to make this kind of enframing visible? He combines the odd structure of this writing with his even odder ideas in ways that encourage the reader to continually frame and reframe their reading/understanding of the text. Discussing the Victorian novel, Helena Michie writes that "framing, unframing, and reframing become part of the act of reading, of inhabiting the fictive world of the novel; cameos of women's bodies appear and disappear."[33] Stella is very much about framing; she has been (un)framed by Graham, and in order to be reframed according to Stedman's needs, she first must return to visibility. Stedman even addresses this issue of framing in terms of his battle with Graham's ideas: when he discovers the seemingly unused "feminine" quarters of Graham's house, he remarks, "Michael Graham might have found a real Egeria to inspire him … — perhaps he made that *fitting frame* for loveliness, brooding in his solitary life on what might have been."[34] Contained within this explicit reference to framing within *Stella* is also an allusion to the framing device of myth. Structurally, this text is also itself framed by the voice of an unnamed narrator. Perhaps the best way to generate answers to this question of making the frame visible is to first examine some of the ways in which Hinton frames this "scientific romance."

Stella as victim of Graham; Stedman as her liberator

This first reading considers Stella enframed as a victim of abuse at the hands of an older, corrupt man, Michael Graham. Her invisibility can be read as a psychological/physiological symptom of this abuse; as Stella is a Victorian heroine, perhaps considering the ways her invisibility can be coded as a specifically female disorder provides another means of examining this text. In her study of Victorian female bodies, *The Flesh Made Word*, Michie identifies various ways that the Victorian female body is coded, many of which can be applied to Stella. Beginning with a discussion of anorexia, Michie highlights cultural examples of obsessive linking of food with sexuality in Western nineteenth century discourse. In nineteenth century novels, depictions of

Victorians heroines in the act of eating are "conspicuously absent" from a culture where "the dinner table is an important locus of interaction," Michie remarks.[35] The issue of eating arises very early in *Stella*, when Stedman unwittingly deprives Stella of her morning meal. When he first arrives at Graham's estate, Stedman is offended to find that the servant has set two places at the breakfast table: "'Does the man intend to sit down with me?'" he wonders, taken aback.[36] He orders the servant to remove the extra setting, which is actually Stella's. After breakfast he hears sobbing in the garden; later he realises that it was Stella. When he inquires about this, she explains, "'It was very hard not to have any breakfast'" (38). Eating as a public, bodily activity seems to be permissible only for men. In giving an example of a nineteenth century medical text that perpetuates the gender dichotomy of male as active and female as passive, Jordanova also illustrates how in even presumably "scientific" texts, females are not depicted as having any relationship with food. Referring to a French medical text by Jules Michelet, which was widely read in French and English in the nineteenth century, *L'Amour* (1858), Jordanova explains: "In *L'Amour*, Michelet stated that men and woman have different characteristic illnesses, women from emotions, men from digestion."[37] Like those heroines whose appearance at the dinner table is prohibited, Stella is also conspicuously absent from the story that bears her own name. Stella's invisible body, like the anorectic's, can be read as a literal translation of such cultural attitudes.

Michie and Susan Bordo both note that anorexia usually first appears in women at the onset of or during puberty.[38] This is not surprising, considering the link between eating and sexuality that Michie has illustrated. Stella's invisibility also emerges at this time; she tells Stedman that Graham made her invisible when she was fourteen years old.[39] One cannot help but be reminded of James Hinton's "habit of persecuting young girls." There is an intimation of sexual abuse in Stella's case as well. Stedman repeatedly expresses disgust and revulsion at what Graham has done to Stella, describing his house as "black and lowering—a fitting abode for one who had deprived an innocent girl of all that could make life worth having"(39). Stella seems to be damaged goods; her one bartering chip as a young middle-class female Victorian has been taken from her by Graham. His imposition of invisibility upon Stella is also described in the moralistic language; at the announcement of Stella's marriage to Stedman, her aunt begs him "'I am so afraid for her, please let her stop here with me. I will try to undo *the great wrong* my brother has done'" (75, my emphasis). Like James Hinton, whose free-love philosophy seems to have supported and perpetuated his abuse of women, Stedman muses that "perhaps Michael Graham, having made her transparent in his dogmatic stage, and being unable to undo his work, consoled himself with the thought that she was an emblem" (52).[40] In this reading, Stella is the creation of Graham, and her invisible body a space, or a blank surface upon which he can reflect himself and his own ideals.[41] This reading of Stella's body also assumes an original state of purity, a *tabula rasa* of virginity; Stedman's anger at Graham

is just, then, as the older man has inflicted damage on his (Stedman's) property before he can even possess it.[42] In this reading of "Stella," Stedman, as the man who is willing to marry the "soiled" Stella, and as the one who pushes her to reclaim her status as a visible woman, is his wife's champion. He helps Stella to reinvent herself as a *self*, as a subject. The effect of visibility on Stella, in this case, is not a superficial one; the appearance of surfaces, according to Elizabeth Grosz, also "generate[s] an interior, an underlying depth, individuality, or consciousness. This depth is one of the distinguishing features marking out the modern, Western capitalist body from other kinds. Western body forms are considered expressions of an interior, of a subjectivity."[43] Thus by becoming a visible subject, Stella is shouting "Me too!" at the Victorian patriarchy and appropriating the Enlightenment concept of subjectivity.

Mythology as framing device in *Stella*

Aside from Potts's claim that "the very definition of virginity reinforces the significance of the female body as essentially perforable—as rapable,"[44] the assumption of original purity is dangerous for other reasons, as Donna Haraway reminds us: "Every story that begins with original innocence and privileges the return to wholeness imagines the drama of life to be … the birth of the self, the tragedy of autonomy, the fall into writing …, tempered by imaginary respite in the bosom of the Other."[45] Graham's valuation of "the love of the All" as transcendence over self-love is such a quest for "respite in the bosom of the Other," in this case, all others. It is interesting that Stella's understanding of Graham's ideology is coded in terms of that original myth of unity and innocence, the Fall of Adam and Eve. Michie, Sandra M. Gilbert, and Susan Gubar, have drawn attention to Victorian novels that rewrite the Fall myth, "where women's sexuality, power, and hunger are conflated."[46] Stella relays Graham's retelling of the Fall myth: "'In the garden of Eden, Eve was like the air—like a spirit. But Satan tempted her, and she wanted Adam to see her. So she ate of the apple of the tree of being seen and known.'" [47] Thus woman, in her original, "pure" state, would have no body at all; she would have simply been space—thin air—in which man could move. Visibility is equated with original sin here. Stedman argues that the mythical apple was actually from the tree of knowledge, but Stella counters with her own (Graham's) version of the story: "'There were two trees in the garden of Eden, a big one for Adam, and a smaller one for Eve. Her tree was the tree of being seen and known. When she ate that kind of fruit, she became visible, she was no longer as she was meant to be'"(32). In this version of the Fall, only Adam dressed his person out of shame, or, perhaps, to better define his boundaries between himself and the female space in which he moves. Eve did so out of self-regard—the desire to be acknowledgeable and acknowledged—and ever since she did so, Stella says, "'we [women] have tried how much could put on, and that is the temptation we must strive against'" (33). Dressing then for women is sinful, and Stedman's request that she at least wear

color on her face so as to be visible, is shocking to Stella. "'How can you ask me?… You know what every one says of women who paint.… I tell you what I call them—fallen angels'" (35). With this allusion to prostitution, visibility, or self-assertion, is again conflated with sexuality, even though Stella explains that by "'fallen angels'" she means "'those women … whose coefficient is really right, but they regret being invisible, and so they paint—they go back'" (36). The Fall myth here becomes fluid, connected to Graham's science in ways that make the relationship between science and myth difficult to elucidate. "'Myth' by definition, and like 'science', enjoys general, abstract status. It lies beyond the here and now …. They are ever-present exemplifications of beliefs so deeply entrenched that enquiring about their origins seems fruitless," Jordanova writes.[48] Graham's rewriting of the Fall myth serves to bolster his science, or perhaps it is the other way around. By undermining the Judeo-Christian myth of the fall from an original state of grace, Hinton places it alongside a science that he has also rewritten to allow for the possibility of invisibility. Both, it seems, are permeable discourses, as is the concept of gender that is founded upon them. Stella's return to visibility at the end of the "scientific romance" in this case could be seen as an inversion of Victorian, idealised womanhood, where "the delicate woman … does not assert her physical needs [and] serves to recuperate the Fall and to re-establish lost innocence."[49] In Stella's eyes, if the Fall was actually about becoming a visible, embodied self, then her reclamation of her own body that was "not so slight as you would imagine, but lithe and active, like a girl of the open air and hunting field,"[50] is in direct defiance of this founding myth, and the pressure that Graham, Ellis, and even Deleuze and Guattari place upon her as a woman is to take the first step in saving mankind.

Hinton also mentions other mythological figures in reference to Stella: Egeria, Madonna, and Dante's Beatrice. These women serve as the inspiration for male figures, the holy vessels that carry the potential salvation of mankind. Stella and Graham model her invisible self as a member of this inspirational sisterhood. The difference, as Stella gives it, is that she has not been imagined into representational artworks, as the others have. "'Being real,'" she claims, is not the same as being a representation. However, Stella's "real" state of invisibility is itself inspired by these images of female as male muse. Thus her invisibility, though achieved through scientific means, is the product of the aspiration of male transcendence through feminine deliverance. That Stella exists for men—either the whole of mankind or only her husband—is reinforced by this tradition of myth. Even though she offers a revision on the Fall myth, it is still a revision that supports Stella's status as Other. But the very rewriting of it challenges the notion that myths are abstract, lying outside of time and space. Stella's reiteration of Graham's version of the Fall myth, which he has altered to explain/justify his desire to render Stella invisible, implies the possibility that other versions of the story are similarly constructed. By offering us an altered version

of this common myth as the product of one man's perversion, Hinton foregrounds the artificiality of such framing devices as innocence, purity, and sinfulness.

Invisible Stella as liberated woman; Stedman as subjugator

Just as there is evidence in this text to argue for *Stella* as the story of a woman achieving personal fulfilment and liberation through asserting her right to a self—assuming a rather Modernist narrative of liberation as selfhood—there is also evidence to the contrary. In this reading of *Stella*, Stedman is an abusive husband who imposes his will upon Stella, convincing her to become visible in direct violation of her own principles. The framing narrator testifies to Stedman's domineering character at the beginning of the story. According to him, Stedman belongs to that class of men who:

> Have the habit of being elected captains of their football or cricket teams when young …. In the mining company with which I became connected … there are numbers of native [Indian] employés [sic], excellent men, most admirable in every private relationship; but they all occupy subordinate positions. We have to put over them some low-lived, swearing Englishman, with one-tenth of their mental ability …. There is something the Hindoos [sic] lack and which [Stedman] Churton possessed in abundance. (8-9)

Hinton's characterisation of Stedman is also playfully self-aware. He is perhaps too quick to find fault with Graham's high-minded metaphysical writings, exhibiting what the narrator refers to as his "even more than average English incapacity for ideas" (107). When Stedman's friend, Frank Cornish, begins voicing opinions that are very similar to Hinton's own writings, Stedman exclaims, "'Good Heavens! … do stop this rot!'" (45) Stedman's imaginative failings and "incapacity for ideas" also delay his discovery of the invisible Stella because, he explains, "it seemed drivelling nonsense to sit there speaking to nothing," and "I felt inclined to call out the name … for her, but the ridiculousness of speaking to the thin air kept me silent" (21, 26). An impatient man, Stedman is also quick to violence as evinced when he beats Stella's dog for ignoring his orders (21).

Stedman's constant pleas for Stella to make herself visible to him are also aggressive; indeed, there is a territorial, sexual aspect to his wishes. Stella's invisibility prevents her from being "read" by Stedman. She is also protected from Stedman's inscription of his own meaning and desires. This, perhaps, is what most distresses Stedman about Stella's invisibility. Even after she is his wife, his property, he is unable to possess her. He must first be able to see her, because, as Jordanova reminds us, the act of looking is "an act that lies at the heart of our epistemology … the process of looking is central to the acquisition of valid knowledge of nature."[51] Stella, like nature, is something that must be "known," and without seeing her, Stedman cannot know her, either

intellectually or sexually. He notes that all photographs are missing from the walls of Graham's house when he arrives, and this places Graham in a position of power over Stedman as the only one who has actually seen Stella. In this sense, *Stella* is also about a knowledge/power struggle between two men over Stella, who is not a subject, but property. There is also a spatial, sexual aspect to Stedman's wish that Stella bear his image within her person, "that some day she [Stella] may bear my image in her heart as she does Michael [Graham]'s."[52] His desire to cast out Graham's presence from Stella's interiority, and leave his own impression there is clearly a colonizing one, and only possible when founded upon conflation of woman with space. As are his requests for Stella to wear something, so as to be partially visible. In this case, dressing Stella has been inverted to be tantamount to undressing her. Again, as Grosz has noted, drawing attention to the appearance of surfaces creates the effect of depth, and also "libidinze[s] the body's capacity to form linkages with other bodies, animate and inanimate."[53] Dressing, then, offers another way of framing the female body.

In this reading, Stella becomes visible again at her husband's request, even though she thoroughly believes that she is sinning and defiling herself in doing so. Even Stedman admits that "she really felt as if being seen was—she felt about it as a well-bred lady would about exposing more of her person than society permits."[54] (86). However, his realisation of this fact does not keep him from wishing her visible. He also hints that Stella's refusal to become visible has adverse effects on his career advancement, and he feels it necessary to remove from his metropolitan appointment in China to a more rural outpost. Voicing displeasure at Stella's attempts at self-expression, as long at that self is invisible, he says:

> If Stella had a retiring, shrinking nature, then I could hope to pass along the path of life without much difficulty—the less attention she attracted the better. But I found she was awfully fond of talking to Mrs. Cornish, Frank, C — … to everyone the little chatterbox went on talking. How Michael Graham and she kept it up I can only conjecture. (76)

Stedman's insistence on the necessity of removing to a rural location in order to keep Stella's uniqueness a secret is also a convenient excuse for Stedman to isolate Stella from the outside world. Just as Graham was once Stella's sole human contact, after they are married, Stedman hopes to fulfil the same role as husband: "'Steddy, old man,' a voice seemed to whisper to me, … 'You've got to be father and mother, and school friends and young men and women, lover, and husband, and bridegroom to her. Your devil is Michael Graham, your heaven is Stella's perfected arms'" (84). Again, Stedman's desire to return Stella to visibility is sexualised. Stella's metonymic arms will only become perfect after Stedman is able to see and reframe her. The first time he actually sees her in clothing is after

recovering her from the spiritualist con artist who had kidnapped her. Being in the outside world, she had agreed to wear a dress, veil, and gloves, and Stedman remarks that "she looked entrancingly pretty. Those little gloves, how charming to put a ring on the finger beneath-if—. The veil, too, if the wind would blow it aside—yet, I sadly reflected, if it did I should only see the inside of a hat" (71). Stella cannot be properly bound by the wedding band or unveiled for matrimonial consummation so long as she remains invisible. Jordanova has examined the politics of veiling and unveiling, reminding us that: "We can imagine women being 'unveiled' in a way men cannot be. Also suitable for unveiling are plaques, statues, indeed prized possessions …. Unveiling women is an idea that remains acceptable, since it fulfils masculine desire allied with fantasies of ownership and display."[55] The drive to unveil, in such cases then, is supported by the notion of gender relations that position the male as subject and the female as object upon which the subject is able to define himself. Stella even attempts to subvert this traditional notion of matrimonial ownership after her marriage to Stedman, only for her attempt to be put down quickly by her husband, who reminds her that invisibility carries a different meaning for men. Stella explains that she wants Stedman to become invisible as well, so that "'we shall be like one another. Won't that be nice?'"[56] Instead of accepting a symbolically egalitarian partnership, Stedman recoils from Stella when she offers him Graham's invisibility drug, snapping at her to "'take that rubbish away'"(82). Stedman's horror at the possibility of becoming invisible is also the horror of being feminized. "The hegemonic heterosexual male body is … constructed in opposition to the openness of the female body," Potts writes, [57] continuing that:

> The self-contained male body, with its exteriorised sexuality personified in the penis-self, repudiates the incoherence and interchangeability of the feminized body, whose orifices represent thresholds, margins of error, sites of weakness where outside may infiltrate inside, and vice versa. This 'male model' of sexuality is 'out there' … : the privileging of vision over other sense reifies the penis as an external sex organ …. (203)

Therefore, anything or anyone that confuses the inside/outside dichotomy—such as Stella's invisible state, or worse, Stedman becoming invisible—is a threat to the existing, patriarchal, model of reality.

Stedman reasserts the primacy of this model of reality when Stella explains her desire to make him invisible, in order to change him, to make him happier and less aggressive. He angrily demands further explanation and she cowers: "'Aren't you just a little bit—a little—violent sometimes?'"[58] Stedman repeats that Graham had designed the invisibility drug to cure personal flaws in females, not males. A similar cure for male bad behavior would "'prevent them from grabbing things and fighting'" (83). Stedman also informs Stella of her

appropriate, more traditional role as his wife: '"Whenever I get angry, you make a sign to me, and I'll become calm—that is, *if I can see it*'" (82, my emphasis). The implication is obvious; Stedman will remain violent and angry so long as Stella remains invisible, and her invisibility and her ability to perform her wifely duties are mutually exclusive. She is now enframed within the institution of marriage, and must behave as such.

Splintering the Frame(s)

Stella eventually gives in and returns to visibility in accordance with Stedman's wishes. He is delighted and they are able to return to England. Before they leave China, Stedman notes that ironically, "she [Stella] received quite an ovation from the ladies of Hong-Kong. They admired the complete way in which Stella had put down my monstrous disposition to jealousy" (105). Although these women were not wrong in assuming it was her husband's demand that she wear a veil, they of course assume that its purpose was to prevent others from seeing her physical features. It was, however, to prevent others from apprehending that she had no features to be seen. Her ability to show herself at the end of their stay in Hong Kong is thus simplistically interpreted as a sign of liberation. One could interpret Stella's reclamation of her status as a subject in this way as well. However, Hinton's sense of irony makes it clear that this in not a straightforward inversion of female oppression, but rather a more convoluted form of the Victorian double bind placed upon middle-class women: Stella must surrender her own desires for herself by reclaiming her physical self in order to become a proper wife and lady. It is telling that the "scientific romance" ends with Stella giving birth to a male heir; her role as reproducer is confirmed and the continuance of the status quo is assured.[59]

However, Hinton does not let it end here. Although order is restored in the ending of Stedman's main narrative, there is still a two-page conclusion that occurs outside this frame. The conclusion is told in the words of the unnamed narrator, whose sympathies appear to lie, in part at least, with Stella. Most of the conclusion consists of a conversation that takes place between the narrator and Stella, at which Stedman is not present. It is this conversation that casts a shadow of ambiguity over the traditional happy ending of the story; when the narrator comments to Stella, "'Well, it has ended happily!'", her answer, though affirmative, is hesitant: "'Yes, Hugh [Stedman] put everything to rights; but I feel as if I had forgotten something, as if we all had forgotten something …. I cannot be quite happy often'" (106-107). Stella realizes that she has missed something, but she is unable to articulate anything but its absence. Her scope for action in thus limited by her inability to articulate. When the narrator asks her: "'But what can you do?'" she can only remark that, "'That is the sadness. I don't know how to do what he [Graham] wanted'" (107). Stella positions her problem as a loss of the ability to fulfil Graham's wishes. Her dissatisfaction, though she is unaware of it, results from the opposition of Stedman's requests to Graham's. In this

either/or equation, Stella must inevitably feel guilty for disappointing one of the men who claim possession of her.

How else could this story end? What would be a truly "happy" ending? These questions are similar to those that Grosz asks in her work: "How to think space outside the constraints of this neutral subject's corporeal projections? How to think desire beyond the limits of castration and thus beyond the phallus, the subject's inherent masculinity?"[60] Grosz's answer, if it can be called that, is that "there must be a space, both conceptual and material, for (perpetually) rethinking and questioning the presumptions of radicality" (5). One hundred years earlier, Hinton was attempting to create a space for questioning the presumptions of reality, as it is constructed by science and the imagination. This brings us back to these two categories. Stella calls imaginative the works of Dante and Raphael, in opposition to the work of Graham, which is scientific. "To call something scientific is to give it a specific kind of epistemological status," Jordanova notes.[61] If this is the case, it is worth examining the status that Stella is bestowing upon Graham's work here, and the status that Hinton confers upon his own texts by calling them "scientific romances."

I take scientific as a derivative of science, and Hinton seems to be using this word in its dominant, modern sense as related to the study of the phenomena of the material universe. Science, as Hinton describes it, is the building of conceptions in the mind based on the similarities and analogies one observes in nature, making predictions and inferences, and finding verification of these correspondences within nature. "But the conceptions themselves are essentially artificial," he remarks.[62] Hinton's ideas about science are similar to a constructivist viewpoint; he claims that "what this comes to as a practical rule is, that we can only understand nature in virtue of our own activity; that there is no such thing as mere passive observation" (3). Observation, the foundation of science, is thus an activity that is always enframed within the personal. In voicing this opinion, Hinton is challenging a prevalent—then and now—assumption that Jane Flax describes as an Enlightenment fallacy, that "reason and its 'science'—philosophy—can provide an objective, reliable, and universal foundation for knowledge."[63] Hinton's obsession with cube exercises is also evidence of his desire to "cast out" all such self-elements in knowledge. Even though it is probable that Hinton would explicitly claim otherwise, the result of Graham's experiments with Stella would indicate that such a project is doomed to failure. Here Hinton bumps up against the boundaries of his own metatheory. Thus his concept of a fourth spatial dimension, while an intriguing mental diversion, is not where the principal value of his work lies. This value must be teased out of the interstices between the categories that Hinton seeks to juxtapose and contain within his texts: science and imagination, science and romance.

What is the "difference between science and imagination?" It is not possible to articulate in definite terms. According to Hinton, "with the greatest

masters in the use of the imagination … we find the utmost vividness and definiteness of conception and—at any rate in the Latin races—the utmost precision of form. Each line of Dante, for instance, seems to call up a visible image and shape."[64] Compared with the "essentially artificial" conceptions upon which science is based, it is really difficult to see how the aesthetic conceptions of "the greatest masters" are very different. The implication of Stella's statement about science and imagination is that the difference is one of degree: science has rendered the invisible Stella a living, breathing reality as opposed to a work of art, but the original idea and drive to make her that way is the result of Graham's imagination. And Graham's imagination is the result of a myriad of influences, of which Dante and Raphael are included. It is interesting that Hinton singles out "the Latin races" as exemplars of the imaginative faculties. By referring to his works as romances, he seems to be aspiring to this imaginative status. To call a book a romance, at the time that Hinton was writing, was to signify it as a work of fiction, more specifically, as an inventive and extravagant one involving fantastic locations and/or characters.[65] It also alludes to an earlier genre of fiction, in which the plot of the story was often interrupted by long digressions of a discursive or poetic nature. Thus the "scientific romance" is not tied to rigorous verisimilitude in the way that Darko Suvin would have science fiction be.[66] It is not realism simply displaced to a fantastic setting.

Hinton's *Scientific Romances* are various and complex texts that resist mere consumption. The plot of these stories, essays, and instructions—if I may call it that—is the challenge to the limits of representation. By combining science and romance, Hinton makes visible the limits of both as devices for framing the nature of reality, or, in the case of *Stella*, the nature of femaleness. "Scientific romance" could also be read as "factual fiction." In these "scientific romances" fact and fiction are allowed to contaminate one another in such a way as to cast doubt on the possibility of the original purity of either category. Cross-contaminations of this kind are especially important to feminist theory; they undermine notions of autonomous subjectivity that has defined itself in opposition to femininity. Stella is an impure subject; she is never entirely under the control of Graham, Stedman, or herself. Her scope for action and imagination is always already limited by her location within social and physical space, even when Graham attempts to erase that location. Thus Hinton dissolves the "romance" or the fiction of the invisible woman as liberated from the contamination of the self-as-object. Similarly, any attempt to read Stella's embrasure of the self as libratory is complicated by the ambiguous conclusion of the novella. Stedman disguises his wish to reconstruct Stella as a receptacle of his own desires by employing the emancipatory language of subjectivity. His version of liberation entails Stella's reclamation of her body, and her ability to proclaim her self as an autonomous, individual being. But, as Ferguson notes, that response "challenges only the answers to the woman question, not its terms."[67] Hinton seems to be aware of these limitations in *Stella*; although he does not offer any answers, his

ambiguous conclusion of the story seems to intimate a dissatisfaction with the framing of the question.

Hinton, like Stella, seems to be unable to fully articulate the problem of the question. For Stella, either option of "liberation," whether it be from the self or though the self, is an unfulfilling one. The conclusion of this story seems to be pointing toward the problematization of the discourse of liberation. This tendency is most likely unconscious on Hinton's part; his views on the emancipatory effects of realizing the transcendent material realm of the fourth dimension would be undermined as well.[68] Hinton's fourth dimension does work, however, as an unframing device, as a fantastic space from which to attempt multiple reimaginings of reality. It is not surprising that later in his career, Wells would develop what William J. Scheick describes as "the technique of the splintering frame" as a four-dimensional, aesthetic approach to the novel.[69] By "splintering the frame" of the novel, Wells illustrates one way in which Hinton's conception of the fourth dimension works to engender a realization of the *constructedness* of all modes of representing reality. Similarly, four-dimensional discourse was amenable to Theosophists, Socialists, and Cubists, among others who were interested in reframing religious, political, and aesthetic debates.

Thus the fantasy of the invisible woman seems to be, in part, about the fictitiousness of claiming liberation, whether it is from visual corporeality, "self-elements," or objectification: in short, liberation from all kinds of relationships. Hinton's scepticism of the possibility of liberation is not surprising, considering his own personal difficulties. Hinton's writing, like his life, is full of complications and contradictions that appearing irresolvable, must somehow hang together. I am not sure that Hinton's work fits into the ironical model that Haraway, Ferguson, and others have proposed for balancing the need for both reading and unframing in theory. It is difficult to determine the full extent of Hinton's self-awareness as an author, and it is not important to this discussion. What is useful in terms of feminist theory, is Hinton's desire to rethink the limits of representation. This desire is a unifying feature of all his "scientific romances." As he writes in the 1895 preface to *Stella*, "one line, one feature, of the landscape of the land to which these thoughts lead, and only one, has been touched upon. But there are many, and each explorer would probably select a different one."[70] His project, limited as it is by his own time and culture, is surprisingly similar to the feminist project of rethinking of the ways in which sexuality, subjectivity, and the concept of emancipation are framed by discourse.

End Notes

1. Charles Howard Hinton, *Stella*, in *Scientific Romances*, Second Series (London: Allen and Unwin, 1898), 1-107, 35. Reprinted as *Scientific Romances: First and Second Series* (New York: Arno Press, 1976).
2. See especially Gillian Beer, "Helmholtz, Tyndall, Gerard Manley Hopkins: Leaps of the Prepared Imagination", in *Open Fields: Science in Cultural Encounter* (Oxford: Oxford University Press, 1996),

242-272, and Ludmilla Jordanova, *Sexual Visions: Images of Gender in Science and Medicine between the Eighteenth and Twentieth Centuries* (Hertfordshire: Harvester Wheatsheaf, 1989).
3. Elizabeth Grosz, *Volatile Bodies: Toward a Corporeal Feminism* (Bloomington: Indiana University Press, 1994), pp.17-18.
4. For a lucid, non-specialist overview of the development of non-Euclidean geometry in the nineteenth century, see Linda Dalrymple Henderson, *The Fourth Dimension and non-Euclidean Geometry in Modern Art* (Princeton: Princeton University Press, 1983).
5. Charles Howard Hinton, "What is the Fourth Dimension?" in *Scientific Romances*, First Series (London: Swan Sonnenschein , 1886), 3-32, 23. Reprinted as *Scientific Romances: First and Second Series* (New York: Arno Press, 1976).
6. Graham's philosophy is a forerunner of the socialism of the Fellowship of the New Life, a group that started in 1883, of which Havelock Ellis was a founding member. This group later splintered into the Fabian Socialists. See Jeffrey Weeks, *Making Sexual History* (Cambridge, Polity Press, 2000), who states that according to the constitution (which Ellis assisted in writing), "the Fellowship was to be based on the 'subordination of material things to spiritual.'" (21).
7. For purposes of clarity, I will refer to Charles Howard Hinton as "Hinton", and James Hinton as "James Hinton".
8. See "*My Other Self": The Letter of Olive Schreiner and Havelock Ellis, 1884-1920*, ed. by Yaffa Claire Draznin (New York: Peter Lang, 1992), for Ellis's discussion of the importance of James Hinton to his own work. See also Havelock Ellis, *My Life* (London: Spearman, 1967) especially pp. 130-131.
9. *Nature*, Feb. 5, 1885, notes that on January 24, "Mr. C. H. Hinton read a paper on the 'Poiograph'" at the Physical Society, 329.
10. See Marvin H. Ballard, "The Life and Thought of Charles Howard Hinton," unpublished M.A. thesis, Virginia Tech, 1980, 59, and also a letter from Charles Howard Hinton to William James, dated October 30, 1896, in James, William, 1842-1910, Letters from Various Correspondents, bMS Am 1092, Houghton Library, Harvard University. Access to these rare documents would not have been possible without a research grant from the Brotherton Library Special Collections at the University of Leeds.
11. Both of these texts were included in the First Series of Hinton's *Scientific Romances*. For a discussion of Hinton's "The Persian King," see Bruce Clarke, "A Scientific Romance: Thermodynamics and the Fourth Dimension in Charles Howard Hinton's 'The Persian King,'" in *Weber Studies*, 14.1 (Winter 1997): paras. 1-27 <http://www.weberstudies.weber.edu> [accessed May 19, 2004]. Aside from my own (presently) unpublished work on Hinton, there is no recent critical discussion of "Casting out the Self."
12. James Hinton, *Chapters on the Art of Thinking and other essays*, ed. by C. H. Hinton (London: C. Kegan Paul & Co., 1879), 213.
13. H. Havelock Ellis, "Hinton's Later Thought", *Mind* 9.35 (July 1884): 384-405, 394, original emphasis.
14. *Ibid,.* 395. Ellis's papers in the British Library contain a disturbing reference to James Hinton's philosophy of self-repression. After publishing an article that praised James Hinton's work, Ellis received a letter from a Miss Emma F. Brooke on August 5, 1885, warning him of the dangers of the propagation of James Hinton's philosophy. Brooke mentions an encounter with James Hinton when both were thrown in close contact over a period of days. According to Brooke, James Hinton made repeated sexual advances upon her. Brooke writes: "At last things came to such a pass that I was obliged to tell him I loathed him and I coupled this with some caustic remarks as to the unmanliness of his conduct. He then told me that he was aware I disliked his attentions and he had thereby the hypocrisy to add that he wished to teach me that duty and loveliness of yielding myself to 'others' needs' and wishes, and of over-coming all 'self-regarding' impulses." Brooke continues to warn Ellis that nothing could be "more injurious to the liberty of woman" than James Hinton's tenets enacted. Furthermore, she writes: "The worst of it is that my experience as regards [James] Hinton by no means stands alone; he was in the habit of persecuting young girls." *The Papers of Havelock Ellis*, British Library, Add. 70528, 38-40. It appears that Brooke was originally put into contact with Ellis through Olive Schreiner, see *"My Other Self"*, pp. 53-56.

15. See "Police" in *Times* (London), Oct. 15, 1886, 3; and Oct. 16, 1886, 4; also Ruth First and Ann Scott, *Olive Schreiner* (London: Andre Deutsch, 1980), 163-164.
16. Hinton, *Stella*, 14, 34-35, respectively.
17. See Ellis, who notes that "when [James] Hinton wrote the various tendencies which we recognise collectively as Socialism had in England scarcely taken definite form. One who held, so strongly as he, that 'overthrowing society means an inverted pyramid getting straight,' who probably today, however, be classed among extreme agitators", "Hinton's Later Thought", 405.
18. Jordanova, 134.
19. See Phyllis Grosskurth, *Havelock Ellis: A Biography* (London: Allen Lane, 1980), especially 93-106. See also *"My Other Self"*.
20. I have in mind Kathy Ferguson's interpretation of "the woman question," which "particularly as elaborated in nineteenth- and twentieth-century socialism," she gives as the process by which "women are problematized and fitted into" a world order established by men and based on male understanding and experiences. See Ferguson, *The Man Question: Visions of Subjectivity in Feminist Theory* (Berkeley and Los Angeles: University of California Press, 1993), 1.
21. *Ibid*., 24.
22. Havelock Ellis, *Man and Woman: A Study of Human Secondary Sexual Characteristics* (London: Walter Scott, 1894), 395. I refer to the dichotomy summarised by Jordanova in *Sexual Visions*. Using the opposing categories of "women" and "men," she writes: "*Women*: superstition and custom, learning from kin, unlearned, daily care. *Men*: Philosophic Knowledge, learning by observation and experience, scientific, direction, superintendence, and management" (31, original emphasis).
23. Ellis, *Man and Woman*, 370.
24. John Ruskin, "Of Queens' Gardens," in *Sesame and Lilies and Unto this Last* (London: Blackie and Son, n.d.), 76-78.
25. Monique Wittig, "One is Not Born a Woman", in *The Straight Mind and Other Essays* (New York and London: Harvester Wheatsheaf, 1992), 9-20, 10-11. See also Diana J. Fuss, "'Essentially Speaking': Luce Irigaray's Language of Essence", in *Revaluing French Feminism: Critical Essays on Difference, Agency, & Culture*, ed. by Nancy Fraser and Sandra Lee Bartky, (Bloomington: Indiana University Press, 1992), 94-112, who discusses what she calls "Irigaray's strategic use of esstentialsim" (95), and how this differs from other forms of essentialism.
26. Annie Potts, *The Science/Fiction of Sex: Feminist deconstruction and the vocabularies of heterosex* (London and New York: Routledge, 2002), 253, original emphasis.
27. Hinton, *Stella*, 48-49, my emphasis. Note the exact reiteration of the phrase "self-regarding impulses" that Brooke places in quotation marks in her letter to Ellis in reference to James Hinton's justification for his unwanted sexual advances.
28. Ferguson, 1, and Grosz, *Volatile Bodies*, 14, respectively.
29. Luce Irigaray, *An Ethics of Sexual Difference*, trans. by Carolyn Burke and Gillian C. Gill (Ithaca, Cornell University Press, 1993), 70.
30. See James Hinton, *Man and His Dwelling Place: An Essay Towards the Interpretation of Nature* (London: John W. Parker and Son, 1859), especially 187-196.
31. Shadworth H. Hodgson, "The Larger Life: Studies in Hinton's Ethics" *Mind* 11.42 (Apr. 1886): 257-262, 260.
32. Elizabeth Grosz, *Sexual Subversions: Three French Feminists* (Sydney, Allen and Unwin, 1989), 127.
33. Helena Michie, *The Flesh Made Word: Female Figures and Women's Bodies* (New York and Oxford: Oxford University Press, 1987), 109.
34. Hinton, *Stella*, 17.
35 Michie, 12.
36. Hinton, *Stella*, 16.
37. Jordanova, 78.
38. See Michie, *ibid*., and Susan R. Bordo, "The Body and the Reproduction of Feminity: A Feminist Appropriation of Foucault" in *Gender/Body/Knowledge: Feminist Reconstructions of Being and Knowing*, ed. by Alison M. Jaggar and Bordo (New Brunswick: Rutgers University Press, 1992), 13-33.

39. Hinton, *Stella*, 27.
40. My comparison of Graham with James Hinton is supported by various autobiographical elements in this story. Aside from the similarities between James Hinton and Graham's philosophies, Stedman's relationship to Graham seems to be partly influenced by Hinton's relationship with his father: Stedman/Hinton must edit Graham/James Hinton's unpublished papers, both are large, physically aggressive men, and both are exiled to travel in the far East. Also, in *Stella*, Stella is apparently the daughter of another woman named Stella, to whom Graham had had a romantic attachment. This woman had disappointed Graham and married another, but after her death (and, apparently, her husband's), Graham became guardian of their daughter, Stella. Matters were similarly convoluted in Hinton's life. In Ellis's papers, he notes, 'According to her [a Mrs Barnes] Mrs Boole really was his [James Hinton's] mistress' (41). Mary Boole, widow of mathematician George Boole, was a confidant and follower of James Hinton. C. H. Hinton married her daughter, also named Mary. There is also disturbing reference to possible sexual abuse/incest in James Hinton's household. See *"My Other Self"*, 116-117 and 402-403, which tells of two separate incidents of James Hinton undressing and fondling his daughters, once with Hinton present as well.
41. See also Rosaleen Love's story, "The Invisible Woman," in *Writing Women* 6 (1988): 27.32, where she offers an interesting, twentieth-century feminist reading of female invisibility. Her invisible woman, also named Stella, is figuratively invisible to her male co-workers and boyfriend. *They* are noticed by others, because "their light shines, and their beams show them off to their advantage" (27). Conversely for Love's Stella, she is either invisible, or simply a mirror for her male counterparts, leading her to decided that "I am a woman, and my light makes me transparent. There's nothing else for it. I shall have to create my own glory for myself" (27).
42. For a discussion of virginity, the possession of women and framing, see Susan Gubar, "'The Blank Page' and the Issues of Female Creativity", in *Critical Inquiry* 8 (Winter 1981): 243-264.
43. Elizabeth Grosz, *Space, Time and Perversion: Essays on the Politics of Bodies* (New York and London: Routledge, 1995), 34, emphasis removed.
44. Potts, 205.
45. Donna Haraway, "A Manifesto for Cyborgs: Science Technology , and Socialist Feminism in the 1980s," in *The Haraway Reader* (London and New York: Routledge, 2004), 7-45, 34-35.
46. Michie, 13.
47. Hinton, *Stella,* 32.
48. Jordanova, 8-9.
49. Michie, 23.
50. Hinton, *Stella*, 84.
51. Jordanova, 91.
52. Hinton, *Stella*, 100.
53. Grosz, *Space, Time and Perversion*, 34. A fascinating recent example of the surface/depth erotics of dressing and undressing—specifically invisible—women is to be found on the "Femmes Invisible" website and webring. The designer of this site is male, and the participants in the invisible femme role-playing linked to this site appear to be predominately male. The creator of the site, Carl A. Thomas, provides a database of depictions of invisible women in written texts, television, and film. He is careful to classify these various depictions as either "True Femmes Invisible," (TFI) or "Fading Femmes Invisible" (FFI). An invisible woman can only be considered a "true" invisible woman if her clothing remains visible. See "Femmes Invisible," <http://members.tripod.com/~invisiblegirls/main.html> (accessed May 6, 2005).
54. Hinton, *Stella*, 86.
55. Jordanova, 96.
56. Hinton, *Stella*, 82.
57. Potts, 201.
58. Hinton, *Stella*, 82.
59. Another early story of invisibility by scientific means is *The Secret of Wilhelm Storitz* by Jules Verne. It was written sometime after 1897, but was not published until 1910. A female character, Myra, is made invisible by an evil scientist. She regains visibility after giving birth to her first child, a son.

60. Grosz, *Space, Time and Perversion*, 5.
61. Jordanova, 17.
62. Charles Howard Hinton, *A New Era of Thought* (London: Swan Sonnenschein, 1888), 9-10.
63. Jane Flax, "Postmodernism and Gender Relations in Feminist Theory," in *Feminism/Postmodernism*, ed. Linda J. Nicholson, (New York and London: Routledge, 1990), 39-62, 41.
64. Charles Howard Hinton, "On the Education of the Imagination", in *Scientific Romances*, Series Two, 3-22, 7.
65. See "romance" in the *OED Online* <http://www.oed.com> (accessed August 1, 2005), which supports my claims for the dates and usage. Northrop Frye's discussion of the prose romance, which he describes as "intermediate between the novel, which deals with men [sic], and the myth, which deals with gods", has been helpful to my understanding of the romance. See *The Anatomy of Criticism: Four Essays*, 303-314, 306.
66. See Darko Suvin, *Metamorphoses of Science Fiction: on the poetics and history of a literary genre* (New Haven: Yale University Press, 1979), where he seeks to define the genre of science fiction in these very limiting terms.
67. Ferguson, 2.
68. Hinton, *A New Era of Thought*, xiv. However, one could argue the opposite, based on the fact that Hinton is very careful to say that this higher realm is a material one. He also eschews metaphysics elsewhere in this book, reaffirming that his definition of transcendence is different from the usual one, which implies some sort of separation from materiality, space, or the text.
69. William J. Scheick, *The Splintering Frame: The Later Fiction of H. G. Wells*, English Literary Studies Monograph Series, no. 31 (Victoria, BC: University of Victoria Press, 1984), 25.
70. Charles Howard Hinton, "Preface", in *Stella and An Unfinished Communication: Studies of the Unseen* (London: Swan Sonnenschein, 1895), no page number given. This preface was removed from the publication of *Stella* in the second series of the *Scientific Romances*.