Images and Imagery: Frames, Borders, Limits—Interdisciplinary Perspectives is a collection of essays by scholars from around the world exploring the complex interactions between literary texts and visual images (in the form of paintings, photographs, and films). Giving coherence to these wide-ranging contributions is the theme of frames, borders, and limits. The eighteen authors, each from a particular point of view, examine works that reach beyond the limits, both cognitive and expressive, of any single mode of expression.

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Studies on Themes and Motifs in Literature

Images and Imagery

Frames, Borders, Limits—Interdisciplinary Perspectives

Interdisciplinary Perspectives

Edited by
Leslie Boldt-Irons, Corrado Federici, and Ernesto Virgulti

Chapter 9

From Pre-Luddites to the Human Genome Project: Smashing Frames in Shelagh Stephenson's *An Experiment with an Air Pump*

Gyllian Raby

Shelagh Stephenson's millennial play *An Experiment With An Air Pump* tests the Enlightenment meta-narrative of Science by taking a multiplicity of points of view and setting them in dialogue. In the process, numerous theatrical frameworks are contrasted or dismantled: frames of stage convention, dramatic time, theatrical metaphor, social imaginary and dramatic metonym. Introducing the play to the cast for production this year, I described it as a "rampage of frame-breakings" across a gallery of the philosophical, social, visual, chronological and even literal senses of the word "frame." To balance this radical impression, it is important to note how the play is also rooted in a tradition of the socially concerned psychological drama. Here, characters are "real" people whose experiences test the implications of values central to our culture. The characters' emotional intelligence demands accountability from the great Enlightenment project that engulfs them, and the complex of social, personal and spiritual resources that empower the individual characters is exposed through a dialogic process. Stephenson's gifts as a writer suit this British "Quintessence of Ibsenism" tradition. She has an unsentimental, ironic sense of comedy, a quick sympathy for the pressures of social (particularly gendered) behavior on male and female characters and a skill at relating the problems of a domestic microcosm to those at the geo-political macrocosm. Nonetheless, it is her refusal to be limited by traditional frameworks featuring unity of time, place, and action that gives the play its breadth and depth of impact. As she bursts frames of

Chapter 9

From Pre-Luddites to the Human Genome Project: Smashing Frames in

Frames by Joseph Wright, Painter and Robert Boyle, Scientist

Right from the start, Stephenson announces that "frame busting" will be important to her play. *An Experiment With An Air Pump* opens with a 1999 scientist, Ellen, analyzing a projection of Joseph Wright's celebrated painting of similar title (Figure 9.1). Ellen follows the common "Ages of Man" interpretation of the play (Egerton 24) but with a peculiarly personal angle. While she describes how, as a child, "this painting

Figure 9.1 Joseph Wright, *An Experiment with an Air Pump*. Courtesy of London National Gallery.

described the world" to her, inspiring her ambition "to be God" (Stephenson 3), live actors break it from its frame by re-creating it in a tableau which "bursts to life" with dialogue. Ellen's act of imagination personifies the figures in the painting as her ancestors, so flooding the stage with implications not immediately apparent in the painting. Italo Calvino asserted that to think imagistically a writer must frame a singular, solid, detailed vision while simultaneously unleashing "the multiplicity of subjects, voices and views of the world" (Calvino 117) to posit a model of the universe. In this way, Stephenson uses dialogue to animate Wright's painting so that it becomes a metonymic representation of the whole Enlightenment experiment. The stage becomes the bell jar of 1799 with

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a whole complex of passionate and contradictory attitudes towards the experiment.

Stephenson is not the first to view Wright of Derby's famous painting as a brilliant signifier of his Age. It is frequently reproduced in the science section of art books and in the art section of science texts, for its scientific subject makes it a rarity in Eighteenth-Century British Art. Indeed, Bruno Latour, in his controversial book *We Have Never Been Modern*, argues that Thomas Boyle's original experiment with an air pump vacuum represents a particular moment in the history of science where Science and Nature (including Hobbes's human politics intrinsic to nature) were artificially separated so that Nature became stuck inside a vacuum in perpetuity, the subject for experiment. Science, including the Experimenter, remains outside, looking in. The air pump experiment, says Latour, invents "our modern world, a world in which the representation of things through the intermediary of the laboratory is forever dissociated from the representation of citizens through the intermediary of the social contract " (Latour 27).

Latour attacks the myth of scientific objectivity and linear progress. He avers that social, political and religious concerns motivate a scientist to imagine a particular experiment. For example, Boyle's initial experiment with the air pump was a practice borne out of his reactions to the conflicts of his time:

> Boyle wondered how to put an end to civil wars. By compelling matter to be inert, by asking God [the designator of kings] not to be directly present, by constructing a new closed space in a container where the existence of the vacuum would become manifest [i.e. by separating God from political leadership and by proving that "divine ether" did not exist in the vacuum.]...Boyle said "no human witness will be believed; only non-human indicators and instruments observed by gentlemen will be considered trustworthy." (Latour 83; parentheses mine)

The air pump represents a conceptual frame that divides Science from Nature/Politics. Latour concludes that in the face of ozone damage, global warming and genetic manipulation, the separation must be dissolved. Stephenson's drama about the air pump also explores this argument by altering her focus from the experiment itself to the motivations, beliefs and relationships of the characters who watch it.

The Philosopher scientist whom Ellen superimposes on the central

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cope with difficult social side-effects of his scientific enlightenment, both outside the house and within. Outside, some literal frame breaking is going on. Rioters smash up his cucumber frames and other property in an 11 page long "pre-Luddite" protest against joblessness and price-fixing. Despite the threat of the mob and his moral opposition to such violence, Fenwick supports *enlightened* rebellion. He insists that, "science is inextricably linked with democracy" (Stephenson 44). Fenwick's excessive pride in his Radical ideas requires that he be willfully blind to the bloodshed of the French Revolution he reveres. Closer to home, he is oblivious to the hurt he inflicts on his wife and daughters whom he banishes from the excitement of his intellectual world. Susannah manages to teach her husband to carry through his public convictions in his private relationships. In keeping with the "drama of social learning" tradition of the play, most characters experience a steep psychological learning curve, the sole exception being Armstrong.

In the painting, (Figure 9.2) Armstrong sits stage right of Fenwick, timing the dove's last breath. In the play he is apprentice to a neighboring expert in anatomical dissections. Dissection is illegal in this "pre-

Figure 9.2 Outline of Wright's major characters, L to R: Youthful Lovers (Susannah), Scientist with Watch (Armstrong), The Philosopher (Fenwick), The bird (Isobel), Older Man (Robert), Two Young Girls (Harriet & Maria), The Excluded Servant. Courtesy of the author.

Anatomy Act" period and, like the notorious Dr. Knox of Edinburgh, they must steal corpses from their graves. Armstrong never wavers in his conviction that scientific progress excuses moral and legal obligation. He says, "Science is neutral. Ethics should be left to philosophers and

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continues, "That's why I'll be remembered as a great physician, Roget, and you'll be forgotten as man who made lists" (Stephenson 71). But the Roget to whom he speaks has not been forgotten. Two hundred years later Ellen imagines the figure down stage left in the painting, to be the famous Roget, whose optical theories founded animation and whose Thesaurus sits in every library. He is the only actual historical figure in the play, which lends him a special connection with the audience. *Roget's Thesaurus*, with its relative, associative definitions seems peculiarly contemporary in its focus on the multiplicity of meanings that underpin and connect apparently discrete terms. In the play, Roget possesses so many synonyms he has hilarious difficulty in expressing himself simply. More serious is his moral equivocation: he is uncertain where he stands between Fenwick's radical idealism and Armstrong's material pragmatism. Roget craves the ease of disengaged objectivity Science offers him, for his lack of social ease and self-knowledge makes him uneasy with judgement. Even when events in the play force him to take a moral position, he feels compromised by his loyalty to his class and by his personal affection for Isobel, the Scots serving girl who stands for the dove in the bell jar.

In Wright's painting, the bird is a cockateale, not a dove. The use of such a valuable exotic bird in the experiment signified the wealth and confidence of the Experimenter. Stephenson's changing the bird to a dove may connote Christly qualities of poverty and exile, vulnerability and sacrifice. Isobel, like the dove, is the subject of experiment. As a working-class Scot with a spinal deformity, she is an outsider recruited for Fenwick's social experiment in treating servants as "family" and is later subject to Armstrong's "scientific-sexual" curiosity about her back. Isobel is no bird-brained victim, however. Her clear-eyed intelligence and rebellious spirit prompt her refusal to live a romantic lie spun by the handsome Armstrong. Unfortunately, her social powerlessness is such that suicide constitutes her only means of refusing. Isobel's social powerlessness is the engine of the play in the same way that the dove's mortality is the engine of Wright's painting. Her bones are also central to Ellen's story in 1999—a narrative "ghost story" device by which Stephenson reminds the audience of the socially vulnerable population living today. For, although many social changes have occurred to make Isobel's fate less likely in the Newcastle of Ellen's time, her friend Kate still represents a climate of scientific opinion favouring eugenics that would obliterate Isobel and her kind. Kate is a corporate geneticist who

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man or woman in the street will know more than you and I can ever dream of" (Stephenson 44). But his vision of social equality in a monarchy-free utopia has not come to pass in 1999; in fact the foundations of Fenwick's Radicalism are crumbling as surely as his house.

The house provides an important literal framework for the play. "Big, plain, solid, not quaint or charming" (Stephenson 29), it stands as a monument to Fenwick's Radical ideals. Two hundred years later, Ellen honors it as the gathering place of intellectuals and political theorists including Lavoisier, Marat and Tom Paine. She understands that the house frames "the history of radicalism and dissent and intellectual enquiry" (Ibid.). It is not just her material but her literal inheritance. Significantly, this inheritance is crumbling: it is too expensive, it is crippling Ellen and she wants to sell.

In 1999, no Luddite rioters pose a threat to the house. Instead, it faces a destruction of identity at the hands of prospective owners who will turn it into a themed spa with a suitably counter-revolutionary invented history, including a "Heritage Railway." Phil, the Handyman, sees this as inevitable given the creeping global obsession with theming from which nothing, not even the coal mine down the road, is exempt: "They've Disneyfied everything else" he jokes, "Why should the miners get off Scot-free?" (Ibid.) The commercialization of the house horrifies Ellen partly because it mimics her own future. Kate has offered her a lucrative job in a corporate system of for-profit science that she has opposed thus far in her life and, to the dismay of her husband Tom, Ellen is considering whether to accept. To make a decision, she scrutinizes the beliefs that first inspired her to practice genetic research in foetal diagnostics. Her re-examination of Wright's painting at the start of the play is motivated by her "ethical crisis" (Stephenson, 36). Using Wright's picture as a medium to conjure up her ancestor's world, she catalyzes the double time frame of the play.

Frames of Time

At first glance, the double time frame presents a simple technique of epic theatre that has been popular among socially aware writers in England for the last half-century. Caryll Churchill in *Cloud 9* and *Top Girls*, Paul Goetzee in *Plutocrats* and many others have favored the powerful effect

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The house provides an important literal framework for the play. "Big, plain, solid, not quaint or charming" (Stephenson 29), it stands as a

in that it discourages the audience from focusing on individual performers, emphasizing social types instead. Stephenson's play uses both these conventions while engaging with concerns about social power structures. She even sounds Brechtian when discussing performance style, warning actors about over-sentimentalizing: "It's trying to keep North Americans on the straight and narrow because they do have a yearning to just tip over and do a lot of crying" (Conley 2). However, Stephenson's reliance on suspense, climax and audience identification with the tragic fate of Isobel's rebellion all place her in a tradition more cathartic than epic. In *An Experiment with an Air Pump*, the common good of society and right doing are not Marxist. Rather they are ambiguous, complex and rooted in the heart: in Fenwick's words, "good science requires us to utilize every aspect of ourselves in pursuit of truth. And sometimes the heart comes in to it" (Stephenson 47).

As the dual plots move us from 1999 to 1799 and back, the repeated breaking of time frame combines with ever shorter scenes to accelerate the action in a climactic dramatic rhythm. Within this structure, several domestic and love stories run parallel in both time periods. This "echoing" of content is further emphasized by the fact that the actors who play Susannah and Fenwick double as Ellen and her husband Tom. A curious dramatic shorthand ensues, that enables the actors to apply the tension developed in one time frame to affect their relationship in the other. Ellen's relationship difficulties with Tom parallel those in the Fenwicks' marriage, but the climax for *both* stories comes in 1799 when Susannah erupts, demanding that Fenwick consider her as "equal." This "echo" effect means the audience follows two stories simultaneously: one that is played our before their eyes and one that is framed by extension and implication, offstage. Two plots for the price of one! In our production we found that for the audience to experience the double effect, the "offstage journey" of Tom and Ellen has to be very clearly understood and communicated sub-textually by the actors in their later scenes. Rehearsal time had to be committed to imagining the unwritten, unseen offstage scenes in detail.

Sometimes, the parallel stories of the two time frames collide on stage. This creates a sense of "forward lean" and suspense. The story of "how the box of bones came to be under the kitchen sink" uses a "ghost story" convention to connect the two time periods. A kind of hybrid dramatic time opens up when "ghostlike" characters from 1799 remain

in that it discourages the audience from focusing on individual performers, emphasizing social types instead. Stephenson's play uses both these conventions while engaging with concerns about social power structures. She even sounds Brechtian when discussing performance style, warning actors about over-sentimentalizing: "It's trying to keep North Americans on the straight and narrow because they do have a yearning to just tip

attempted suicide (metonym for the dove's asphyxiation in the bell jar) can therefore provide the emotional climax in the play.

Maria's reading of her love-letters, which weaves between the two main time periods, provides another kind of dramatic time. It has no parallel echo, neither is Maria doubled. The transitional, unframed nature of her theatrical space reinforces the uncertainty of her long-distance romance. As she reads her letters, stagehands change the scenes from one time period to another. At first glance, this seems an obvious, somewhat unwieldy staging solution for the double time frame. But Maria's letters from her fiancé in India reveal the detrimental effect of colonial life on his grasp of reality. Cliché romantic images gradually supplant his memory of her (the 1799 equivalent to "Disneyfication," perhaps) and she becomes increasingly angry. Her developing vitriol and shorter, ruder letters accelerate the play and after her last letter, time changes occur more quickly and without scene changes, so that the distinction between the two time periods becomes increasingly blurred.

The blurred time frames and echoed relationships within the intersecting stories prevent clear juxtaposition. Emphasis is not placed on the social-economic processes that form us, but rather on the humanity of which we are made. The play reveals us as poly-temporal creatures who respond similarly to certain social economic and affective stimuli, no matter what our day and age. This notion of the poly-temporality of humanity is relevant to Stephenson's main contemporary issue: our understanding and social responsibility in using the genome. After all, when we share a majority of genes with mice and fruit flies, no part of us, nor our actions can be considered completely, homogeneously "modern." Bruno Latour says: "I may use an electric drill, but I also use a hammer. The former is 35 years old, the latter hundreds of thousands...Some of my genes are 500 million years old, others 3 million, others 100,000 years..." (Latour 75).

Stephenson's characters are not on a singular and linear path through biological time: too much mystery and serendipity is involved when the present is so deeply affected by the past and the future. Only when Ellen changes her relation to the past by accepting the human reality of Isobel's bones and by understanding her childhood "will to power" through Science, can she heal her relationship with Tom and resolve her ethical crisis. Tom worries about the future. He is concerned that Ellen's work might end up serving a destructive desire for human perfectibility by

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might have complications so I won't go down it. Once you know something, you can't un-know it" (Stephenson 88). As she speaks Ellen realizes that ideas have their own momentum and that she must beware how they operate her. By the end of the play she has rejected the romantic quest for Enlightenment that Wright's painting inspired in her. She accepts the box of Isobel's bones as proof that the house that Fenwick built sits on questionable foundations; she also speculates that the new "spa" owners will run out of money, will abandon it, and that it will ultimately be leveled for a car park: a future that no one envisaged. Similarly, Ellen urges Tom not to despair for his own future. He must not value himself for his job alone for as a human being that questions the status quo he will never be redundant. Ellen no longer nurses a romantic vision of her search for truth. Her ethical crisis is not resolved: it has served to awaken her participation in the social ethical implications that are too often separated from scientific discourse. Stepping away from her romantic attachment to both the painting and the house, Ellen now faces the future with her passion for science tempered by a realist's apprehension.

Frames of Class and Gender

Ellen offers a strong contemporary female role and the play often expresses feminist frames of thought. In 1799, Susannah and Harriet are infuriated by the male attitude: "keep infants away from the fireplace and women away from science" (Stephenson 3) and even the placid Maria yearns for empowerment. However, in 1999, gendered power has been reversed. Ellen and Kate are now the powerful scientists; Tom is the redundant humanist. This debunks any idea that Armstrong's gender is the cause of his arrogance and violence. Something else is at the root of it, something that Kate shares with Armstrong. Armstrong is an aristocrat; Kate is a member of the scientific elite. It is their culture of wealth and privileged knowledge that causes them to be blinded by their scientific ambition. Unlike Armstrong, Kate neither seduces with lies nor murders by hand, but she asserts that in the case of genetic diseases like manic depression and schizophrenia, "you might want to terminate the pregnancy..." (Stephenson 37). Such eugenic absolutism revolts Tom and Phil. Phil needs no college education to see that genetic science might eventually create a health underclass identified by bar codes. He

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> ine this, people'll say I can't have this kid because it'll never get a mortgage. I mean, that's bloody mad, that. (Stephenson 68)

Phil's anxiety about genetic bar codes is shared by many: Kalle Lasn even put a man with a bar code on the back of his neck on the cover of his anti-globalization book *Culture Jam*. Phil imagines powerful secret and corrupt *X-Files* type "authorities" which Tom differentiates into actual health insurance companies, banks and government health services. Tom is the articulate voice of social conscience. He accuses the dominant class of world corporate leaders of mistaking "ethics for a branch of interior design" (Stephenson 52). Their alliance (Tom from an educated class, Phil working class) indicates that the old understanding of the class system must be re-framed if social justice is to be protected. Fenwick's radical attack on the class system is of no use to them. The Chartist goals have been met; some western women who (like Ellen), identify with male philosophers have even been empowered. However, Tom and Phil's alliance indicates an urgent need to define classes anew through an ethical consciousness that protects the socially vulnerable in the information age. Phil hints at the conditions needed for this ethics to come about: firstly, Fenwick's Enlightenment credo that knowledge is a good beyond question must be thrown out. Secondly, the romantic "Disneyfication" aesthetic must be rejected: it co-opts would-be Luddites, seducing the miners, as Phil says to "dress up as miners and pretend to dig coal" (Stephenson 29) for tourists. Thirdly, attention must be given to simply respecting life. When he lights a candle to mark the death of Isobel, Phil suggests that, "attention is a form of prayer" (Stephenson 67). This pragmatic, rather than romantic, spirituality, rooted in respectful human relations, is a value that remains a constant good between the two time periods of the play. It is attention that Susannah requires from her husband, and that Tom wants Ellen to give to the social consequences of her work. So, although gendered power is reversed between the 1799 and the 1999 plots, and although class boundaries are re-drawn to obliterate the class loyalty that prevents Roget from accusing Armstrong when he suspects him of responsibility for Isobel's death, Stephenson identifies a new struggle that reaches across class and gender. It is the struggle to distract human attention from the lure of perfectibility promised by consumer products, of which gene therapy promises to be one.

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Frames of Private and Public Behavior

Fenwick has rigidly defined frames of private and public activity. He suffocates Susannah's spirit by barring her from his public intellectual life. In 1999, Tom alerts Ellen that she is guilty of a similar "disconnect" between her public socialist values and her private passion for science. Keeping the realms separate has enabled her to deny that they might be in conflict, until the crisis of Kate's job offer. As she explores her motive for wanting to accept the job, Ellen becomes aware of her disconnect and the need to heal it. Nudged by Tom, she admits that her decision to take it was prompted by her heart rather than her head and realizes that her urge to pursue science is not cool and considered but, "a passion, it's intense…It's sexy. It makes me fizz inside. To me it's a form of rapture" (Stephenson 87). Her acknowledgement of this personal passion that drives her professional choice acts as a psychological talking cure: the recognition frees Ellen from the power of Wright's painting and allows her a new awareness of the dove in the bell jar. The scene following her realization has Ellen stand frozen on stage while Isobel reads her suicide letter. The theatrical image allows the audience to see Ellen give her complete attention to the predicament of the oppressed.

Stephenson must have decided that Ellen's recognition comes too easily. She revised the script for the first American production by the Manhattan Theatre Club in 2000, publishing a second edition with Dramatists' Play Service. Perhaps the revision was influenced by English reviewers' critiques that, in contrast to the vivid domestic conflicts of the 1799 plot, the 1999 plot is cerebral: a question of real estate and money markets, rather than fully personalized drama. The newer edition places the "social values versus personal passion" dilemma right inside Ellen's body. Act One Scene Three now reveals that she has had five or six miscarriages, which she avoids thinking about while throwing herself into work with stem cells from aborted foetuses. When Tom conflates her miscarriages with the pre-embroys upon which she experiments, Ellen breaks into tears. The implication is that the category divisions she has framed between her personal and professional life cause her emotional confusion because she is in denial of the human life inherent in the pre-embroys. In the revision, Tom betrays his discomfort with Ellen's entire research process: he has misgivings about her using aborted human tissue (continuing their alliance, Phil echoes this concern). Furthermore, Tom's moral concerns are no longer limited to the corporate uses of Ellen's work but include the research process itself: he has misgivings about her

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about her miscarriages leads the audience to question her veracity. Although Phil's fear of DNA bar codes and Tom's anxiety about market driven genetic health care remain in the script, the new edition has shifted the focus to the ethics of abortion and the stem cell controversy.

For a producer, the question of which version to stage is not easy. The revision contains dialogue improvements, cutting some melodramatic and poetic phrases and tightening lengthy scenes. Although it is never mentioned after Act One Scene Three, her miscarriage trauma offers an interesting opportunity to emphasize Ellen's femininity in contradistinction to her identification with the male philosopher central to Wright's painting. Nonetheless, I decided to stay with the first Methuen edition of the play partly because the cast had already begun work with it; also because of my own agenda. I was inspired to produce the play precisely because of the social concerns over global markets that are emphasized by Phil and Tom in the first edition—concerns that I think will be swamped once the words "stem cell" and "abortion" are aired. I am personally concerned with the vast number of genetic processes that are being patented each year, and the way global syndicates can use international subsidiaries to bypass national laws against cloning and altering germ lines. Public opinion is reluctant to constrain genetic technology because of the sublime mythology surrounding it. Pundits like Walter Gilbert refer to the genome as "the grail…the ultimate response to the commandment "know thyself" (Nelkin 19)—an attitude Ellen personifies at the start of the play. Medical science continues to be viewed as inherently good, despite the testament of historic eugenics programs and the warning in Harlin's 2000 Report to the European Commission on Genetic Research that, "Clear pointers to eugenic tendencies and goals inhere[d] in the intention of protecting people from contracting and transmitting genetic diseases" (Nelkin 98). Privacy about genetic information is not yet a constitutional right despite the warnings of genetics lawyers like Lori B. Andrews, who urges:

> …three levels of protection are necessary. The first is to ensure that people have control over the genetic information that is generated about them. The second is to give them control over who has access to that information. The third is to prevent discrimination based on genetic information. (Andrews 4)

Stephenson's first edition foregrounds these vital issues. I was reluc-

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during this play? It is her need to end her childhood infatuation with Science as painted by Wright. She starts by de-framing the painting, then the time frames, then the social imaginary that constructs science as objective and democracy as equality and ultimately arrives to dismantle the personal frame where she has defined herself as a scientist carrying Fenwick's torch.

At the end of the play, the meta-narrative of Enlightenment Science, so effectively stated in Wright's painting, has lost its power to inspire. The cumulative, overlapping and echoing journeys of the characters prompt the audience to consider new frameworks that have more space for social, moral, sensual, cognitive and emotional realities to coexist in an ethical narrative for the information age. The goal must be a Science that seeks sustainability rather than perfectibility. The process is one of empathic listening and self-awareness. Ellen's unrelenting efforts to understand herself and her motives enable her to negotiate an authentic compromise. She will accept the job and bring to it the moral scrutiny she uses on herself. This is no happy ending. Albeit she has managed to extricate herself from the two-dimensional frame that shaped her life, Ellen faces the new century with as much apprehension as does Fenwick, weeping over Isobel's corpse. The "gallery of frame-breaking" we witness in the show encourage us to do likewise.

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