

**PLAY THEME PACKAGE**

**Shelagh Stephenson's  
EXPERIMENT WITH  
AN AIR PUMP**



**In Production At Brock University's  
Department Of Dramatic Arts  
November, 2002**

## Who is Shelagh Stephenson?

Shelagh Stephenson was born in Northumberland, England, and studied Drama at Manchester University, graduating with a BA Honours in 1978. As a Northerner, she comes from a part of England that has long struggled with a depressed economy, marginalized even during the southern prosperity of the 1980's. A left wing trade-union politics is integral to the mental environment of the North and, when Stephenson was a student, most of the exciting theatre companies touring Manchester produced socially conscious work. Companies like **7: 84**, **Joint Stock**, and **Monstrous Regiment** urged their audiences to reconsider the social relations seemingly inherent in gender and the workplace and to become socially engaged in participatory democracy. These companies had a co-operative management style and considered their art as a responsibility to transform their society. One of their objectives was to inform and empower women, within the theatrical profession as well as in society at large. Caryl Churchill's huge success with **Cloud 9** on the West End was a shot in the arm for Manchester drama students who observed few female role models writing and directing in professional theatre. (In 1978, their single lecture on "Women in Theatre" was enthusiastically given by the bearded Professor Tony Johnson, due to the complete lack of female faculty in the Manchester Drama Department).



The plays of the northern touring companies tended to be epic in form, a result both of the Brechtian theories for socialist theatre and of a new generation of tightly constructed yet episodic television dramas (such as Dennis Potter's BBC2 drama **Pennies from Heaven**). Stephenson's own writing reveals this heritage of concern for social responsibility, women's autonomy and episodic structure. Reviewers mainly applaud her work for its profound excavation of relationship, which she presents through vivid characterization and unusually effective theatrical metaphors. With her leaning towards comedy, Stephenson balances the plunging darkness that careful dissection of the politics of private versus public relationship often brings. Her 1996 play **5 Kinds of Silence** (which won the Writer's Guild Award) is about horrible domestic abuse and incest, yet the **Times** reviewer called it "a hard edged comedy".

In 1993, after years of hard grind pursuing her determination to be a writer, Shelagh was commissioned to write five original plays for BBC Radio. These include **Darling Peidi**, about the notorious Thompson and Bywater murder case, and **The Anatomical Venus**, about representations of female sexuality. The wit, linguistic metaphor and clever construction of these works enhanced a meaningful exploration of disrupted psychology and social injustice, and her career as a popular writer of conscience began to accelerate. In 1996 she had her first large scale production, at the Hampstead Theatre in London, of her stage play **The Memory of Water**. This remains her most produced play to date. Catapulting her to international fame, the script has been translated into more than seven languages. It won the "Best Comedy" Olivier award in 2000, and in Canada was a great hit in Canadian Stage's 1998 season. Stephenson has adapted the play into a film titled **Before you Go**, released in 2000. This play came next. **An Experiment with an Air Pump** was joint winner of the Peggy Ramsay Award in 1997, and was premiered by the theatre-in-the-round Manchester Royal Exchange Theatre. It has also been widely produced. A commission from the National Theatre to write a play about the Mappa Mundi (the oldest extant map of the world) was produced in the NTS season last year. Her "Diary of a Woman in Despair", about the writing of this play, reveals the painstaking, eclectic research and the listening for character voice and rhythm that is at the core of her alchemical approach to writing. Stephenson is no longer regarded an emerging writer but as a celebrity, and her work is in great demand.

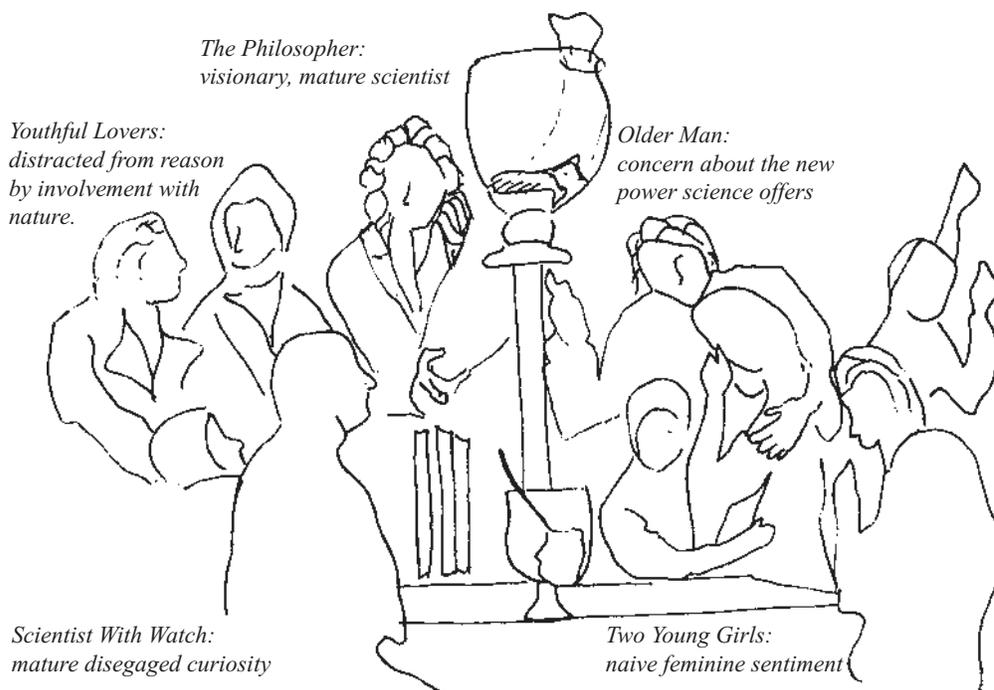
# Why Base a Play on An Experiment with an Air Pump?

By peopling her play with characters from a famous painting, Stephenson harnesses its classic energy, so asserting the long-term cultural importance of her work. This painting has a lot to offer.

## About Wright of Derby's Famous Painting

Joseph Wright of Derby painted this picture in 1768. The 15x20 foot canvas is renowned among art lovers as his most complex and vivid composition, and one of his greatest successes in the genre of "candlelight" painting. This approach to lighting a subject, from an intense yet unseen light source, was a technique perfected by Wright, but it is also the subject matter of the painting that has made it, as critic Ellis Waterhouse said, "one of the wholly original masterpieces of British Art". The painting combines a sensitive portrayal of human sensibilities with the fascination for science that revolutionized the 18<sup>th</sup> Century. It was an unusual subject choice and the artist sold it to a gentleman scientist for 200 pounds.

Wright's painting was inspired by a tradition of travelling lecturers who popularized the "Natural Laws" published (in Latin) in Isaac Newton's *Principia* of 1687. The Air Pump experiment had particular impact because it overturned a well known traditional axiom from Plutarch and Rabelais that "Nature abhors a vacuum" (*Gargantua Ixviii*). Wright belonged to the Lunar Society, a group of wealthy gentlemen intellectuals committed to the sharing and furthering of knowledge. Like the character of Mr. Fenwick they were fascinated by new breakthroughs in pneumatics, astronomy, chemistry, optics and social theory.



## The Experience of the Sublime

Both Wright and Stephenson use the characters to explore a spectrum of responses to the Air Pump experiment and to the larger spirit of Enlightenment science in the 18<sup>th</sup> Century. Art critic Judy Egerton comments that, in making them observe the physical death of the bird in the glass belljar, Wright is placing them within his contemporary framework of "The Sublime". The 18<sup>th</sup> Century term describes the awe, wonder and fear which people experience when they interact with the power of Nature. Stephenson's central character, Ellen, practices genetics because she too thrills to the Sublime experience: through science she hopes to be "beatified by the search for truth" (*Air Pump*, p. 5) and to become as God. The play documents her questioning of the moral energy inherent in this Sublime quest. Whether this questioning echoes Wright's purpose is a matter of contention among critics, who argue about his attitude to the Sublime. Do his characters express more "Feeling than "Objectivity"? Are they completely caught up in the immediacy of the Philosopher's "Spiritual Appeal"?

# Accounts of the Painting Compared With the Play

## I The Ages of Man

One critical view is that Wright demonstrates a new “Enlightenment” version of the “Ages of Man” theme, from juvenile sentimentality through objective curiosity to scientific maturity. Stephenson takes every opportunity to attack this view of maturity, which separates feeling from intellectual curiosity, labelling the former as “childish”. Her characters agree that so-called “mature” objectivity in science is a fallacy. For example when Kate, the representative of corporate science, accuses Tom of being a hopeless romantic, he insists that her argument for the health utility of genetic therapy is itself a Romantic pretense blind to its own deep prejudices. (Air Pump p.89).

## II Science in the Place of God

A second interpretation is that the direct, immediate gaze of the philosopher, as his hand is poised over the air valve, draws us as viewers *into* the scientific demonstration. We become complicit in the decision about whether, and when, to save the dove from asphyxiation. This challenge to the viewer to step in, as a *deus ex machina*, is used by Stephenson to alert her audience to our power and responsibility. Her use of a double time frame juxtaposes mistakes of the past with decisions pending in the future that demand *immediate action*. The jolts from one time frame to another create a two centuries wide montage of a world view in which science substitutes for religion. By starting her play with Ellen’s detailed deconstruction of Wright’s painting, Stephenson signals her intention dispute the Sublime experience it depicts. Ellen notes that the composition, placement and character of the Philosopher-lecturer is reminiscent of the Christ figure in religious paintings. With personal insight, she realizes that she has wanted to be God the scientist. At that moment she sees what sociologist Dorothy Nelkin has exposed in her book **The DNA Mystique**: the religious language with which corporate science cloaks its activities. Stephenson clearly wants her audience to join Ellen in questioning it. On closer examination of his painting, it appears that Wright’s Philosopher might also be in a divided state of mind.

## III A Warning to Mortals

Recently, art critic William Schupbach has pointed out that the glass jar on the table contains a skull and that the Philosopher’s right index finger is pointing at it in a warning about the inevitability of death despite scientific progress. This warning undermines and contrasts with the inner illumination, or “Enlightenment” of the rational pneumatic demonstration. Although she doesn’t refer to the skull, Ellen’s foreboding about the motives of genetic therapy echoes Wright’s warning.

***“The human genome is the grail. It is the ultimate response to the commandment “know thyself”. Walter Gilbert at the Human Genome Research Centre Los Alamos, March 1986***

## The Air Pump as Dramatic Symbol and Sign

Wright’s air pump experiment provides Stephenson with the characters and the central debate of the play, but she turns it into a didactic symbol. The dove survives the controlled experiment at the beginning, but in the end Isobel is not spared. In an image so didactic that it almost cancels out the sentimentality, Stephenson emphasizes in her stage directions that Isobel should take the place of the dove in the staged tableau at the end of the play. The air pump vacuum symbolizes the constricted social environment of Isobel’s existence, one in which a deformed Scots servant girl will inevitably asphyxiate. The message seems clear: that the socially vulnerable will be sacrificed as science advances.

The present day threat of genetic intervention means that it isn’t just the socially vulnerable who are threatened, but anyone outside the perimeters of the normal. Phil realizes that Kate’s scientific project hopes to see schizophrenics like his Uncle Stan selectively aborted in the future. Tom accuses Kate of elitism. “You don’t understand the world at all, do you? You do all your experiments in a vacuum”. The play uses the air pump to signal that at the same moment science discovered that a vacuum can be created, it stepped inside away from human ethics, to pursue only its own needs. Stephenson echoes the common belief that Science divided itself from Nature during the 18<sup>th</sup> century Enlightenment, and that the legacy of this separation today is global pollution on the one hand and the transgenic electro-chemical designer body on the other.



# The Air Pump as a Metonym for a Social Construct

The interweaving of the characters' personal, domestic, political and scientific beliefs characteristic of Stephenson's writing demands that we understand Science not as its own autonomous entity, but as a complex muddle. Science is a political, emotional, religious, cultural indicator of the consciousness of a people in a given period. Bruno Latour, a contemporary philosopher of science, shares this view. Like Stephenson, he attacks the myth of scientific objectivity. In his controversial book **We Have Never been Modern**, Latour uses Joseph Boyle's experiment with the air pump to argue that the resulting "invention of facts" is a social construct born out of Boyle's own reactions to the American and French Revolutions, the Industrial Revolution and the population explosion of the 18<sup>th</sup> century. Latour illustrates how social, political and religious desires direct a scientist to imagine a particular experiment. Boyle was, Latour argues, a concerned citizen of his time who desired citizens' political rights to expand in a new social contract that would put an end to civil wars. The air pump experiment can be viewed as a metonym for these goals "By compelling matter to be inert, by asking God [the designator of kings] not to be directly present [i.e. by expelling "ether" from the vacuum], by constructing a new closed space in a container where the existence of the vacuum would become manifest [i.e. separating God from Nature], by replacing opinions with observation—for only non-human indicators and instruments observed by gentlemen of good standing will be believed". The air-pump cannot be divorced from its context, as simply a "scientific device showing that vacuums are possible". Latour says it is also "an anthropological creation that redistributes God, Will, hatred and justice". In view of the ozone hole, global warming and gene manipulation, Latour argues with Stephenson, human beings must dispense with the vacuum of science and get back to acknowledging their participation in Nature.

## Stephenson's Social Concerns

Stephenson is not anti-science. Rather, she allows that scientific ambition is a powerful motivating human passion. Fenwick's vision of the "relentless, irresistible advance of science" which will enable "every man or woman [to] understand more than we can ever dream of" has great romantic appeal, while the prosaic nagging of his wife has none. The women of 1799 are frustrated by romanticism—scientific and otherwise—that marginalizes them as undifferentiated objects of affection. Susannah and Harriet are infuriated by the men's refusal to allow them participation in the world of ideas, and even the placid Maria rebels.

Perhaps Stephenson's unromantic feminist light exposes the pretenses of Fenwick's liberal politics, but in this play inequities of gender are not what empowers evil. In 1999, gendered power has been reversed. Ellen and Kate are now the powerful scientists, Tom the redundant humanist. Given that high ranking research positions in science continue to be dominated by men, it would seem that a feminist critique of science is not the object of this play. Stephenson's choice to cast two female scientists in 1999 bypasses the idea that gender causes arrogance and violence and suggests that something else is at the root of evil. Unlike Armstrong Kate does not kill by hand, but she does insist to Phil that, once having identified the gene for manic depression, parents have the moral right to make eugenic decisions. 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 succumb to their scientific ambition. Might the temptation to empower genetic science eventually create a "Health Underclass" today, just as the poor were disenfranchised in 1799?

Monopolies and government price-fixing to control food production are a side-effect of Adam Smith's Enlightenment economics, as attested by the riots outside Fenwick's house in Scene 1 (pre-cursors to the famous Luddite riots of 1811). In our own century, the anti-globalization protests at the World Summit meetings in Seattle, Quebec City and Calgary provide a contemporary echo. While world market manipulation is the main focus, the global trading of genetic human and plant patents also concerns many protesters. In the play, Tom worries about the market-driven culture of scientific enquiry, which is of a piece with the denial of history he sees in the "theming" of the Fenwick house into a Disneyfied hotel. He knows the market place hates history, preferring to think of ethics as a "branch of interior design". Stephenson's dual time frame asserts the importance of history by illuminating the social concerns of the present and the future.



## The Dual Time Frame and the Jolt of Historicization

For Stephenson intellectual debate is inextricably joined to personal relationship; therefore two domestic love dramas are woven through the ideas in her play. She uses the double time frame deliberately as a device to prevent the audience from becoming emotionally entangled to the detriment of thought. She sees this Brechtian technique as particularly valuable on our side of the Atlantic.

***“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...” Shelagh Stephenson.***

### A Brechtian Structure

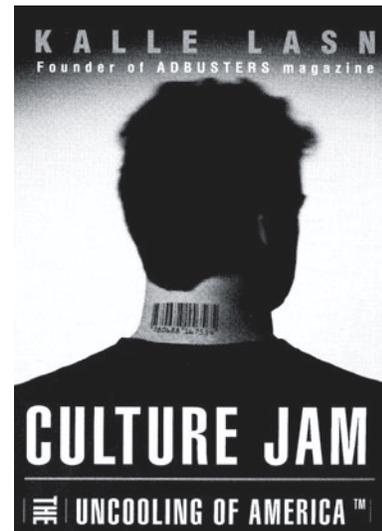
The theatre philosopher Bert Brecht argued that all plays should be “historicized” —staged as though they were historical pieces— in order that audiences come to see all human societies as social, cultural and economic constructs that must inevitably change over time. The audience is then alerted to the potential for social change and ready to engage in discourse about possibilities for change. Juxtaposing two historical time periods has proven a strong technique for realizing this effect. It has become a favourite device with several contemporary English playwrights including Caryl Churchill, Tom Stoppard and Paul Goetzee. In their individual ways, these writers have all used the device to distance the audience from emotional identification with the characters and to emphasize intellectual responses.

Experiment with an Air Pump, inhabits three time periods: two on stage (1799 and 1999) and one in the auditorium (2002). Although there’s no great distance between 1999 (when the play was written) and the present day, audience awareness of the fast rate of developments in genetic science since 1999 emphasizes Stephenson’s point that civil society is too slow in coming to grips with them. The play starts in the present, with Ellen addressing her real audience directly, to draw us in to the drama of the painting en route to 1799. Then we are jolted back and forth at an increasing rate until the boundaries between time zones are almost dissolved, as the characters welcome the new century.

***“Historicization leads to considering a given social system from a point of view of another social system. The evolution of society provides the points of view.”***  
***Bertolt Brecht.***

### Brechtian Characterization shows human “ Polytemporality”

The doubling of some actors (who play different characters in the parallel time frames) is also a technique popular with socially aware writers. It inhibits us from identification by asking us to notice the actor under the characterization. Philosophically, it considers human beings as poly-temporal animals who respond similarly— no matter what the day and age— to social- economic stimuli. Characters are not presented as unique beings on a singular path of evolutionary progress. In his argument that the Enlightenment is a chimera in that we have never been either enlightened or modern ( and therefore clearly can not be post-modern), Bruno Latour also draws on a poly-temporal notion of human beings as “exchangers and brewers of time”. None of our actions, nor any part of us, is completely, homogeneously “modern”. Progress is not a forward moving wave. Rather, we are in a dialogue with our history, backwards as well as forwards. For example, Tom’s discovery of the bones under the kitchen floor affects his relationship with the house, with his wife and with her intended career move. Only when Ellen changes her manner of relating to the past, re-imagining the bones as a person, can she heal her relationship with Tom and see how to cope through her ethical crisis. In Stephenson’s play, the present is inseparable from histories of the past and both affect the possible futures.



***“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”.*** Bruno Latour.

## A brief Historical context for the 18<sup>th</sup> Century scenes

**Experiment With an Air Pump** compares the onset of the Industrial Revolution and the race for Colonies with the intensity of change we are experiencing today through silicon chip cultur, globalization and patenting-mania.

### Farming Monopolies, Population Growth, Industrial Revolution

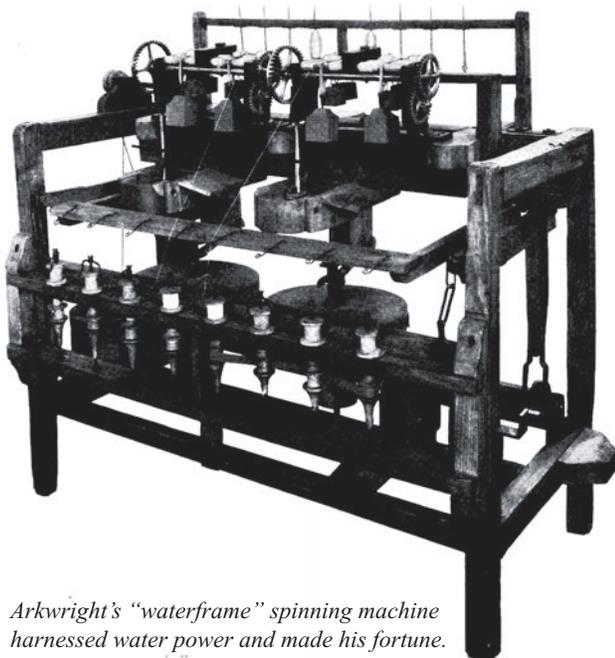
The riots at the beginning of Stephenson's play express the social calamity that accompanied the rapid technological change of the 18<sup>th</sup> century.

The agricultural revolution enclosed lands that had been communal for recorded time, while farming methods were transformed beyond the recognition and the financial means of the traditional yeoman farmers. Food resources were stretched thin as the population of England & Wales doubled between 1785-1830. Meanwhile, Britain was involved in a costly continental war against revolutionary, then Napoleonic France from 1793, which worsened the plight of the poor with conscription and war. The population of the cities grew at a phenomenal rate in response to the collapse of traditional farming and cottage industry and to the employment demands of the new industry. There was such a fever of invention to increase industry that the British patent office inaugurated by Charles II did the same business in the *decade* of 1770 than it did in the preceding *century*. 292 patents were issued in Britain in the 1770's, 477 in the 1780's and 647 in the 1790's. A way of imagining the impact of this on the landscape is that in 1799 (a decade after their introduction) as many as 2,000 steam engines were in use in Britain. The intense suffering of the poor through this period of change was the focus of much intellectual debate. The prevailing attitude, led by the Utilitarians, was anti-welfare. It was believed that charity would breed a softer race. Even the influential Scottish preacher Thomas Chalmers opposed poor-relief, pointing out that the close-knit presbyterian communities provided one another with



*Industrialist R. Arkwright, friend of Wright of Derby*

mutual support and the basic reading and writing skills necessary for religious worship. (Since "the admirable practice of Scotland" in this laissez-faire "management" of poverty was applauded by the English, Isobel's claim that "all Scots can read" locates her as a member of the literate Scottish poor to whom a book is a holy thing). During the war years, charity was harsh—it was estimated at the time that only 3 out of 20 children born in the workhouses survived infancy. In response, the 18<sup>th</sup> century fulminated with ideas for social and political reform. For example, the Sunday School and the British and Foreign School movement was formed to teach poor children to read and write, and London Hospital was founded in 1740. In the 1770's, John Howard began his inquiries in to prison reform and the Campaign against Slave Trade and Slavery began in 1770, leading to the 1811 Act prohibiting the transportation of slaves.



*Arkwright's "waterframe" spinning machine harnessed water power and made his fortune.*

## Social Protest and the Intellectual Societies

Enquiry into the nature of things and how to improve them was characteristic of 18<sup>th</sup> century intellectual life. The Royal Society founded by Charles II after the model of the Academy Francaise inspired many imitations at all levels of society and in all parts of England.



*The famous Revolutionary chemist, Lavoisier; with his wife. In Act 1 Ellen tells Phil that Lavoisier once visited her house, and that outlawed Tom Paine gave secret readings there*

While Joseph Wright's Lunar Society was not particularly radical in its politics, others were inspired by the French Revolution. The government authorities held these philosophical and scientific debating societies to be a dangerous breeding ground for Radical thought; during the war years of political repression when all public gatherings were banned, historian E.P. Thompson describes an active underground revolutionary tradition. In 1791, the Deputy Adjutant General attacked the Association of the Sheffield Mechanics saying, "Here they read the most violent publications and comment on them, as well as on their correspondence not only with the dependant societies in the towns and villages in the vicinity, but with those established in other parts of the Kingdom". Fenwick was definitely part of this movement with his republican sentiments, his sympathy for servants and for rioters. Riots protesting the price of corn, decreasing wages and the lack of jobs were often focused against the new machines that put cottage industries out of business. Fenwick is dismissive of the shortsighted goals of his local rioters but by 1811 the quelling of the more organized Luddite Riots required a huge military operation.



*And at night when all is still  
And the moon is hid behind the hill  
We forward march to do our will  
With hatchet pike and gun!  
Oh, the cropper lads for me,  
The gallant lads for me  
Who with lusty stroke  
The shear frames broke  
The cropper lads for me!  
A Luddite Song*





## The Colonization of India

During the 18<sup>th</sup> century the British gained control of India through the instrument of the East India Company. The Mughal Empire that dominated India was divided by tensions between Muslim, Hindu and Sikh interests— tensions that were deliberately exacerbated by political rivalry between the Portugese, French, Dutch and English merchant colonists who were all attempting to gain commercial control of India. The English increased their power until the capture of Delhi in 1803 effectively completed their dominance.

The race for the colonies was a significant trend of the 18<sup>th</sup> century, and Stephenson manages to build it into her plot despite its tangential relation to her central story about science. Maria's letters from her fiancée Edward show the stages of colonization: first wonder and shock at the exotic foreignness, followed by a desire to make it familiar. Through a protectively selective memory warp, "Home" itself becomes foreign to him and a new, sanitized "better than the real thing" home is carved into the foreign country. A parallel is drawn in the 1999 plot where the "re-development" of Ellen's house into a "themed" spa provides a present day version of a colonial urge to sanitize dangerous social history analagous to Edward's colonization of India. Phil, who is ignorant about cultural history but intelligently versed in urban myths, cheerfully acknowledges that the theming of culture is "Shite", even though he makes his living from it. Like most people he doesn't question his own easy complicity in the "disneyfication" of the world; despite his distaste for it he accepts its inevitability. Indeed, the "theming of the world" is one of the fastest growth indicators in the entertainment and leisure industry, whether hotels, restaurants, museum-galleries or theme parks. Stephenson is in good company in drawing an analogy between colonization and theming. American cultural critic Noam Chomsky argues for resistance to "American monoculture". Naomi Klein, Canadian author of *No Logo*, speaks for the many people who are concerned by this global trend to "theme" local and indigenous cultures out of exisatence. The great English novelist Julian Barnes, wrote *England, England* as a satiric investigation of our mania for "theming". In a different vein Kirkpatrick Sale's book *Rebels Against the Future* describes the manifesto of a Neo-Luddite movement founded to resist the technology and "branded existence" of what he calls "the second Industrial Revolution".

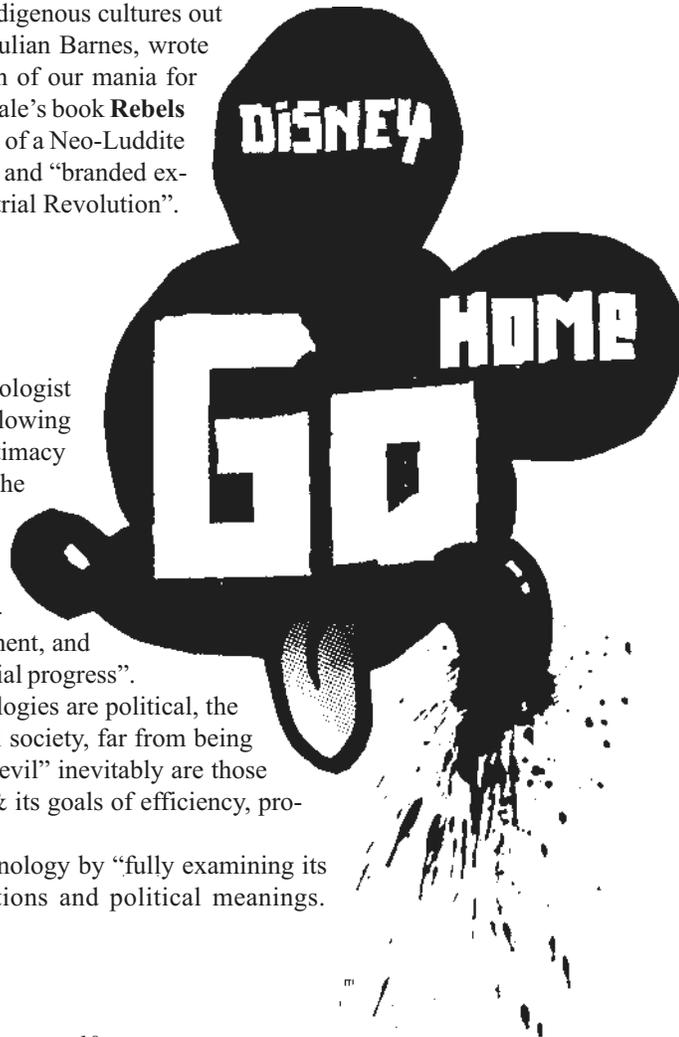
## Notes towards a Neo-Luddite Manifesto

In March 1990 a New Mexico psychologist named Chellis Glendining published the following basic principles in "an attempt to give legitimacy to those who are troubled by & resistant to the technology of the 2<sup>nd</sup> Industrial Revolution".

- Opposition to technologies that "emanate from a worldview that sees rationality as the key to human potential, material acquisition as the key to human fulfillment, and technological development as the key to social progress".

- "Recognition that, since "all technologies are political, the technologies created by mass technological society, far from being "neutral tools that can be used for good or evil" inevitably are those that serve the perpetuation of that society & its goals of efficiency, production, marketing and profits.

- Establishment of a critique of technology by "fully examining its sociological context, economic ramifications and political meanings.



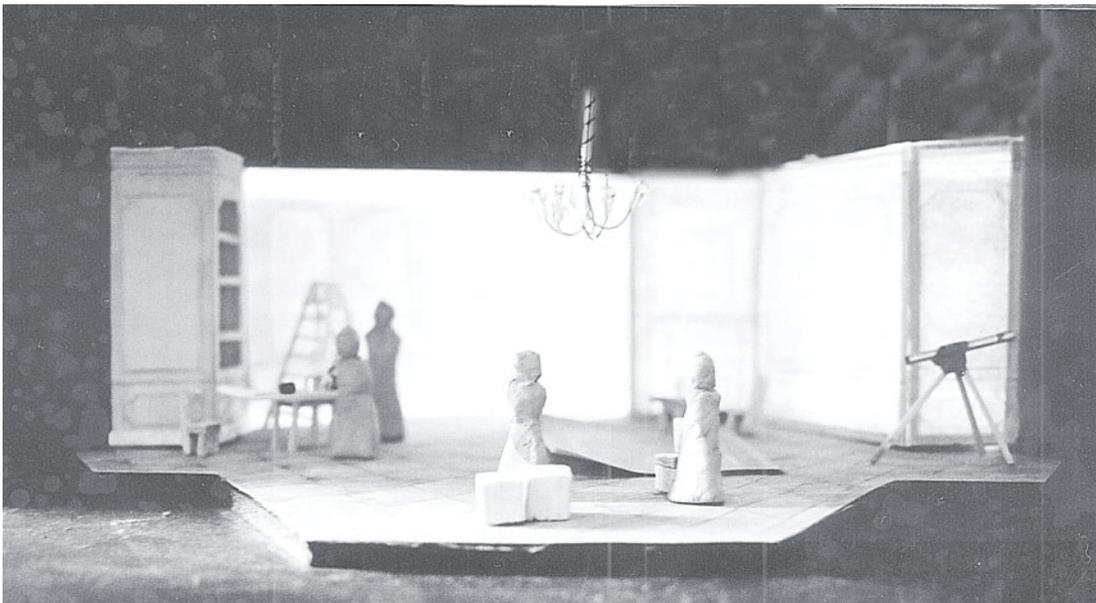
## About the Production

Karyn McCallum's set is a "lightbox" where rich back-lighting of the wall panels offers a homage to Joseph Wright's interest in light and reiterates the glowing experiment which fires Ellen's imagination of the characters at the start of the play. It is important to us that the transitions between periods occur effortlessly. To this end, we are keeping properties minimal and relying on the extreme shift in quality of light to communicate the change of period. The modern scenes show an exhausted, empty house, harshly lit from the front. Our objective has been more to contrast the mood of the two environments than to convey a complete, detailed historical shift, and to document physical continuities between the time periods, as well as contrasts. As time runs out towards the end of the century, we want to establish a progressive emptying-out of the house and a diminishment of its spatial properties. Costume changes become quicker as the play unwinds, and the lines between the characters at the end are somewhat blurred as they all join in marking the millenium. The three moments where the two time frames overlap on-stage are very exciting to us as a focus for exploration.

Production rehearsals will focus first on the parallelism in the plots of the dual time frames. We will use picturization to discover the multi-layered relationships of the characters where key concerns about power in the hierarchy of gender, class and income are communicated. The markers of accent so specific to British social groups are not one of our priorities; however, we may decide to use a light Scots accent to underscore Isobel's difference from the others.

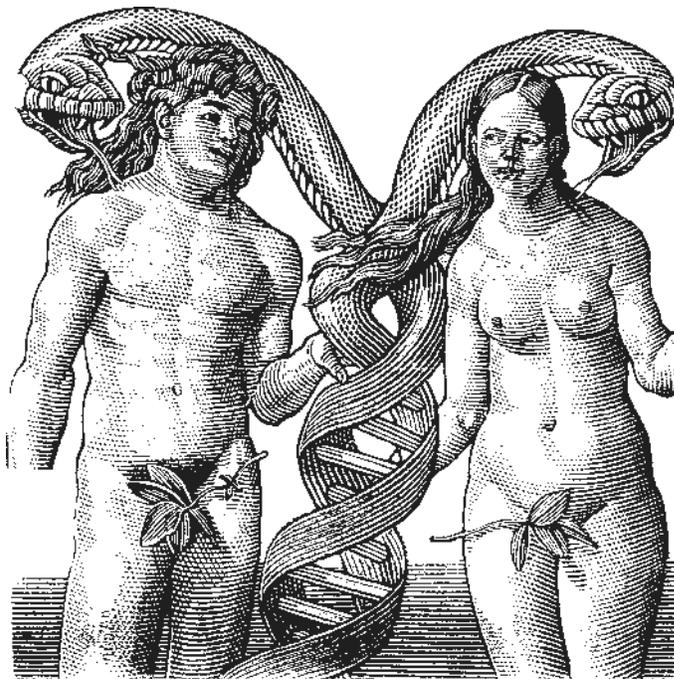
Our second priority will be to generate a sense of forward action and suspense. This will mean careful structuring of character journeys. Susannah's slow boil and Maria's developing attitude towards her fiancée are particularly challenging to pace. Likewise, Isobel's infatuation with Armstrong contains several repeated action beats which we will need to explore so as to find psychological variety. We'll take every opportunity to inject humour, as it is important to balance as much as possible the view of Isobel as a victim. Her suicide is a choice, arguably, even a rational option. A technique we will have to master is the repeating pattern Stephenson has written into the play where a conflict between characters grows red hot but is interrupted by the arrival of a third before it can erupt. It will be important not to allow the energy to dissipate after "good manners" divert the topic of debate, but allow it to be converted to stored, kinetic, emotion.

Stephenson's object has been to write a play for a contemporary audience. She has not been careful or detailed in her portrayal of 18<sup>th</sup> century language or life. This is an approach she announces at the beginning of the play by having stage management come out to over-dress Ellen in her period corset. Although she has some fun in Harriet's play-within-the-play lampooning 18<sup>th</sup> century pomp and pastoral, the "canting ranting and tones" of Garrick's theatre are not otherwise important, and neither is period stage structure or a relationship of direct audience address relevant—with the possible exception of the letter scenes. Our overall objective will be to honour Stephenson's smart and vivid script by making the production flow, buoying up the ideas with a deep understanding of their integral connection to the relationships.



## Some Important Events in the 18<sup>th</sup> Century

- 1734 Locke's **Essay on Man** published; Voltaire's **Lettres Philosophiques** published.  
1740 Hume's **Treatise on Human Nature** published.  
1754 Abbe de Condillac's **Treatise on the Senses** published, endorsing empirical observation in scientific enquiry.  
1763 end of the 7 years war between Britain and France.  
1776 Adam Smith's **The Wealth of Nations** published.  
1777 Sheridan's **School for Scandal** produced.  
1778 Death of Voltaire.  
1780 Gordon Riots in London.  
1783 Independence of America's 13 Colonies recognized by British Government.  
1784 Mrs Siddons first played Lady Macbeth.  
1785 Mozart's **Marriage of Figaro** produced. Death of Doctor Samuel Johnson.  
1787 Society for Effecting the Abolition of the Slave Trade founded.  
1788 Political crisis during madness of King George III.  
1790 Burke's **Reflections on the French Revolution** published. Adam Smith **The Wealth of Nations** published.  
1792 Tom Paine's **Rights of Man published:** in rebuttal of Burke's eulogy for French monarchy which "admired the plumage & forgot the dying bird".  
1791 Wordsworth & Coleridge: **Lyrical Ballads** published.  
1792-3 Robespierre's Reign of Terror in France.  
1793 Britain at war with France. Louis XVI executed. (Invasion threat until 1803) British Board of Agriculture set up.  
1795 Seditious Meetings Act prevent crowds of protesters assembling in Britain.  
1797 Spithead mutiny in British fleet.  
1798 Malthus' "Essay on Population". Further Laws restricting public meeting and freedom of worship.  
1801 First General Enclosure Act.



## Events in Human Genome Technology

- 1853 Father Gregor Mendel tracks hereditary characteristics of peas, in Bonn.
- 1900 Mendel's genetic research "rediscovered" by William Bateson, in England.
- 1936 Bell & Haldane showed the lineage of haemophilia and colour-blindness through genetic inheritance.
- 1948 J. Neel showed that sickle cell anaemia is the product of a single recessive gene in the haemoglobin molecule.
- 1953 Crick and Watson discovered genes are double helical strands of deoxyribonucleic acid, 2 strands running parallel to each other and joined at periodic intervals by rungs formed of one of 2 pairs of bases: adenine and thymine or cytosine and guanine.
- 1956 Lund, Joe-HinTjio & Levan demonstrate that the human genome contains 22 pairs of autosomes and 2 chromosomes.
- 1959 Discovery that Down's Syndrome results from a chromosomal anomaly.
- 1973 Invention of "recombinant DNA" where a fragment of DNA can be "snipped out" of one genome using scissors called restriction enzymes which bind to and cut DNA at specific sites dictated by the sequence of base pairs. This enabled single genes to be isolated for study.
- 1978 Maxam and Sangar devised technologies to determine the sequence of base pairs in a stretch of DNA. Through the 80's new technologies speeded up this process.
- 1986 The US announced intention to fund Department of Energy and National Institute of Health to complete the sequence of DNA.
- 1988 HUGO (Human Genome Organization) founded, an international society intended as a united nations of the genome. Critical of goals for "predictive medicine" it endorsed proposals to exclude all eugenically oriented health policies, to prohibit research seeking to modify the human germ line, and to protect the privacy and anonymity of individuals' genetic data.
- 1981 Cantor invented pulsed-field gel electrophoresis to cleave chromosomes into fragments that can be re-inserted in to new genetic elements such as plasmids, capable of replicating as recombinant molecules in host cells.
- 1988 U.S. Geneticists develop procedure to create transgenic animals.
- 1997 Dolly the Sheep, the first successfully cloned animal, born. (There are concerns that Dolly is aging more rapidly than ordinary sheep).
- 1999/2000 Genomes are sequenced for the fruitfly, the cholera bacterium and other pathogens. "Chemical genetics" research develops the ability to "turn on" and "switch off" individual genes and to breed "knockout mice" with a specific missing gene.
- 2000 June 26. Scientific leaders announced completion of a "working draft" of the human genome.
- 2001 ANDi, the first transgenic primate, is born at the Oregon Regional Primate Research Centre. He has a jellyfish gene in each of his cells.

***In the age of the Genome, 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 of who has access to that information. The third is to prevent discrimination based on genetic information". Lori B. Andrews.***

# **A Glossary of Names, Places and Events in the Play.**

## **Robert Boyle (1627-1691)**

Often called the “Father of Modern Chemistry”, Boyle was an English physicist and chemist dedicated to demonstrating theories through experimental proofs. A member of the Royal Society, he was the first to distinguish between chemical elements and compounds. He was a deeply religious man who saw no conflict between empirical science and religion. He was sympathetic to the Dissenting Church of his time and left a large portion of his estate to charity and missionary work.

## **Bourgeois (pg13)**

The original meaning denoted a freeman of a medieval town. Later it came to mean a shop-keeper or merchant, and by the eighteenth century it connoted a whole social class between the class of the aristocracy and that of the working class. Fenwick’s family is bourgeois. Later, in mid nineteenth century Marxist doctrine, bourgeois referred to capitalist middle men who made their living by negotiating between producers and consumers. The class function was viewed as parasitical, and the word came to describe a person who is rigidly or conventional, overly affected smugly greedy and miserly of goods and spirit. Although the word is used in 1799, it carries the post-Marxist pejorative sense of being stuffily affected and middle class. Stephenson’s language is always contemporary, and does not parody 18<sup>th</sup> century style save in Harriet’s play within the play.

## **Lavoisier (1743-1794)**

Antoine Laurent Lavoisier was the greatest chemist of his time and the founder of modern chemistry. He was an advocate of the French Revolution for which he worked tirelessly, seeking to bring rational methodology to a variety of archaic social traditions. Among other things, he established free education for the peasantry in his district, he designed new fire hydrants, currency and minting methods, improved the quality of gun powder used by the Revolutionary Guard and determined the true length of the metre. Lavoisier made an enemy of Marat by exposing as false his claim to have viewed the element “fire” in pligiston. to the French Academy of Science

## **The Luddites**

The Luddites took their name from a mythical Ned Ludd—whose origins are still obscure, but who is believed to have been hanged after smashing 2 frames belonging to his Leicestershire employer in 1779. Between 1811-1816 organizers agitated popular rebellions, particularly in the great industrial centres of northern England. Some historians believe that the Luddites were a highly secret and well-organized society and that members who survived the riots went on to become Chartists in the movement for universal suffrage and a Bill of Rights.

## **William Shakespeare (1564-1604)**

The most famous English poet and dramatist dead or alive. Quoting Shakespeare signifies cultural literacy and (in the case of his love poetry) extremity of feeling. Armstrong quotes **King Lear** IIiv, where Lear begs his daughters not to stint on allowing him his kingly retinue. A Shakespearean sonnet, such as Isobel reads, is composed of three groups of four lines (quatrains) each, typically with the rhyme scheme abab cdcd efef and a final couplet with the rhyme gg.

## **Robert Southey (1774-1843)**

A British lyric and epic poet contemporary at the time of the play, Southey was a friend of Wordsworth and Coleridge. He was educated at Oxford, who was for a time a fervent supporter of the French Revolution on which he wrote an epic poem and two dramas. Later, after Robespierre’s Reign of Terror, he withdrew his support. In 1813 he was Poet Laureate, but was generally overshadowed by his luminous poet friends.

## **Tom Paine (1737-1809)**

Paine was an American Revolutionary, patriot, writer and political thinker, born in England. He was a frequent visitor to France and a supporter of the Revolution in its early days. Paine maintained a correspondence with leaders of Radical movements in England and throughout Europe. He often travelled, lecturing to societies advocating social change. For this, and for his role in the American Revolution (1775-1783), he was exiled from England and had to visit secretly.

## **Phlogiston**

Stahl, the German physician had propounded the theory that “phlogiston” or “fire stuff” was what made combustible bodies ignite. On combustion it was believed that phlogiston was driven off into the air leaving only ash behind. Joseph Priestley’s research focusing the sun’s rays on red calx of mercury to produce metallic mercury & a gas, was picked up by the chemist Lavoisier whom he met in 1766. This led to a new theory of combustion and confirmed the law of the conservation of matter.

## **William Hague**

The Oxford educated leader of the British Tory party, Hague was Margaret Thatcher’s chosen candidate, inheriting the post after his predecessor John Major lost the 1997 election. Hague has branded his politics as “The Common Sense Revolution”, a logo that is also being used by Tories in North America. For Hague, it consists of five central “guarantees”: the complete deregulation of education, rationing healthcare in the National health Service, a “one strike you’re out” policy towards people on benefits who refuse employment, tax cuts to be funded by cuts in welfare, and refusal of European Money Union.

## **The French Revolution**

In May 1789, amid mounting unrest throughout famine-stricken France, the Estates General was summoned. This traditionally inactive advisory body to the King consisted of three “Estates”: the clergy, the nobility and the people. The Third Estate were locked out of the meeting due to their demands for tax reform. They set up their own assembly at a near by tennis court and swore to convene until a national constitution was established that guaranteed government representation. Public support for the new National Assembly caused the July 14 march on the Bastille. This, the first outright defiance of Royal power, opened an era of power for the lower classes. What had begun as a moderate demand for governmental reform became a vision of a completely altered society based on the inspirational philosophy of “Liberty, Equality, Fraternity”. Other European governments, concerned about the contagion of the revolutionary attack on property and the established order of being, mobilized to intervene. In 1791, the need to defend their borders unified the French nation while sending the National Assembly into a new “Reign of Terror” phase of extremism against monarchists. The King was executed and from 1793-4 all suspected of sympathy with the monarchy were executed by the guillotine. The Revolutionary Wars eventually gave way to the Napoleonic wars as Buonaparte’s military successes won him the support to stabilize and ultimately to overthrow the government.

## **The Dissenting Church**

A Protestant Church in England or Scotland that refused to accept the doctrines and religious forms of the established state authority, the Church of England. John Wesley, famous for his tireless evangelism and for his emotional oratory, was the founder of Methodism. He preached a doctrine of individual conversion, a “new Birth” by which every soul finds God in its own experience, independent of the Church.

## **The Presbyterian Church**

The Presbyterian Church is one run according to John Calvin’s Protestant theology, under the authority of presbyters, or elders of the given parish, over whom there is no higher office. Calvin (1509-1564) emphasized doctrines of predestination and salvation solely by God’s grace.

## **Dr. J.I. Guillotine**

French Medical Doctor who advocated the use of the guillotine as a Reform measure in methods of capital punishment, on the grounds that it was more “scientific” and humane than traditional methods (drawing and quartering, breaking on the wheel etc.). The blade was drawn up to a height proportional to the density of the object to be cut off, to ensure that its momentum would expedite a single, quick, “clean” execution.

### **Jean Paul Marat (1743-1793)**

One of the leaders of the French revolution, vividly remembered by David's famous portrait of him in his bath, Marat was the greatest journalist of the French revolution. His passionate essays in his newspaper "**L'ami du Peuple**" made him a popular hero. Age 22 he spent went to England where he worked in medicine and as a veterinarian and lecturer, for 10 years. From 1770-1772 he was in Newcastle. In 1774 he wrote and published in English "The Chains of Slavery", and received his doctorate in medicine from St. Andrews University, Scotland. On returning to France he became physician to the King's brother, and continued his scientific investigations, particularly in combustion and optics. In 1789, as the Estates General cautiously began the revolutionary process of challenging the King's government, Marat devoted his life to the cause of revolution. He was made a deputy of the National Assembly by the people of Paris, and was famously vitriolic in his attacks on the Girondist political group. They had him arrested in 1794 and he was tried for treason against the revolution. He was exonerated and used his triumph to outlaw the Girondist party. Charlotte Corday, an aristocratic Girondist sympathizer, assassinated him in his bath.

### **Peter Mark Roget 1779-1869**

Born in Worcestershire, Roget was a physician, philologist and amateur scientist. He studied medicine at Edinburgh and helped to found the School of Medicine at Manchester. From 1808-1840 he practiced in London. In 1814, he invented a "log-slide" rule for calculating the roots and powers of numbers, which won him a fellowship in the Royal Society. Roget's interest in optics caused him to theorise "the persistence of vision". The retina of the eye retains an image for a fraction of second after the image is removed or changed. This fools the eye that a succession of slightly altered images (as in a flick-book) are actually moving images. Roget's theory provided the foundation for other work on animation. He is best remembered, however, for his **Thesaurus of English Words and Phrases** (1852) that he began age 63. This is a comprehensive classification of synonyms or verbal equivalents, still popular in modern editions.

### **The Utilitarians**

Jeremy Bentham and Edwin Chadwick were prime parliamentary proponents of this philosophy, which argued that since human beings pursue pleasure, the ideal of good must mean the greatest good for the greatest number. Although they favoured political and social reforms and believed in popular sovereignty, Utilitarians also believed in strong administrative power, electing state legislators with the power to define the greatest good. In his major work, "The Constitutional Code", Bentham described a system of social ministries: Indigence Relief, Education and Health which were, much later, adopted in some form by the British Parliament.

### **John Wesley 1703-1791**

Wesley preached Methodist values that became the core of Victorian sobriety: diligence, sobriety, frugality & a new sense of personal morality. He fought the slave trade in Bristol where fortunes were built on it, and toured to America where Methodism found a great following. His resistance to the Church of England State religion put him in prison on several occasions.

**"The real philosopher is the man who has freed himself from the prejudices imposed by a religious education, who recognizes that religion is no more than a human passion born of wonder, fear and hope; who is given to the study of causes; who is governed by reason as the Christian is governed by grace. He bases his principles on observations; he realizes that all ideas come from the senses; he studies the universe but without believing he will succeed in discovering all its secrets; he lives in society and owns his overriding duty to society; he achieves probity because he follows reason".**

Dumarsais, Le Philosophe 1740.

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