

“O, never shall sun that morrow see!”:  
the sun vs. coal morality play in *Macbeth*

Marianne Kimura

The secret morality play in *Romeo and Juliet* tells the story of Man transitioning away from the sun—to coal (and other fossil fuels)—and then staying in exile from the sun (i.e. man is dependent on fossil fuels) before returning to the sun (Romeo’s suicide). (This could be a slow process encompassing many generations.) This economic change occurs because the system is emergent, comprised of intricate, ultimately uncontrollable interactions between different entities.

*Macbeth* is where this process is studied in closest detail. In effect, man’s transition back to the sun (as primary energy source) is magnified in a psychological drama of denial, destiny and desperation. This underlying drama can be traced through imagery, especially imagery of the sun, horses, and nature imagery, such as, bushes, trees and other plants, and animals.

In the standard morality plays, the central character, Everyman, was an allegorical representative of mankind. This character typically resists the temptation of the Vice character at first but then succumbs to the Vice (the Vice character was played by the leading actor of the troupe and this role was the most engaging and entertaining of all the roles), then suffers from this poor choice, then reforms or is reformed as contact with the upright and pious Virtue character leads Everyman to correct himself.

Shakespeare developed his concept of the Everyman along the fault line sep-

arating collective behavior from individual behavior, especially as these behaviors affect our use of fossil fuels and our other relationships with the natural world. Collective behavior causes people to form new relationships with the universe (and the planet) that they may not individually approve of or condone, but which are nevertheless personally inescapable. Scientific exigency (the Second Law of Thermodynamics, for example) replaces the old role of “fate” in this kind of drama: “Life is a complex thermodynamic system, not a paragon of virtue” (Schneider and Sagan, 295) may be a modern restating of the ineluctability—the cosmic inescapability—of the situation.

*Macbeth* plays out to show humanity facing the tipping point—the inflection—where the economic costs can no longer be borne (the natural consequences of depletion and pollution—that is, the purely natural consequences since heliocentrism<sup>1</sup> validates the long-term resilience of the sun economy). So *Macbeth* is mostly a close-up moment from the broader story that is told in *Romeo and Juliet*. *Macbeth* shows mankind facing up to its collective decisions. Before this “day of reckoning” occurs, the play also allegorizes humankind’s movement away from the sun. In the play, the basic cause is called “ambition” (allegorizing that people must compete against each other for resources), when Macbeth describes his motivation for killing Duncan as his own “vaulting ambition” (I.vii.27). This paper can’t go into details on the human drive to compete, emerging from evolutionary forces, but in choosing this particular word “ambition” Shakespeare has been more recently followed by biophysical economist Nicholas Georgescu-Roegen, who made investigations in his seminal work *The Entropy Law and the Economic Process* (1971) into the ways a “modern” economy runs on—and is

---

1 I’ve tried to show that William Shakespeare accepted and used many of Giordano Bruno’s scientific ideas, especially the idea of a heliocentric solar system, which Bruno also saw as driven by the heat and light of the sun, an early thermodynamic expression of the idea. For more details, see practically any of my papers on Shakespeare’s plays, but in particular “Stand and Unfold Yourself: Prince Hamlet Unmasked”

indeed structured and defined by the availability of— finite mineral resources and who arrived at a similar conclusion about ambition:

“Population pressure and technological progress bring *ceteris paribus* the career of the human species nearer to its end only because both factors cause a speedier decumulation of its dowry (of mineral resources). The sun will continue to shine on the earth, perhaps, almost as bright today even after the extinction of mankind and will feed with low entropy other species, those with no *ambition* whatsoever. “(Georgescu-Roegen 304).  
(my emphasis)

Macbeth is a character, like Romeo, who has good and bad in him. At first deemed “Valiant” (I.ii.24) and “brave” (I.ii.16) Macbeth is lauded for brutally killing a foe (Shakespeare goes out of his way to emphasize this brutality: “he unseam’d him from the nave to the chops/And fix’d his head upon our battlements” (II.ii.22-23)). In a sense, morally speaking, his action is not so attractive actually, but his bravery and skill are admired by the king and the sergeant, and then Macbeth and Banquo are praised for slaying many more enemy soldiers. (Macbeth here suffers no pricks of conscience or internal anguish, as he does later when he murders Duncan: only the act of stepping away from the old energy regime is figured metaphorically as a fraught, uncertain, agonizing movement.). By the end of the play, of course, Macbeth has killed many more people but the general view of his actions has changed. He becomes a “hell-hound” (V.viii.3), a “hell-kite” (IV.iii.217) and a “tyrant” (V.vi.8). He has far, far stepped out of an established order.

The king, Duncan, functions on one level as a symbol of the sun, which is not merely a heavenly body, but an idea of a sun-man relationship. Duncan says to Macbeth, “Welcome hither! I have begun to plant thee, and will labor to make thee

full of growing” (I.iv.28-29). In this old sun-based order, things are largely agricultural.

Duncan’s murder symbolizes man’s stepping away from the sun economy, and this is most clear right after the death of the king: “Here lay Duncan/His silver skin lac’d with his golden blood/ And his gash’d stabs looked like a breach in nature” (II.iii.111-113). The golden and silver colors of his body give him a supernatural and cosmic aspect—like the stars, moon, sun, and other celestial bodies, rather than a bleeding human one; the “breach in nature” recalls the paradigmatic path away from the solar economy. Later, Lady Macbeth describes Duncan’s crown as “the golden round” (I.v.28), words that flash an image of the sun. Another earlier conversation illuminates this Duncan-Sun equivalence particularly resonantly and indeed almost playfully:

Macbeth: My dearest love, Duncan comes here to-night.

Lady Macbeth: And when goes hence?

Macbeth: Tomorrow, as he purposes.

Lady Macbeth: “Oh, never shall sun that morrow see!” (I.v.59-61)

The sun figure, Duncan, will die, so he will not live to see the next day.

The death of Duncan, associated with “a breach in nature”, is repeatedly associated with major cosmic, religious, and natural calamities. “The night has been unruly....Some say the earth was feverous and did shake” (II.iii.54,80) reports Lennox just before Duncan’s corpse is found. Duncan’s death is “Most sacrilegious murder” (II.iii.67), while Duncan’s dead body is compared to “the great doom’s image” (II.iii.78). Hiding in all of the dramatic rhetoric is a passage that Hermetically points a finger directly at the true villain, coal:

The night has been unruly. Where we lay,

Our chimneys were blown down, and (as they say)  
Lamentings heard i' the air; strange screams of death,  
And prophesying, with accents terrible,  
Of dire combustion and confus'd events. The obscure bird  
Clamor'd the livelong night. Some say the earth was feverous, and did  
shake. (II.iii.54-61)

The word “chimneys” in the passage above is one of the Hermetic message couriers. Chimneys and new developments in chimney construction became more and more common throughout the second half of the 16th century as coal use rapidly grew. In *The Big Smoke: A Brief History of Air Pollution in London since Medieval Times*. Peter Brimblecombe notes that:

The domestic acceptance of the fossil fuel (coal) is also reflected in the increase in the number of chimneys in the city. William Harrison (b.1634-d.1593), one of the contributors to *Holinshed's Chronicles*, which Shakespeare drew upon so heavily for his plays, wrote as a marginal note that the number of chimneys had increased greatly since his youth (mid-sixteenth century). In those times, he wrote, (wood) smoke indoors had been regarded as hardening the timbers of the house and as a disinfectant to ward off disease. (Brimblecombe, 35)

The word “chimney” then would be rather naturally associated with “coal” in the minds of the audience. Next is, of course, “combustion”, recalling the way that coal burns, and which looks mystical when it is paired with the word “dire” in the passage. But I think that “dire” is simply a way for Shakespeare to privately cast judgment on the new economy of coal. “Blown”, “air” and “obscure” in the passage also Hermetically signal coal smoke as it blew around

in the air and obscured the sky.

In the middle of the very next scene, about 90 lines after this quite Hermetic passage, Macduff tells Ross that “Malcolm and Donalbain, the king’s two sons/Are stolen away and fled, which puts upon them/ Suspicion of the deed”. (II.iv.25-7) Ross then comments disapprovingly on the two sons’ action in a most curious way:

Ross: ‘Gainst nature still.  
 Thriftless ambition, that will ravine up  
 Thine own live’s means. Then ‘tis most like  
 The sovereignty will fall upon Macbeth (II.iv.27-30)

Ross does not yet know that Macbeth is the real killer, and the commentary on the sons has no basis in fact, as the audience knows. One curious thing is that he uses “thine” (the second-person), though clearly, he does not mean that Macduff is the killer, but rather Ross’ commentary is a general one, though aimed indirectly at the absent sons. But who does he really mean to accuse of this action? Whose name is quickly associated with this action to “ravine up” or consume? The passage brilliantly leads the audience to the word “Macbeth” by closing with it. Since we know that Macbeth is an Everyman figure, forced to choose coal, then the judgment is another Hermetic commentary on the way that the coal economy (and fossil fuel economies in general) produce effects that put an end to any further human accessing of the sun economy in the future. The word “thine” in “Thine own lives’ means” then actually cloaks a direct address to the listening audience in the theater. Drama is a communal and festive space, deeply informed by ritual, where difficult truths can be uttered safely, though in a hidden manner.

And so now we can see that when Lady Macbeth exclaims much earlier to Macbeth “your face, my thane, is a book, where men may read strange matters”

(I.v.61-2), we can understand that Macbeth is a fictional model— “a book” —of industrialized human beings in general, and that Shakespeare conceived of this plan to reveal his thinking in a secret way (“where men may read strange matters”).

After Duncan’s murder, Rosse and an Old Man speak about the awful natural events that surround it. The Old Man starts the conversation by emphasizing how he has never known anything as “dreadful” and “strange” as “this sore night” (II.iv.3). Rosse then says:

Ha, good father

Thou seest the heavens, as troubled with man’s act,

Threatens his bloody stage. By th’ clock ‘tis day,

And yet dark night strangles the traveling lamp.

Is’t night’s predominance, or the day’s shame,

That darkness does the face of earth entomb,

When living light should kiss it? (II.4.4-10)

Living light cannot reach the earth and “kiss it” because of the “darkness” and “dark night” ; darkness here is a dire symbol of the effects of coal smoke. Also, beyond the dark smoke, coal would bring complexity to a city that would in turn give rise to a populace that didn’t use the sun economy anymore. “Dark night strangles the traveling lamp” does obliquely characterize the economic reality of coal’s ever-increasing dominance in the English (especially the London) economy. The Old Man then relates another “unnatural” act which just occurred: “on Tuesday last/A falcon, tow’ring in her pride of place,/ Was by a mousing owl hawk’ d at and killed.” (II.iv.12-14). In Egyptian mythology, Horus, the god of the sky and the sun, was depicted as a falcon (and Shakespeare would surely have known this). The falcon, very high in the sky, a majestic, superior creature has been

defeated by a lowly mousing owl. “Mousing” gives the image of “mouse”, which has a grey color, like coal smoke. The image of the owl echoes the recent image “the obscure bird/ Clamor’d the livelong night” (II.iii.60-1) from Lennox’s speech given above, doubly attaching coal to the owl image and then showing the owl (secretly ‘coal’) as a predator.

The ingeniously conceived conversation continues:

Rosse: And Duncan’s horses (a thing most strange and certain).

Beauteous and swift, the minions of their race,

Turned wild in nature, broke their stalls, flung out,

Contending ‘gainst obedience as they would make

War with mankind.

Old Man: Tis said they eat each other.

Rosse: They did so—to th’amazement of mine eyes that look’d upon’t.

(V.iv.14-20)

Of all the resonances between *Romeo and Juliet* and *Macbeth* (there are many), the use of horses is the most interesting and takes on a chilling, horrifying aspect in *Macbeth*. We should recall that Juliet’s famous opening Act III epithalamion (“Gallop apace, you fiery footed steeds/Towards Phoebus’ lodging; such a wagonner/As Phaeton would whip you to the west/And bring in cloudy night immediately...” (III-ii.1-4)) stands as one of the main clues to Juliet’s identity as the sun in the secret play.

Book II of Ovid’s *Metamorphoses* contains the famous story of the young mortal Phaeton, who tried, unsuccessfully, to drive Phoebus’ golden sun chariot pulled by four horses across the sky. Juliet’s slight reference to Phaeton perhaps adds a slight note presaging tragedy to *Romeo and Juliet*, but in *Macbeth*, Duncan’s horses, “turned wild”, “flung out”, and “contending ‘gainst obedience as they

would make war with Mankind” supply an apocalyptically harrowing echo of the tragic Greek story when the sun was pulled out of its usual path by the out-of-control horses who “roamed through the unknown regions of the air” (Ovid 75), and left the earth in ruins:

When the horses feel these (reins) lying on their backs, they break loose from their course, and with none to check them, they roam through unknown regions of the air. Wherever their impulse leads them, there they rush aimlessly, knocking against the stars set deep in the sky and setting the chariot along through uncharted ways....The earth bursts into flame, the highest parts first, and splits into deep cracks, and its moisture is all dried up. The meadows are all burned to white ashes; the trees are consumed, green leaves and all, and the ripe grain furnishes fuel for its own destruction. But these are small losses which I am lamenting. Great cities perish with their walls and the vast conflagration reduces whole nations to ashes (Ovid 75)

Later, other horses in the play become nightmarish harbingers; their appearance always signals more bad news for Macbeth, or presages some evil deed about to be committed. Macbeth is the one to hear the sounds of their hooves, as in Act IV where he has just heard the prophecies of the three witches, and is just about to hear that Macduff has fled: “I did hear the galloping of horse. Who was’t came by?” (IV. i.146). The play has a notable 10 occasions of the word “horse” or “horses”. Two occur in Act III scene 1 before Banquo is murdered; (Banquo: “Go not my horse the better/ I will become a borrower of the night” (III.i.25-26); Macbeth: “Hie you to horse; adieu” (III.i.34) Two of the murderers about to kill Banquo use the word “horse” in rapid succession; the frequency of this image peaks in Act III as Macbeth’s power reaches its apex. But as his grip on power fails,

the image is then turned around and used to underline his desperation: “Send out moe horses, skirr the country round/Hang those that talk of fear” (V.iii.35-36), Macbeth orders as he hears of more enemies descending on his territory, and just before he has the disheartening conversation with his wife’s physician. The horses of *Macbeth*, through the connection of sun figure Duncan’s horses, all share mythic resonances with sun-god Apollo’s dangerous steeds, “hot with those strong fires which they have within their breasts, which they breathe out from mouth and nostrils” (Ovid 67). The horses which seem to be pursuing Macbeth are symbols of the sun, the organic economy which awaits when fossil fuels are depleted.

Horses belong to the world of work, of war, to the mundane and the mythic. In *Macbeth*, the “secret play”, the story of a fateful rise and fall—the movements, the travails, the progress— of a civilization (complex and defined also by mundane work, by wars, and by the mundane and the mythic) through the rise and fall of fossil fuels, is illuminated and its broad outlines traced by the eerie and *unseen* presence of horses.

Juliet’s epithalamion of Act III, scene ii, where she calls “come, civil night” (10) and “come, night, come” (17) so her marriage to Romeo may be consummated is given a macabre and malevolent makeover in Act I, scene v of *Macbeth*, when Lady Macbeth similarly calls “come, thick night” (I.v.50) as she makes it clear that the plans to kill Duncan will be carried out then. This is the famous “unsex me here” (I.v.40) monologue, where Lady Macbeth also asks for her milk to be exchanged for “gall” (I.v.48), recalling the “choking gall” (I.i.194) image in *Romeo and Juliet* that is linked to coal. More Hermetic and negative coal imagery, with words such as “smoke” and the image of ‘heaven’ being unable to penetrate (again, as with Juliet, the sun seems to be associated with natural and sexuality) follows: “Come, thick night/ And pall thee in the dunnest smoke of hell..... Nor heaven peep through the blanket of the dark/ To cry ‘hold hold!’ ”

(I.v.50-4) Coal smoke blocked the sun, and the coal economy displaced the sun economy.

In a previous paper, I called Juliet a kind of panoply of images and associations: first, these relate to the gentle country life powered and sustained by the sun: lambs, ladybirds, dovecotes, and such; also, images of the sun as sacred power (Phoebus, “worshipp’d sun”) are given their due. I would like to suggest that Lady Macbeth’s role in the hidden play in *Macbeth* is to embody another panoply of images which largely amount to a dreadful “anti-Juliet”. This panoply definitely includes coal. But she is a Vice figure who is far removed from Iago, with his carousing, his nameless hatred. Lady Macbeth is married to Macbeth and therefore she is very close to him. A Vice figure like this is an innovation indeed, sexually, emotionally, mentally.

The Vice figure exists to tempt Everyman to sin. There is no drama or tension if the Vice figure does not succeed at this task, if only for a while. In *Othello*, Iago succeeds, but his treachery is uncovered and Othello confronts him. This dynamic is one that could be found in a traditional morality interlude. In *King Lear*, Regan and Goneril succeed, as well, in tempting Lear away from Cordelia. Likewise, he later sees them for who they really are and rejects them. Where *Macbeth* is so innovative and fascinating, and thus where it shows the artistic development of Shakespeare, is that the Vice figure— Lady Macbeth— is married to the Everyman figure, united with him.

On the surface, Lady Macbeth shows a conscience that cannot be wiped clean with her “out, dam’d spot!” monologue. But perhaps audiences of the day would have found resonances in her speech to the coal soot and smoke of London that was also difficult to wash away and that was being generated with ever more rapidity, and with an exigency, the economic survival of more and more, that could certainly not be washed away. (Weimann writes that “coal mining alone developed so rapidly that deliveries to London increased more than threefold between

1580 and 1591 (1580: 11,000 tons: 1591-91: 35,000 tons....on the eve of the Civil War, England was mining three times as much coal as the rest of Europe put together.” (Weimann 164))

The increasing pollution and loss of connections to the natural world, connections Shakespeare and other Londoners of his age (that is, people from the countryside who had known a largely pre-coal economy) had taken for granted, made for a sense of ineffable communal sadness, or melancholy, while coal also caused physical illnesses such as lung ailments and throat problems. Lady Macbeth, who at the beginning of the play is so strong and confident, calling for “thick night”, smoke, gall, and for spirits to “make thick” her blood and so forth, now becomes a weak and debilitated patient, afflicted with “thick-coming fancies”. She used to love, it seems, that word “thick”, but now in her illness it has taken revenge on her, or rather, its use in the name of her illness is meant, no doubt, to recall the ‘thick smoke’ of London which caused real illness in the citizens there. Is there any hope for the patient? Perhaps, according to the interesting conversation between Macbeth and the physician in Act V:

Macbeth: How does your patient, doctor?

Doct.: Not so sick, my lord,

As she is troubled with thick-coming fancies

That keep her from her rest..

Macbeth: Cure her of that.

Canst thou not minister to a mind diseas'd,

Pluck from the memory a rooted sorrow,

Raze out the written troubles of the brain,

And with some sweet oblivious antidote

Cleanse the stuff'd bosom of that perilous stuff which weighs upon the heart?

Doct.: Therein the patient

Must minister to himself. (V.iii.37-46)

In his work in a public arena such as the theater, Shakespeare strove to participate usefully in “a communal form of experience” that was also “a process of consciousness shared by the audience” (Weimann 215). As a kind of cultural and artistic ‘physic’s ministration’, therefore, *Macbeth* could have helped to explain, identify, and artistically locate some of the forces (natural, social, historical) that functioned, through human actions, to define and shape the London of the time, including the use of coal and the consequences of burning it. And in the end, of course, Shakespeare is correct in that ending fossil fuel dependence intentionally will have to be a decision made by us, by ourselves.

As Macbeth seeks the prophecies of the witches for the last time, and the third apparition, a “child, crowned, with a tree in his hand” enters, Macbeth describes him using language that Hermetically indicates the sun: “What is this/That rises like the issue of a king/And wears upon his baby-brow the round/And top of sovereignty?” (IV.i.87-89) (my emphasis) (The sun was regarded as above the king in the Great Chain of Being). This is the moment when we can see already through imagery that the power of the sun will be resurgent and reborn. (Macbeth hints at his own unconscious recognition of this since he speaks these lines that prefigure his doom: something that will also top his sovereignty will emerge). Thus this apparition is the one that holds the tree in his hand and says: “Macbeth shall never vanquish’d be until/ Great Birnan wood to high Dunsinane hill/ Shall come against him” (IV.1.92-94) Macbeth then asks, rhetorically, “Who can impress the forest?” (IV.195), seemingly unaware that it is the sun and nature that give rise to the trees and forests and ultimately decide where they will grow. However, it is precisely because Macbeth is a collective Everyman that he cannot process the message that signals his end.

But the tree in the hand of the child is more than just a plant. It represents the point at which the natural sun-based economy returns as the major--then the only-- source of economic inputs--these will be from photosynthesis in the mind of the playwright (Shakespeare obviously knew nothing of photovoltaic cells)--into the human ecological system (This process could take decades or centuries or millennia, I have no idea of the time frame involved.) Shakespeare guesses that coal will someday be depleted and distills this difficult transition back to a sun-based economy to an ingenious image, a child carrying a tree, as a solar-powered world moves back into human view and calculations.

Macbeth's death is not the final word. (His head is carried onstage, signaling the death of the old paradigm.) The new king, Malcolm, ends the play with a speech which contains these lines:

... My thanes and kinsmen,  
 Henceforth be earls, the first that ever Scotland  
 In such an honor nam'd. *What's more to do,*  
*Which would be planted newly with the time,*  
*As calling home our exiled friends abroad ....*(V.ix.28-32) (my emphasis)

In his choice of agricultural language, Malcolm, the new king sounds very much like the one Macbeth did away with (Duncan: "I have begun to plant thee and will make thee full of growing" (I.v.28-9)). Shakespeare therefore sees the new post-Macbeth (post-fossil fuel) order as another sun-based one: "our exiled friends", the sun-based economy, will return with this energy transition.

In this rather economic view of Shakespeare, I believe I can find some general support in Michael Bristol's *Big-Time Shakespeare*, where the author sees the extended "social dialogue" with Shakespeare as a way to keep alive and preserve certain "values more durable than those which circulate in current markets":

Shakespeare is a common possession, though not ambiguously a common good. In my view, Shakespeare’s authority is linked to the capacity of his works to represent the complexity of social time and value in the successor cultures of early modern England. One of the crucial features common to these successor cultures is the way individuals and institutions must constantly adapt to the exigencies of a market economy. Our extended dialogue with Shakespeare’s works has been one of the important ways to articulate values more durable than those which circulate in current markets. (Bristol, xii)

The market economy (now also known the ‘global economy’) came about through the fossil fuels that cannot, by definition, be as “durable” as the sun, and there lies the source of an economic discontinuity, the crux of the issue. Macbeth’s rise and fall symbolizes the trajectory of human fossil fuel use, from zero to a peak and then back to zero (with the death of Macbeth). It is a thermodynamic phenomenon based fundamentally on material exigencies. It can be drawn as a single wave of energy pulsing through the system, with human beings as the dissipative entities.

*Macbeth* is partly Shakespeare’s way to “purge” (using the language of medicine that Macbeth uses with the physician in Act V, scene iii) Macbeth (and all that he symbolizes in the underlying secret play of the sun-coal-sun transition) from the universe. Actually, the text starts to show the return of the sun in a Hermetic fashion too, even as Macbeth’s power weakens. This is evident in the most famous monologue of the play:

Tomorrow and tomorrow and tomorrow  
Creeps in this petty pace from day to day,  
To the last syllable of recorded time;

And all our yesterdays have lighted fools  
The way to dusty death..." (V.v.19-23)

Macbeth seems gloomy, since his military campaign isn't going well, but, actually, suddenly, the Hermetic message buried in the language is now turning hopeful. Here we have many words which indicate the renewed presence of the sun: "tomorrow and tomorrow and tomorrow" "lighted" "fools" (associated with clowning, festivals, seasonal rituals and so forth) "yesterdays" "time". Only "dusty death", the end of this first sentence of the famous monologue, may recall coal again (Macbeth is still alive), but not for much longer.

*Macbeth* offers wisdom that helps us understand the ramifications of another underlying "secret play" (indeed, energy is invisible: it functions on a molecular level and therefore it is a sort of "secret play" that underlies our everyday lives) where we are the "poor players that strut and fret" (V.v.24-5) in a cosmic drama in flux as energy in different forms and amounts, due to cosmic forces beyond our control, flows to us in the world (our own stage).

"Art hopes to sidestep mortality with feats of attention, of harmony, of illuminating connection, while enjoying, it might be said, at best a slower kind of mortality: paper yellows, language becomes old fashioned, revelatory human news passes into general social wisdom", wrote another great writer, John Updike (Updike, xiv). I think that Shakespeare hoped that his faith in the primal constancy and the steady usefulness of the sun would be guided by his art into "general social wisdom" one day in a constructive, peaceful and positive way. *Macbeth*, with its brightening end and its focus on healing and medicines, is another expression of his hopes.

#### Works Cited:

Brimblecombe, Peter. *The Big Smoke: A history of air pollution in London since*

*medieval times*. London: Methuen. 1987.

Bristol, Michael D. *Big-time Shakespeare*. Oxon, Oxford: Routledge. 1996.

Georgescu-Roegen, Nicholas. *The Entropy Law and the Economic Process*. 1971.

Cambridge, MA: Harvard University Press, 1999.

Ovid. *Metamorphoses*. trans. Frank Justus Miller. Cambridge, MA: Harvard University Press. 1994.

Shakespeare, William. *Macbeth* and *Romeo and Juliet* in *The Riverside Shakespeare*. Eds. Levin, Blakemore et al. Boston: Houghton Mifflin Company, 1974.

Schneider, Erid D. and Dorion Sagan. *Into the Cool: Energy Flow, Thermodynamics and Life*. Chicago: University of Chicago Press. 2005.

Weimann, Robert. *Shakespeare and the Popular Tradition in the Theater*. Baltimore, MD: Johns Hopkins U. Press, 1978.

Updike, John. *The Early Stories (1953-1975)*. New York, NY: Alfred Knopf, 2003.