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Article in *Modern Drama* · December 1996

DOI: 10.1353/mdr.1996.0084

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What does chaos theory have to do with art?

Dean Wilcox

1996

Abstract

Wilcox suggests that by using the ideas generated by chaos theory, a new tool to improve performance analysis might be created. To prove his point, Wilcox analyzes David Lynch's collaboration with composer Angelo Badalamenti, "Industrial Symphony No. 1: the dream of the brokenhearted."¹

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1 INTRODUCTION

At first glance the title of this essay may cause you to ask yourself the same question: "What does chaos theory have to do with art?" Or,

¹This paper was originally presented as part of the International Federation for Theatre Research Performance Analysis Symposium in Montreal, June 1995.

more importantly, what does it have to do with performance analysis?' Certainly, these are fair questions which will be addressed within the body of this paper. I must begin by stating that I am neither a mathematician nor a scientist, and that the mathematics involved in the evaluation of chaotic systems (although relatively simple) tend to make my head spin. I am not interested in drawing scientific conclusions from theatrical practice, but in employing the philosophical ramifications of the systematic study of chaos to allow a unique perspective on the modern theatre.

While it may seem like a stretch of the imagination to intertwine chaos theory with contemporary theatre practice, I believe that both are profoundly rooted in our postmodern existence; that is, they exemplify a zeitgeist of the late twentieth century. As N. Katherine Hayles points out in the introduction to *Chaos and Order: Complex Dynamics in Literature and Science*:

The postmodern context catalyzed the formation of the new science by providing a cultural and technological milieu in which the component parts came together and mutually reinforced each other until they were no longer isolated events but an emergent awareness of the constructive roles that disorder, nonlinearity, and noise play in complex systems. The science of chaos is new not in the sense of having no antecedents in the scientific tradition, but of only having recently coalesced sufficiently to articulate a vision of the world.²

That astute observation is no less true of the relationship between postmodern performance and its avant-garde predecessor. By elaborating on the interconnectedness of these congruent developments, this essay will endeavor to move beyond a metaphoric application of chaos theory to utilize the ideas generated by this new science as an analytical tool on par with semiotics and deconstruction.

This study did not spontaneously develop, but was influenced by Leonard Shlain's dialectic analysis of *Art & Physics: Parallel Visions in Space, Time & Light*. Shlain's work is based on the belief that [r]evolutionary art and visionary physics attempt to speak about matters that do not yet have words. That is why their languages are so poorly understood by people outside their fields. Because they both

²N. Katherine Hayles, ed., *Chaos and Order: Complex Dynamics in Literature and Science* (Chicago, 1991), 5.

speak of what is certainly to come, however, it is incumbent upon us to learn to understand them.³

By examining such simultaneous activities as Einstein's development of the special theory of relativity, in which the perceptions of the world are determined by the observer's physical placement (the cliché, at its extreme, states "Everything is relative"), and the Braque/Picasso development of cubism, which seems to provide a visible manifestation of Einstein's theory, Shlain offers convincing evidence of the generally unacknowledged connections between art and physics. In this light, the current postmodern revolution (denoted by a focus on fragmentation, juxtaposition, rupture, and repetition) can be read through an examination of the relationship between contemporary scientific inquiry and contemporary performance techniques.⁴

2 CHAOS CONDENSED

The study of chaos, like the study of any performative genre, must begin by acknowledging the mutable properties of a process that evolves through space and time. As chaos theory tells us, a seemingly stable system may progress undisturbed indefinitely, until, at one moment, the system suddenly becomes "chaotic," or ceases to proceed in an orderly manner. Chaos theorists have routinely concentrated on these moments of transition from stability to chaos, illuminating the importance of what has previously been perceived of as systematic irregularities or statistical "dirt" (the elements that traditional scientific inquiry is unprepared to acknowledge and has generally pushed to the margins or completely ignored).

Like deconstruction, chaos theory focuses on the elements that don't quite fit within a system in an orderly, logical way. Both offer analytical techniques focused on the interrelationship of contrasting elements, but chaos theory is able to do so without the self-devouring impasse of non-communication. By examining such "natural" occurrences as the weather, the onset of turbulence, and the fluctuations of the stock market, chaos theorists have devised a methodology to ap-

³Leonard Shlain, *Art & Physics: Parallel Visions in Space, Time & Light* (New York, 1991), 20.

⁴This connection between scientific exploration and performance criticism is the subject of a special supplement of *The Journal of Dramatic Theory and Criticism* entitled "Physics and the New Theatre Historiography," 5:2 (Spring 1991), 61-136.

proach systems that appear to move in completely random directions.

For example, take a simple dynamical system (a system in motion that varies with an inconsequential amount of randomness) like a pendulum. Given the correct energy boost at the proper time a pendulum will run indefinitely in a precise and orderly manner (nearly any clock can attest to this). The same is true for a double pendulum (essentially one pendulum hung underneath another). Given the proper periodic boost it will follow a smooth motion. However, give it just a slight extra amount of energy and that smooth motion will become a chaotic rhythm (or arrhythm).

To illustrate this transformation from an orderly to a chaotic system "chaotician" James Yorke stated (in a recent lecture) that most physics textbooks only cover the first type of regular rhythmic activity. "He then gave the double pendulum a hefty swing, which caused it to execute exquisitely complex chaotic motion, and remarked that, apparently, until twenty years ago no one ever swung that hard."⁵ Externally (from our vantage point) the chaotic movement of the double pendulum appears to be completely random, following a jerky, irregular pattern. What is fascinating about this example is that this irregular movement conforms to a logical structure that is completely internal to the system. What may be looked at as chaotic is in reality a complex dynamic system controlled by, and dependent upon, all of the factors involved. The movement of the double pendulum is determined by the relationship that each of the variables (the initial energy boost, the previous swing, the following swing, etc.) has to do with the system as a whole. So, while the tag "chaos theory" may seem to indicate a search for total randomness, the study of various chaotic systems has revealed underlying patterns of an unpredictable order.⁶

This discussion of the interaction of elements that comprise a chaotic system must be grounded in a philosophical position that is

⁵Stephen H. Kellert, *In the Wake of Chaos* (Chicago, 1993), I39.

⁶Before proceeding with this investigation it is important to make clear that while the juxtaposition of terms like internal and external, inside and outside have the appearance of establishing a Platonic dialectic, the two do not exist independently of each other. There is a very tangible bond between the visible (external) pattern created by the erratic swing of the pendulum and the (internal) logic that drives it. The two are not mutually exclusive, but merely provide useful terms to facilitate discussion. A good analogy to keep in mind is Saussure's description of the connection between signifier and signified as inextricably linked as two sides of a piece of paper. Each side can be independently manipulated, but cut through one and you affect the other.

concerned, not with the final product (as a static entity), but with a system in motion (a dynamic process). As Stephen Kellert points out in his book in the Wake of Chaos, "Chaos theory shows us that the need for diachronic methods of understanding is much broader than previously thought."⁷ It is impossible to examine a system like the arrhythmic movement of the double pendulum with the traditional scientific tools of hypothesis, theorem, controlled experimentation, and proof. Dynamic systems simply do not conform to any predetermined (synchronic) conclusions, but exist in space and time and demand the evolution and application of diachronic methods of analysis.

As Kellert further explains, "chaos theory does not provide predictions of quantitative detail but of qualitative features; it does not reveal hidden causal processes but displays geometric mechanisms; and it does not yield law-like necessity [as does Newtonian physics with its emphasis on predictability] but reveals patterns."⁸ This statement is echoed by James Gleick in perhaps the most accessible book on the subject, *Chaos: Making a New Science*, "To some physicists chaos is a science of process rather than state, of becoming rather than being."⁹

One of the most popular motive images in chaos theory is derived from a paper delivered to the American Association for the Advancement of Science in 1972 by Edward Lorenz entitled, "Predictability: Does the Flap of a Butterfly's Wings in Brazil Set off a Tornado in Texas?" The image, while both playful and striking, encapsulates an extremely important element of the study of chaos. As Lorenz describes, the storm created by the flap of the butterfly's wings represents a system that is "sensitively dependent on initial conditions," that is to say, every element present at the creation of the system is an integral part of how that system moves and evolves.

Lorenz's paper, although focused on the unpredictability of the weather, is essentially an essay on the concept of iteration. By taking a seemingly insignificant occurrence, like the flap of a butterfly's wings, and multiplying it again and again and again it is possible to create a fiercely uncontrollable system like a tornado (iteration should not be unfamiliar to anyone who has placed a microphone too close to a speaker, thereby allowing the sound to be "feedback" into the system and creating a squealing din from a whisper).¹⁰ As Gleick points out,

⁷Kellert, 96.

⁸*Ibid.* Italics mine.

⁹James Gleick, *Chaos: Making a New Science* (New York, 1987), 5.

¹⁰For other accessible sources on chaos theory see: N. Katherine Hayles, *Chaos Bound*:

this sensitive dependence on initial conditions is not a recent discovery, but has its place in folklore:

For want of a nail, the shoe was lost;
For want of a shoe, the horse was lost;
For want of a horse, the rider was lost;
For want of a rider, the battle was lost;
For want of a battle, the kingdom was lost!¹¹

To review, chaos theory looked at from a philosophical position, stresses process over product, the interaction of all elements of a dynamic system, the sensitive dependence on initial conditions, iteration, the revelation of previously hidden patterns, and the evolution of a system driven by its own internal logic. What then do these abstract thoughts have to do with the concrete process of theatrical performance? Suppose, for example, we juxtapose two entirely different types of drama, the ordered linearity of Henrik Ibsen and the chaotic dynamism of what Bonnie Marranca has termed "The Theatre of Images."¹²

3 A CLOSED FIELD OF FORCE VERSUS THE EXPANSION OF A VISUAL MOTIF

Ibsen's work, viewed both in performance and in its textual form, can be described as having a fixed, external narrative structure. In this sense, it is possible to map a piece like *Hedda Gabler* as it flows from exposition to climax and beyond. There is a predetermined framework into which the plot, the characters, and the dialogue fit quite nicely. As Bert O. States points out in his *Great Reckonings in Little Rooms*, Ibsen's plays constitute "a closed field of force" in which "every detail is temporally and spatially linked: in short, a world permeated with causality. But it is a world whose causality has been determined in

Orderly Disorder in Contemporary Literature and Science (Ithaca, 1990) and John Briggs and F. David Peat, *The Turbulent Mirror* (New York, 1989). so Edward N. Lorenz, *The Essence of Chaos* (Seattle, 1993), 8.

¹¹Gleick, 23. See note 9.

¹²Now to some this may seem like comparing apples and oranges, but working to draw a parallel between contemporary scientific inquiry and contemporary theatre practice is an action that not only requires a certain amount of reductionism, but the setting up (and knocking down) of certain straw dramatists.

advance by the medium itself.”¹³ It is this medium that appears as an orderly structure on par with the smooth swing of a pendulum given the correct periodic boost of energy.¹⁴

In contrast, a piece by someone like Robert Wilson that is not governed by a predetermined narrative structure does not follow the same type of dramatic logic. Wilson’s pieces are generally structured around a sequence of spatial arrangements guided by an overriding, intuitively determined, geometrical frame.¹⁵ As Wilson points out, “I work out of intuition. Somehow it seems right ... The work mostly has some architectural reasons. This one’s here because that one’s there.”¹⁶

Wilson’s pieces, like the chaotic movement of the double pendulum, may appear erratic from an external vantage point, but are nonetheless dynamical systems governed by an internal logic created by the interaction of all stage elements.¹⁷ Although it can be pointed out that this type of production does have a visible structure (created by the juxtaposition of images), this pattern does not exist independent of the production (as does the pattern that governs the work of Ibsen). In Wilson’s work the overall structure is produced by the dynamic movement of the piece as a whole, creating a unique pattern of movement that (like the pattern created by the double pendulum) dissipates in stasis.

While Wilson may create an internal structure according to his own intuitive logic, I, as an audience member, can only see this pattern by reviewing the composition of images when the piece is complete. This

¹³Bert O. States, *Great Reckonings in Little Rooms* (Berkeley, 1985), 135. Italics mine.

¹⁴While I have chosen Ibsen as the quintessential example of a stable narrative structure, William W. Demastes reveals the chaotic side of Ibsen’s dramaturgy in his “Re-Inspecting the Crack in the Chimney: Chaos Theory From Ibsen to Stoppard,” *New Theatre Quarterly* to (August 1994).

¹⁵Demastes’s essay not only offers a unique approach to the work of Ibsen and Stoppard, but provides a concise description of the movement from Newtonian physics to chaos theory. In a piece like *Deafman Glance* the “narrative” frame is simply the presence of the “deafman” suspended above the sequence of surreal images that are presented on the stage below.

¹⁶Frances Alenikoff, “Scenario: A Talk With Robert Wilson,” *Dancescope* (Fall/ Winter 1975/76), 15.

¹⁷I emphasize all stage elements since in Wilson’s work it is impossible to hierarchize the elements as one can in the more traditional theatre of Ibsen. In Wilson’s productions setting, sound, and light are not subservient to character, plot, and dialogue, they conjoin in a more egalitarian manner.

process of reevaluation is in direct contrast to viewing one of Ibsen's plays, where I know from the beginning of the performance that it will follow a logical pattern with which I am familiar. From my vantage point as an audience member, I can see what direction the plot will take just as I can predict when a commercial break will interrupt a made-for-TV movie. By contrasting these two artists it becomes apparent that Ibsen's work is compact with no extraneous characters or images, whereas Wilson's performances thrive on the expansion of a central theme or visual motif.

This difference between a compact work (or what States might call "a closed field of force") and a work that expands is the difference between a system with a pre-inscribed linear trajectory and a chaotic system in which one is never certain what will happen next. It would be ridiculous to imagine a production of *Hedda Gabler* in which, at random intervals, a kangaroo hopped across the stage. This same image, however, might fit quite nicely into one of Wilson's pieces. One system relies on the interplay of all elements to create pattern and structure, while the other follows an external pattern that exists independently of the work.

In an orderly system governed by a predetermined dramatic structure (like Ibsen's plays) the flap of a butterfly's wings are irrelevant. The structural narrative is stable and will not be disturbed by minute variations of gesture or vocal inflection created in performance (this is not unlike the process of traditional scientific inquiry that ignores the statistical dirt that doesn't quite fit the expected model). With this type of dramatic structure all of the elements are subservient to the narrative and can be read in support of, or in opposition to, the movement of the plot. It is this traditional narrative construction that parallels the traditional belief of Western science that, "[v]ery small influences can be neglected. There's a convergence in the way things work, and arbitrarily small influences don't blow up to have arbitrarily large effects."¹⁸

In Wilson's productions, though (due to the chaotic nature of his work) small, seemingly insignificant elements, when repeated and magnified, become the central motifs on which the entire structure is based. Void of an overriding narrative, Wilson's pieces are constructed from the interaction of even the most minute elements.¹⁹ For example,

¹⁸Gleick, I5. See note 9.

¹⁹This is evidenced by the fact that Wilson routinely lights his productions so that certain objects are isolated and various parts of his performers are made to stand out -

both Lucinda Childs's repetitive movement and Philip Glass's repetitive score parallel one of the primary "themes" of *Einstein on the Beach*, namely the repeated movement of the train (an image generated from Einstein's theory of relativity) as it divides the stage into various spatial planes.

This varied repetition of a specific geometrical form is a hallmark of Wilson's structural theatre. Describing the preponderance of triangles in his production of *Einstein on the Beach* he has stated, "you find them everywhere: from the train's cowcatcher to the triangular light coming down in the courtroom scenes to the light streaming up in a triangle from an elevator shaft in the spaceship scene."²⁰ By structuring his pieces around images, as opposed to a narrative, Wilson's work directly reflects the activity of a chaotic system. Viewed from the outside this system may appear to move in a completely random direction, yet Wilson's compositions (like the onset of turbulence or the erratic swing of a double pendulum) nevertheless have a guiding internal logic.

4 LYNCH'S INDUSTRIAL CHAOS

This focus on process over product, on image over narrative is also found in the work of David Lynch. His often disturbing films are created through the juxtaposition of visual elements, evoking a kind of dream-like (or in most cases, nightmare-like) aura. Best known for such films as *Eraserhead*, *Blue Velvet*, *Wild at Heart*, and the TV phenomenon *Twin Peaks*, his collaboration with Angelo Badalamenti on *Industrial Symphony No. I: the dream of the brokenhearted* exists as both a continuation of his previous work and an anomaly. Presented at the Brooklyn Academy of Music's Opera House on November 10, 1989 as part of New Music America '89, the production was filmed and subsequently released as a commercial video tape (for those of us not lucky enough to have been in Brooklyn on that particular Friday in November).²¹

Consequently, *Industrial Symphony* exists as the convergence of a performance and a non-performance. Unlike most of Lynch's work,

sometimes a hand is brighter than the rest of the body.

²⁰Barbara Barracks, "Einstein on the Beach," *Art Forum* (March 1977), 33.

²¹David Lynch, director, *Industrial Symphony No. I: the dream of the brokenhearted*, (Warner Reprise Video, So minutes, 1990).

this piece was designed and executed on-stage, demanding that it conform to the restrictions of the "live" theatre. With the video, however, Lynch is able to overlap images and offer a multiple perspective on the work that would be impossible from a stationary theatre seat. Found in the local video store (provided it has a cult or music section) alongside Laurie Anderson's *Home of the Brave*, the Demme and Byrne collaboration *Stop Making Sense*, and Lee Breuer's *Gospel at Colonus*, *Industrial Symphony* seems to be one among a growing library of video performances. Although derived from a live event, the definitive version of these performances exist only on video (with a form that is not unlike the continual barrage of music videos that permeate the MTV landscape) and are available, not to the fortunate theatre-goer, but to the home viewer.

Lynch's work is eerie and powerful, chaotic and erratic. The piece begins with a phone conversation between Laura Dern and Nicholas Cage (the stars of Lynch's *Wild at Heart*). Cage breaks up with Dern by stating, "Ain't nothin' wrong with you. It's just ... us I can't handle" (followed by an audible "click" as he hangs up the phone). Thus, the dream of the broken-hearted is underway. The stage work is punctuated by images of industry and war: sounds of bombs dropping, air raid sirens, smoke, fire, electrical wires, pipes, towers, and flashing lights cycle through the entire piece. Interspersed between moments of industrial chaos, singer Julee Cruise (best known for singing in a roadside bar on *Twin Peaks* and for her album *Floating into the Night*²²) glides, floats, and croons. The piece is very much dependent upon the juxtaposition of the harsher elements (the smoke, the flames, and the industrial rubble) with the calming presence of Cruise.

Examined from the perspective of a linear narrative composition (complete with an external logical structure), *Industrial Symphony* has little, if anything in common with the work of someone like Ibsen. Read as a narrative the piece seems to be about love, or sex, or as Lynch explains it, "sound effects and music and ... happening on the stage. And, it has something to do with, uh, a relationship ending."²³ But, beyond this it is anyone's guess what Lynch truly had in mind. Yet, a specific moral or story is ultimately not the point of a work like this. Lynch is notorious for emphasizing mood over logic, and as

²²Produced and written by Lynch and Badalamenti, the album includes a number of songs from *Industrial Symphony*.

²³Glenn Kenny, "New Music America: Industrial Strength," *The Village Voice* (14 November, 1989), 88.

he states: "I'm of the Western Union school. If you want to send a message, go to Western Union ... You have to be free to think things up. They come along, these ideas, and they hook themselves together, and the unifying thing is the euphoria they give you or the repulsion they give you ... You have to just trust yourself."²⁴

Listed individually the images that shape *Industrial Symphony* might appear to be random signifiers strewn about the landscape of Lynch's demented imagination. They are a floating, singing woman in a white crinoline prom dress; a woodsman (played by Michael Anderson, the actor who portrayed "the dwarf" on *Twin Peaks*) who saws wood and runs from the light and at one point repeats word for word the opening conversation by Dern and Cage, while accompanied by a soprano sax and a woman in a tight, short black dress who continually rubs her body; a half-naked woman who crawls over an abandoned car only to end up slithering through the back window leaving her bare legs exposed; a number of actors dressed as "mechanics" complete with hard hats, face masks, and overalls who periodically attempt to start the gas powered engines strewn about the stage; a large "skinned deer" that arises from a gurney and does a staccato walk/dance on stilt-like legs accompanied by a "steamy" sax backup. Ruminating on this inventory of seemingly unconnected images, it is important to remember that the individual signs that Lynch uses to create *Industrial Symphony* are not as significant as the overall mood that they create when viewed within the work as a whole. What chaos theory offers this litany of signifiers is a method of extending the semiotic model of analysis from the identification of individual signs to the overall pattern that is created by the interaction of these signs.

Chaos theory demands that the focus be on the system in which the elements take shape. Signs by, and of themselves are building blocks that can create either a Parthenon or a post office. What counts is the interaction of the elements within the dynamic system. Similar to the whorls and eddies created in a fluid at the onset of turbulence, the interplay of images and sounds displayed in Lynch's production can not be isolated from the composition as a whole, but demand to be addressed as part of a larger structure. How one reads the "skinless deer" apart from the piece in its entirety is ultimately not as important as how it is conditioned by the other signs that surround it. In this respect, it is not possible to place a literal "meaning" on the image,

²⁴) David Breskin, "The Rolling Stone Interview with David Lynch," *Rolling Stone* (6 September, 1990), 63.

as any reading of it must focus not on what it means, but on what mood it helps to create.

The figure of the deer by itself is quite disturbing, but within the context of *Industrial Symphony* it might illustrate the raw nerves of a jilted lover, the vulnerability of all relationships, or perhaps Lynch chose it just because it was weird. From the perspective of theatre criticism (influenced by chaos theory) it is not important to isolate what this unique sign represents, since the organization of this piece can not be dissected as if it were driven by a linear narrative, but must be approached like a chaotic system complete with a logical structure of its own. A concise reading of the individual sign is not as important as how it conditions (and is conditioned by) the entire production. Which, of course, returns us to that ancient problem of the hermeneutic-circle (the relationship of the part to the whole), which can not be resolved except to say that the individual elements (conditioned by their dynamic interaction with all other elements both preceding and following) create the larger, more intricate pattern that comprises the whole.

This relationship is compounded not only by the interaction of the individual elements in motion, but by the frames of reference from which they are drawn. Lynch, like Wilson, tends to use and reuse images and ideas, and these recycled images make up his primary pallet as a visual artist. Echoing Wilson's intuitive process, Lynch states:

The thing of composition is so abstract. It's so powerful where you place things and the relationships. But you don't work with any kind of intellectual thing. You just act and react. It's all intuition. It must obey rules, but these rules are not in any book. The basic rules of composition are a joke.²⁵

So, as in chaos theory, the onus is not on the primary elements, but on what happens to them as they interact. As Edward Lorenz is careful to point out, "if the flap of a butterfly's wings can be instrumental in generating a tornado, it can equally well be instrumental in preventing a tornado."²⁶

Although *Industrial Symphony* is filled with images that have been used and reused within the context of Lynch's film work, the focus

²⁵Ibid., 62.

²⁶Lorenz, 181. See note 10.

on juxtaposition and re-contextualization creates a stage piece with multiple layers of reference. At one point the actors dressed as "mechanics" run on stage with metal worklights (similar to the one that Dean Stockwell so memorably sang into in *Blue Velvet*). By focusing on the individual sign it is possible to read the light simultaneously within the frame of reference of *Blue Velvet* and *Industrial Symphony*. Yet, by focusing on the dynamic systems created by the film and the stage production what becomes important is the convergence of these points of reference. *Blue Velvet* is a film permeated with violence and Stockwell's crooning does not connote the soothing element that Cruise's does. In fact, Stockwell's mimed rendition of Roy Orbison's "In Dreams" is the direct precursor to one of Dennis Hopper's more violent outbursts. In this context the light becomes a very palpable signifier, an omen of impending violence.

Paralleling Stockwell's crooning scene in *Blue Velvet*, the lights in *Industrial Symphony* accompany the strange and disturbing "skinned deer" dance. Watching the red fleshless creature pirouette on its stilted legs as the mechanics run their beams of light over its meat-like body is oddly horrifying. What does it have to do with the subject of love, relationships, or sex? Who knows. Yet, viewed within the chaotic system that Lynch has created (both in film and on-stage) it becomes an integral component of his compositional technique. Judging from the ("uh") relationships portrayed in *Eraserhead*, *Blue Velvet*, and *Wild at Heart* it is impossible to describe Lynch as a hopeless romantic. He tends to show the more disruptive, violent, and (at times) misogynistic aspect of relationships. In this respect the worklight, as a sign in Lynch's visual tapestry, is able to signify an unbalanced state of affairs due to its previous use in *Blue Velvet* and current use in *Industrial Symphony*.²⁷ Taken out of the Lynchian system of signification, however, it is simply a light source.

While the images that constitute *Industrial Symphony* repeat and are continually re-contextualized, it is Cruise's unchanging presence

²⁷This multi-layered signification is also evident in Lynch's choice of performers. The mere presence of Julee Cruise (who, singing and dressed in the white crinoline prom dress, is oddly similar to the tiny chipmunk-cheeked woman who sings from the radiator in *Eraserhead*) and Michael Anderson evoke *Twin Peaks*, as Dern and Cage do *Wild at Heart*, and the industrial noise and landscape do *Eraserhead* and *The Elephant Man*. Although it appears that every film Lynch has directed is represented somewhere in *Industrial Symphony*, there is no mention of *Dune*, his 52 million dollar disaster. Perhaps he felt that the sound of bombs dropping and air raid sirens were enough of a reference.

that functions as the butterfly flap that ties the piece together. Her floating and singing exist as an iterated gesture that propels the work (as well as allows for a disruption of it). Thrust into a piece dominated by violent imagery it is Cruise's MaryPoppins-like levitation that offers the only calming force amid the industrial chaos. Like the sensitive dependence on initial conditions that permits a small disruption to be magnified into a tornado, Cruise's reiterated presence swells into a symbol of tranquillity. As she appears again and again we are lulled into a repetitive pattern of industrial noise followed by Cruise (almost whispering) Badalamenti's dreamy score. This cyclic pattern is destroyed as, following an explosion, her body plummets to the stage floor. Her now inert form is subsequently picked up by two of the mechanics and placed into the trunk of a car (the same vehicle, incidentally, over and through which the half-naked woman had previously crawled).

The iterated gesture of Cruise floating and singing is replaced by the image of her (disembodied) head projected onto three television sets that are placed at the foot of the stage. No longer physically able to float, she sings while her head hovers within the frame of the televisions. Eventually, *Industrial Symphony* ends with the resurrected Cruise ascending off stage right singing:

Love
Don't go away
Come back this way Come back and stay
Forever and ever
The world spins.²⁸

Although the floating gesture is repeated throughout the entire piece, it is important to point out that it does not remain immune to the surrounding violence. As part of a system it is subject to the evolution of that system. If the flap of a butterfly's wings are able to initiate a tornado wouldn't the butterfly be in danger of being swept up into the storm?

²⁸Julee Cruise, *Floating into the Night*, produced and written by David Lynch and Angelo Badalamenti (Warner Brothers Records, 1989).

5 A CHAOTIC APPROACH TO (NON) INTERPRETATION

By offering little to no narrative and creating a dynamic theatrical pattern through the iteration and juxtaposition of images and sounds *Industrial Symphony* exists as a perfect example of a chaotic system in motion. I must admit, however, that I could have chosen any production that met these requirements (the Lynch piece happened to be accessible and available on videotape). The point is not that chaos theory has something specific to say about Lynch's work (or Wilson's work), but that it is useful in analyzing performances generated by our present artistic (postmodern) condition. I firmly believe that there are points of contact between the manner in which "chaoticians" approach unstable systems and the process by which contemporary nonnarrative productions are created.

Conceivably the most important comparison between chaos theory and imagistic theatre is a shift in focus. Quite simply, both provide a uniquely contemporary method of perceiving the world around us. In his celebrated text *The Structure of Scientific Revolutions*, Thomas Kuhn examines what he has termed "paradigm shifts" in the way in which scientific inquiry proceeds from a base of acknowledged beliefs (or momentary truths) through the challenging and upsetting of these truths, to the (re)establishment of new beliefs. Scientific exploration, like theatrical creation, is based on an accepted body of knowledge and techniques and it is not until these static approaches are challenged that a revolution in thought can occur. As Kuhn points out, "What a man [or woman] sees depends both upon what he [or she] looks at and also upon what his [or her] previous visual-conceptual experience has taught him [or her] to see."²⁹ By disrupting these established conceptual frames both chaos theory and postmodern performance offer a challenge to these accepted (momentary) truths. Truly, as N. Katherine Hayles has observed, "Although it is too soon to say where the discoveries associated with complex systems will end, it is already apparent that chaos theory is part of a paradigm shift of remarkable scope and significance."³⁰

Because it is a part of the larger (postmodern) paradigm shift, chaos theory offers theatre criticism a methodological, philosophical

²⁹Thomas S. Kuhn, *The Structure of Scientific Revolutions* (Chicago, 1962), I 3.

³⁰Hayles, 2. See note 2.

approach to dynamical systems in which the diachronic interaction of elements takes precedence over the synchronic examination of fragments. Analyzing a work of art with this in mind we can clearly see that contemporary performances created by the dynamic interaction of all stage elements (propelled by an internal logical structure rather than an external narrative frame) mirror the structure of a chaotic system. By mingling the basic tenets of chaos theory with semiotics and deconstruction, the postmodern theatre critic has an extremely useful analytical tool with which to explore the "chaotic" productions that tend to fall outside the boundaries of traditional theatre criticism. As William W. Demastes concludes in his essay "Re-Inspecting the Crack in the Chimney: Chaos Theory from Ibsen to Stoppard," the chaos model "may very well be an essential tool for future research into modern and postmodern drama."³¹

As a philosophical attitude directed toward the theatre, chaos theory removes the demand to know what a production ultimately "means" by redirecting the focus to the overall pattern created by the interaction of individual elements as they move through space and time.³² In approaching a contemporary work by someone like Wilson or Lynch, meaning and interpretation can not be looked at as stable entities, but are splintered amongst the viewers as the interaction of the stage elements leads, not to a moral or climax, but to a chaotic pattern of movement and images. Certainly one may describe this interaction of forms as constituting the "meaning" of the production, but in doing so one must also ask if this is the same type of meaning that is generated by the work of someone like Ibsen. In order to begin to thoroughly analyze the structure of a postmodern production by the likes of Lynch or Wilson, we (as theatre critics) must search out new methodologies that are sympathetic with the dynamic systems that these productions create. So, in conclusion, I return to the question that began this inquiry: "What does chaos theory have to do with art?" What does the flap of a butterfly's wing have to do with a skinned deer? Perhaps Western Union knows.

³¹Demastes, 252.

³²It is this approach that was most aptly described by Susan Sontag in her landmark essay "Against Interpretation" when she stated that, "The function of criticism should be to show how it is what it is, even that it is what it is, rather than to show what it means." *Against Interpretation and Other Essays* (New York, 1967), 14.