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# Quantum theatre : a language for the voices of contemporary theatre

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**QUANTUM THEATRE: A LANGUAGE FOR THE VOICES  
OF CONTEMPORARY THEATRE**

**A Thesis**

**Presented to**

**The faculty of the Department of Television, Radio, Film and Theatre  
San Jose State University**

**In Partial Fulfillment**

**of the Requirements for the Degree**

**Master of Arts**

**by**

**Carol Anne Fischer**

**May 2004**

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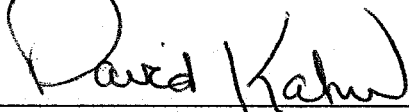
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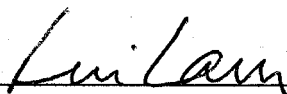
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## ABSTRACT

### QUANTUM THEATRE: A LANGUAGE FOR THE VOICES OF CONTEMPORARY THEATRE

by Carol A. Fischer

"All the world's a stage, and all men and women merely players," (As You Like It 2.7.139-140) distills a predominant ideology of Shakespeare's time, that life is deterministic; an individual pursues the role that has been determined for him by the gods/God. In similar fashion, nuances of theatre theory shift according to the nuances of cultural ideology within a given social, historical setting shaded by particular influences and events. The millennial shift into the 21<sup>st</sup> century is such a time of shifting for theatre theory.

The 20<sup>th</sup> century changes in science, particularly discoveries in the quantum, sub-atomic world and development of chaos theory – the "new" sciences – are exerting influence onto broader ideologies within our culture, and thoughts of non-deterministic concepts have invaded the arts. This thesis explores how the language and concepts of quantum physics theory serves theatre theory and criticism through analogy and inspiration. Works of theatre practitioners Anne Bogart and Naomi Iizuka are subjects for demonstration and practice of the application of such Quantum Theatre.

## ACKNOWLEDGEMENTS

I gratefully acknowledge all who listened as I sometimes obsessively, compulsively, and often with obtuse labyrinthine logic, worked at observing and then actualizing my own quantum-like thoughts into comprehensible words and phrases and sentences. And an extra thank you to Dr. Lui Lam, who also explores how science serves the arts and humanities through inspiration and analogy, but who still made me be as accurate as possible regarding the science.

## DEDICATION

I dedicate this thesis to my father, Alfred J. Gates, who always wanted to say, "My daughter, the physicist." Dad, in an oblique way, this is close.

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*It is my conviction that slight shifts in imagination have more impact on living than major efforts at change. - Thomas Moore*

*Imagination is more important than knowledge. - Albert Einstein*

## INTRODUCTION

Those of us born in the middle years of the 20<sup>th</sup> century seem to be particularly sensitive to the changes occurring with the Millennium shift into the 21<sup>st</sup> century. This linear, *chronos* time shift has happened coincidentally with the *kairos* time shift that the human psyche experiences at mid-life (40-55 years of age). Kairos time refers to the "out-of-time-ness" of life, the spiritual, conscious/unconscious, the artistic rather than pedantic aesthetic. Kairos is ontological rather than semiotic; that is, it has to do with *being* rather than representing, of *itself* (that is, the moment being experienced) rather than pointing to *other* (moments in the past or future). Mid-life, the psychologists tell us, is a time of shifting, of change, of transformation - new attitudes, new goals, new thoughts - all depending on what has been lived and experienced before - "we have shifted from a biological and social agenda in the first half of life, to a psychological and spiritual agenda in the second half" (Hollis 14). And so, in this time slot on the chronos century calendar (the 1990s becoming the 2000s) there is a concatenation of the kairos mid-life openness to the transition of the experienced mid-life working

force, the inherent forceful radicalness and revolution of the youth (historically often the harbingers of change), and the energy and ideological attractiveness of the chronological turn of the century.

In the world of theatre and performance the anticipated movement into 2000 (or is it 2001?) prompted a plethora of ideas and subjects. "Millennium" became included in the lyrics of the song "What You Own" in Jonathan Larson's hit Broadway musical Rent, the subtitle of "Part One: Millennium Approaches" of Tony Kushner's play, Angels in America, the name of new theatre companies, a "catch word" for advertising hot new technical equipment for sound, lights, rigging and other theatrical mechanics, and THE reason for changes in theatre art and environments including choices of works presented and arguments for why audiences should see them. Maria Shevtsova, professor of Theatre Studies in England, delivered a paper printed in Theatre Research International in 1999, in which she discusses the millennium shift in theatre research including approaches to theory.

[...] the interdisciplinary approaches – between all the arts as well – and attendant cross-fertilization, which, besides breaking limits to conceptualization as regards the theatre, command authority for theory as such. This has been very important, especially because of the mistrust of abstraction rampant in countries with strong empiricist and pragmatic/utilitarian cultures. Do I hear some of you thinking that the ascendancy of theory might be a problem? That theory has gained prominence to the point of overpowering theatre insofar as, while you turn page upon page of writing, the discourse is continually theoretical, and discussion of plays, players and productions is kept to a minimum? [...] It *might* turn out to be a problem for the twenty-first century if we lose sight of why theories were important in the first place, namely to use in relation to theatre. It might turn out to be a problem, too, if we forget that theories, when coming from

"outside" our discipline, can be made to be discipline-specific and nevertheless retain their interdisciplinary elasticity. (100-101)

Shevtsova is certainly speaking to a particular audience, an erudite attendance at the International Federation for Theatre Research World Congress in 1998; the general theatre spectator and reviewer would more likely speak in terms of "like/dislike" or "sense/nonsense" rather than theory and fear of its predominance. But the point of theory is to make use of a language that will help to reveal the truth, the consciousness, the soul of the performance, that can relate theatre to the lives of the individual performing or viewing and the community to which that individual belongs, and how various dynamics in those lives relate back to theatre.

Marvin Carlson, in his historical survey, Theories of the Theatre, understands "theory" to mean "statements of general principles regarding the methods, aims, functions, and characteristics of this particular art form." (9). The weightiness of Aristotle's Poetics in theatrical history is considered the starting point of theatre theory, although even previous to Aristotle was Plato's negativity regarding drama which he viewed as imitation while man's concern should be on reality. His allegory of the cave alludes to the destructiveness of seeing only the shadows of reality. Aristotle discusses the idea of imitation, "mimesis," as a much more positive function, and one to pursue in poetry and drama. He postulates that human beings take pleasure in imitations, that reality can be contemplated for growth and learning when found "represented with perfect realism in images" (47). He connected

beauty to form and order, parts being organized – a beautiful plot has a beginning, a middle, and an end, a teleological unity that leads to positive influence on the spectator. Subsequent conservative theorists applied this unity more narrowly, some even expounding that good theatre should have a story that takes place only within the time of the actual play and only within a space that could actually be within the playing space.

The prominent cultural understandings of human beings and their consciousness and learning experiences at any historical point were reflected in whatever particular theory developed about theatre for that period. It was understood that drama and playacting influenced viewers and therefore needed to be controlled to some extent so that the thoughts and actions of the people could be molded and controlled rather than anarchic. And since theatre was attended by the general populace ensuing a wide breadth of influence, arguments about theory, about the “methods, aims, and functions” became heated and extremely divergent.

David E.R. George, professor and published author of international dramatic studies, traces the development of the concept *theatrum mundi* – all the world’s a stage – that applies the metaphor of theatre and acting to a theory of life’s workings itself.

[...] A fundamental philosophical appropriation: ever since Plato, and then St. Augustine and John of Salisbury, co-opted the theatre as a metaphor of the world, the *theatrum mundi*, to see the world as a stage has been to see it as inauthentic, deceptive, an empty, vain show in which we are mere puppets, first of God, now of society. The force and ready accessibility of this metaphor can be seen by tracing this dominant *topos* from Plato and the

Church Fathers on through Rousseau and Nietzsche to contemporary sociology. For example, Erving Goffman's The Presentation of Self in Everyday Life [...] was a commercial success which speaks volumes about how culturally receptive we are to the equation of theatricality with inauthenticity, the deception of mere appearance. ("Letter to a Poor Actor" 353)

For the church fathers, God was the author of roles and puppet-master of fates, also the cosmic spectator of the action. And theatre theory used the concept. The ultimate distillation of the ideology is in words of Shakespeare: "All the world's a stage, and all men and women merely players" from As You Like It (2.7.139-140); and with even more pessimism in Macbeth (5.5.24-25): "Life's but a walking shadow: a poor player/ That struts and frets his hour upon the stage/ And then is heard no more." This supposes a deterministic view, with little opportunity for man to choose from his own possibilities, to be *self*-determining. The only viable choice for man was to figure out his assigned role at any given point and fit into it so that he could experience some meaning in his actions.<sup>1</sup> The pre-determined role that an actor would perform on stage was an imitation of the pre-determined role for which he, or any person, had been created in life. Theatre should teach morality, should demonstrate how to have a viable role in society. The operative word was "verisimilitude": having the appearance of reality, of truth.

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<sup>1</sup> This pre-determinism was also corroborated by scientists and mathematicians. "18<sup>th</sup> century French mathematician Pierre Simon de Laplace once boasted that given the position and velocity of every particle in the universe, he could predict the future for the rest of time. [...] The literal application of Laplace's dictum to human behavior led to the philosophical conclusion that human behavior was completely predetermined: free will did not exist." (Crutchfield, et al, "Chaos," Nonlinear Physics for Beginners 46-47)

George further expounds with sarcasm or perhaps consternation, that for Goffman in the 1960s and '70s, there is not even this transcendence. "The masks are all there is, and personal identity is exposed as a myth for a series of performances calculated to deceive... Just like in theatre" (354). When George published this article in 1986, he saw the dialectic between Goffman and himself as the difference of understanding life in the binary terms (person-role) presented by Goffman (and with which he was taking great issue), or in a more ternary model of three overlapping circles (actor-person-role) that allows for the actuality of the character acted, the possibility of person in a role, and the potentiality of the actor as a person outside of the role (359). One wants a lover to be a true lover and not just playing a role of a lover; yet we demand of lovers on stage, whom we know are playing roles, to be believable as real lovers.<sup>2</sup> In an article three years later, he developed a more expansive theoretical base.

In this essay, "Quantum Theatre – Potential Theatre: A New Paradigm?" George explores the possibility of shifting the basic cultural ideological approach to theatre away from the vocabulary of the deterministic Renaissance understanding of the human world with its throw-back to classicism and the gods (or the singular Judeo/Christian God) being in

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<sup>2</sup> Jure Gantar looks at the complexity of three vs. two while reflecting on the interface of text-performers-audience, but refers to a scientific principle from chaos theory: "While in astronomy the motions of *two* cosmic bodies can always be described with the help of Newtonian mechanics, a problem in which we are faced with *three* or more bodies, each with its own orbit and subjected to different forces of gravity, is an entirely different case. As French mathematician Henri Poincare showed in his 1890 paper on the dynamics of complex systems, the solutions of three-body problems are often impossible. Instead, they are governed by what scientists call a 'sensitive dependence on initial conditions.'" ("Catching the Wind in a Net: The Shortcomings of Existing Methods for the Analysis of Performance." *Modern Drama* 39 (1996): 542)

ultimate, creator control. He raises the question and possibility of using the vocabulary and ideology of concepts brought to light by the quantum physicists of the 20<sup>th</sup> century. These scientific theories are understood in their scientific world to function only within the study of subatomic physics, that the laws don't apply in our human-sized Newtonian world that is linear and most clearly understood through chronological cause and effect. Even so, George sees wonderful potential in borrowing quantum theory to observe, appreciate, speculate and approach theatre at this millennium juncture.

The word "potential" is, however, worth emphasizing [...]. It means "powerful," "potent," but as used in quantum theory since Heisenberg, it "introduces something standing in the middle between the idea of an event and the actual event, a strange kind of physical reality just in the middle between possibility and reality." The theatre is, of course, just such a liminal realm, as is our age as a whole, poised between the possibility of radical change and the actuality of passively attending our own tragedy. (178)

Scientists might disagree with the suggestion that quantum thinking can be applied to a more generalized cultural or worldview theory, yet the various explanations of these theories supports George's case by using theatrical vocabulary. For example: "It will be shown that these entities (space and time) are not merely the *stage* on which the cosmic *drama* is *acted out*, but belong to the *cast*. [...] In Einstein's conception, space is no longer the *stage* on which the *drama* of physics is performed: it is itself one of the *performers*" (George's emphasis, quoting Sir Edmund Whittaker, 172).

Also interesting in this light is a study by a group of Applied Linguistic scholars who videotaped a university physics research group in weekly

meetings over a period of six months. Their published observations are an exploration of how scientists journey through representations. Noteworthy for this discussion is the theatrical vocabulary used to describe their research.

We take the reader into a kind of *liminal* world that working scientists routinely construct through linguistic and graphic means. [...] Visual representations are treated through this collaborative interpretive activity as *stages* on which scientists *dramatize* understandings of their own and others' work. In these *scientific dramas* the participants take on a *variety of roles, including set designer, author, director, actor, protagonist, and audience.* (my emphasis, Ochs 151)

The cross-over of language is not only enjoyable, but gives an immediate visual impression of the scientific circle working. As throughout history, theatre is *for* and *of* the general populace, and rare indeed would be someone who did not understand or have ideas about the functions of the roles listed in the above quote. Erving Goffman is not incorrect in his initial observations of ways that the world is indeed a stage, including the quantum world.

The published theatre historian and professor Rosemarie Bank finds the conversation between theatre and the new science to be useful, enriching, engaging, and provoking.

We are not physicists fielding theories about the nature of the universe; [...] yet we have long understood the value of analogies that help us and our audiences perceive what we see. [...] For a theatre researcher, the displacement of the traditions of Newton, Hegel, and Darwin and the perception of a new spatio-temporal landscape are unavoidable and inescapable features of the quantum relative universe. [...] We find ourselves in the good company of many who have sought out the new world quantum



physics has articulated in this century. [... quoting Foucault] "We do not live in a kind of void inside of which we could place individuals and things... we live inside a set of relations." No relation exceeds the space of the universes the mind can conceive, spaces for thinking the future as well as the past. ("Physics and the New Theatre Historiography" 64)

Her assessment becomes a model and encouragement for pursuing an exploration of what quantum may have to offer theatre theory and the current and future understanding of what happens on our stages as a self-contained world, a world interacting with a specific audience and by extension with the world that encompasses the audience. This needs to be explored especially for the sake of the contemporary playwrights and many of their new works. Quantum concepts and language offers an approach to these works that allows them to live their own existence, one not pre-determined by theories established during the previous hundreds of years (but also not negating those theories in relation to the works and cultures out of which they developed). Bank quotes an Einstein observation that "time and space are modes by which we think and not conditions in which we live" ("Theatre History in Simultaneous Universes" 66). The goal here is to find a more inclusive language and vocabulary that define more of the breadth of what today's theatre thinks, and how such thinking about today's theatre can help relate to what we see on stage.

Other theatre scholars use variations of this language to speak of the needs in their own circles for revised understanding and exploration. Cara Gargano at Long Island University mixes quantum and chaos, complex

systems and dissipative structure with ancient mythology and postmodernism to make sense of the relationships of text, action, character and design on stage. She sees power in the potential and the diversity, and the reinventing of mythology as the supportive dynamic.

I would suggest that this new theatre might more appropriately be called pre-millennial, or even Odyssean, since it fuses new modes of communication with ancient ones, sees itself as a conduit between our daily life and our spiritual health, attempts to resolve the long-standing dualities between Apollonian science and Dionysian art and between rational observation and faith – and finally proposes its new world view of infinite potential. (“Complex Theatre” 158)

She draws near to the ideas of Richard Schechner analyzing performance and developing performance theory through understanding ritual and the continuing ritual aspects of theatre. Schechner draws conclusions that he hopes will apply towards broadening rather than narrowing understanding of performance.

Mathematical and transactional game analysis, model building, comparisons between theater and related performance activities – all will prove fruitful. These approaches are difficult; often they demand that the theorist, critic, and practitioner learn the language of other disciplines (but hasn't this always been the case?). These new approaches may be productive because they urge explorations of horizontal relationships among related forms rather than a searching vertically for unprovable origins. (27-28)

This thesis enters this exploration of a new approach to the liminal activity of theatre and performance through the language and theory of quantum physics. Some theatre researchers like David E.R. George and Rosemarie Bank are using this crossover in language application to further study in their specific focus: George has focused on performance aspects of

Buddhism and the similarities in worldview philosophies of Eastern thought and quantum concepts; Bank finds quantum ideas useful in studying a particular historical period in theatre as a world in itself. References to these and other authors included as part of a Literature Review are interwoven throughout this thesis rather than gathered together in one chapter so that each is within the context of the point being developed.

I purpose in Chapter One, to approach an understanding of basic quantum physics through my layperson's perspective, applying the vocabulary and language used to describe these concepts towards shifting the stance of theatre theory sensitized by the millennium. Just as quantum physics is not directly applicable to quotidian human life dynamics, so theatre dynamics are also just outside (or just out-of-sight-line) of the quotidian of an individual. Both open up perspective; in their liminal spaces we shall ask how quantum can be of service to theatre in Chapter Two. I suggest the idea of "borrowing" from quantum physics and its authors, and from its corollary, consciousness, that others have used when juxtaposing the science with studies from the humanities. The scientist Eric R. Scerri in an article exploring the nature of analogy and parallelism as used in such books as The Tao of Physics, does warn that working an analogy from one field of endeavor to another can be harmful if the nature of analogy is misunderstood, but within "an examination of the points of difference as well as similarities, more knowledge can be gained about each of the systems"

(691). The warning is heeded, even while employing some imagination to express the connection of science language to theatre.

While applying such service, I also address the negativity of certain theatre scholars about the direction they see in theatre at this point in history. Rather than merely debating opposition to their arguments, I will use the shift in imagination functioning through the vocabulary and analogy of quantum physics to suggest a shift in observation, a way to reconsider how we think and talk about what is happening on stage especially with regard to contemporary works. This is not to say that bad theatre is not bad, that every negative comment ought to be magically changed into a positive one just using a different vocabulary, but to bring to the discussion new energy and the possibility of transformation within the process of understanding by the audience and scholars as well as the critics.

To illustrate the practice of this conversation, the works of theatre artist/director Anne Bogart (Chapter Three) and of playwright Naomi Iizuka (Chapter Four) will be reviewed in quantum theatre light. I have chosen these two practitioners because they inhabit an in-between land in theatre criticism, crossing from what some regard as avant-garde to what is considered mainstream and back again, not exactly experimental, but not fitting into the traditional modes that draw season subscribers. There is a sense that theatre critics don't quite know what to do with their works, don't quite know how to talk about the uniqueness and integrity of their particular art. Chapter Five concludes, pointing again at quantum language and

concepts as analogy and inspiration, quantum itself performing great service to the discussion of theatre at exactly these unique, non-traditional, nonlinear junctures.

## CHAPTER ONE: THE JOY OF QUANTUM

Richard Foreman (director, writer, producer) came to the forefront of theatre at an interesting time in performance history, the 1960s and 70s. The avant-garde movement with its various stands against traditional storytelling, methods of communication, sense-making (since the world didn't seem to make much sense) had opened up the arts to new and sometimes odd ways of thinking, seeing, hearing. Foreman founded his Ontological-Hysteric Theatre in 1968. Kate Davy explains his efforts using vocabulary more apt to be in a science textbook:

He discarded the conventional dramatic attributes of plot development and character interaction, replacing them with a kind of "atomic" structure. He explains that this structuring involves the breaking down of all the theatrical elements (story, action, sound, light, composition, gesture) into "the smallest building-block units, the basic cells of the perceived experience of both living and art-making." (Plays and Manifestos ix)

In his "Manifesto I," Foreman speaks of "the danger of circumstance turning in such a way that we are 'trapped' in an emotional commitment of one sort or another. The new ontological mode of theater [...] forces the unseeable to cast shadows" (70). This becomes a path for us theatre folks to follow on the journey down (or is it up) into the world of quantum physics. Like in the ontological-hysteric theater, journeying into this scientific realm carries a sense of "the danger that arises when one chooses to climb a mountain and – half-way up – wishes one hadn't" (70).

Ken Wilber in the introduction to his book, Quantum Questions, Mystical Writings of the World's Greatest Physicists, insists that physicists would not allow quantum physics to be support or proof of a mystical worldview or of any religious faith. Yet others, such as Paul Davies (physicist and popular author) see a revolution in philosophy as well as in science with the discoveries in the quantum world. The questions raised in searching out the sub-atomic world beg for broader application as analogy and inspiration to men and women contemplating the reality of the world they inhabit, asking if the uncertainty, the seeming randomness, the non-linear quantum leap from possibilities to actualities in the miniscule world are mirrored or paralleled on the human level. Scientists insist not; rather, the deterministic, cause-and-effect laws apply. And yet there is an invisible, less concrete level in the human psyche - the soulful, artistic plane that is eager for the analogies as a way to grasp workings unknowable by our Newtonian biased senses. (It seems that those same scientists should insist that we cannot base a worldview philosophy on Newtonian physics either, since those laws were developed for observable physical situations rather than for philosophical/spiritual treatise, but our thoughtful predecessors did exactly that in continuing the development of a God-determined universe.) With such allowance for the parallel, I move into principles of the quantum world.

A quantum is a quantity, a packet of something, but not some *thing* like a particle of dust, only smaller. It is a discrete packet of energy released as an electron makes a downward transition from one energy level that

surrounds a nucleus of an atom to another (Davies, Other Worlds 32). And these quanta are viewed as "tendencies to exist" expressed in terms of probabilities and measured in energy units based on Einstein's special theory of relativity: mass = energy and energy = mass (Zukav 32).

Gary Zukav, in writing The Dancing Wu Li Masters, claims only to be a lay person, in fact, a liberal-arts-mentality lay person, with the intention of translating what he has learned of theoretical physics into language that can be understood by the non-scientist (xxviii). This essay is also for the sake of non-scientists and even more pointedly, theatre/performance artists, theorists, and critics. I am translating/distilling even further a language for the sake of this particular research. Zukav encourages his reader to be open to the concepts without making an effort to visualize or draw mental pictures the way we might visualize a Newtonian principle (as in the way we all suddenly see - in the mind's eye- an apple falling when we hear the name, "Sir Isaac Newton"). Quantum mechanics is understood through mathematical equations and through imagination. We willingly suspend our disbelief (along with Samuel Coleridge and his approach to literary fiction) as we look at some theories.

In 1927, physicists in conference about their work debated on an overall philosophy regarding their discoveries that became known as the *Copenhagen Interpretation of Quantum Mechanics*. The physicist and philosopher, Fred Wolf analyzes this historic discussion that took place in Denmark, as similar to the more ancient argument of the continuists vs. the



discontinuists – flow being inclusive for the former and leaps being the crux for the latter. The debate centered on what could be understood about the properties of waves and particles. Albert Einstein was on the side of the continuists, and wanted to see a wave as an ensemble of particles distributed through space (which would then make particles a more basic unit). Niels Bohr as protagonist for the discontinuists claimed that neither the wave nor the particle is the ultimate reality.

The wave is not the ultimate reality. The particle is not the ultimate reality. Reality is not the ultimate reality. There is, instead, one unbroken wholeness that appears paradoxical as soon as we observers attempt to analyze it. We can't help but disrupt the universe in our efforts to take things apart. (121)

The meaning of quantum mechanics is that it is a complete description of individual events (*event* being defined as a point in space and time without extension or duration - Davies 42). There is potentiality until experience determines the actuality (Wolf 117-124). Fritjof Capra in The Tao of Physics explains this as a basic oneness of the universe.

It shows that we cannot decompose the world into independently existing smallest units. As we penetrate into matter, nature does not show us any isolated "basic building blocks", but rather appears as a complicated web of relations between the various parts of the whole. These relations always include the observer in an essential way. The human observer constitutes the final link in the chain of observational processes, and the properties of any atomic object can only be understood in terms of the object's interaction with the observer. (68)

Previous to this conference, Bohr had developed his *Principle of Complementarity* which claims a wave-particle duality of light. Experiments were done shooting light electrons through dual slits. The electrons then

demonstrated wave-like interference patterns on the other side leading the observer to assume a wave quality to light. But forcing electrons through one slit and/or detecting which slit an electron passed through, showed results that assumed the electron to be a particle. The variable is in the observer him/herself and the chosen experimental method. Looking for wave-like results shows light as a wave. Looking for particle-like results show light as a particle. Although one measurement excludes the other, both results are necessary to understand the nature of light. How can that be? - because the behaviors are not the properties of light, but the properties of the experimenter's interaction with light (Zukav 93).

In another experiment, scientist Arthur Compton fired x-rays (known to be waves) at electrons. The x-rays bounced off the electrons as if they (the x-rays) were particles losing energy in the collision; the loss could be measured by comparing the wave frequencies before and after the collision. Compton's single experiment demonstrated the dual nature of the electromagnetic radiation of the x-rays. Zukav makes his own quantum leap in logic at this point in the explanation of complementarity. It would appear that light has no properties in itself independent of an observer; and in following logic, without an observer or interaction, light does not exist.

The other half is that, in a similar manner, without light, or, by implication, anything else to interact with, *we do not exist!* As Bohr himself put it: "...an independent reality in the ordinary physical sense can be ascribed neither to the phenomena nor to the agencies of observation." [...] the world consists not of things, but of interactions. (95)

(Perhaps somewhere here is hidden the answer to the Zen-like koans: what is the sound of one hand clapping? Is there sound if a tree falls in a forest with no one around to hear?)

The experimenters and observers of quantum particles never really "see" the particles themselves in a Newtonian observation sense. The particles' presence is assumed from the clicks of the Geiger counter or trails and pathways that show where they have been or from evidence of a new particle detected after a collision. There is no accurate (or even close to accurate) mental picture we liberal arts/humanities thinkers could possibly have of mass = energy/ energy = mass. The pictures that physicists develop are mathematical equations and matrices. Heisenberg built tables or matrices that deal with the physical observables: "those things that we know at the beginning of an experiment, and those things that we know about it at the end. We make no speculation about what happens in between" (Zukav 110). Such a matrix helps to calculate the probabilities of the transitions that happened accounting for what is observed. But Werner Heisenberg also discovered another reason for us to not attempt to have mental pictures of these concepts; he called this discovery the *Uncertainty Principle*.

Heisenberg wanted to find a way to measure the position and momentum of an electron as a way to "see" more of the properties of an electron. The way to shine light on the electron was to use photons with a small wavelength and "shoot" the light towards the electron (perhaps not unlike shining a bright flashlight in the direction of a noise in the dark).

So, the scientist used gamma rays and managed to pinpoint the position when the light hit the electron. However, the energy from the collision knocked the electron out of position, and into which direction or how fast this particle was moving could not be seen. (Was that animal we caught in our flashlight scurrying under the porch or running to the woods?) So a different light ray was put into service that had longer wave-length so that he could tell how fast the electron was moving and in what direction, but not exactly where it was (as if through foggy light we could see movement, but could not define a ball rolling or a cat prowling. The analogy is only partially accurate since there is no relevant comparison available in the world of ordinary-sized objects, but it gives some idea of the concept.) "This uncertainty meant that no matter how accurately one tried to measure the classical quantities of position and momentum, there would always be an uncertainty in the measurement. Predicting or determining the future of atomic objects would be impossible" (Wolf 115). Either one part or another of the picture is blurred; trying to clarify one side only fuzzes the other. And the act of observation has changed the initial event that was being observed.

The Principle of Uncertainty or Indeterminism became part of the discussions in Copenhagen, and is not so distant from Bohr's Complementarity, in that both speak of pairs of observations that end in paradox and cannot be reconciled in any dialectic manner. They are what they are, or rather each is what each is. Returning to Richard Foreman, we become newly aware of the danger of being half-way up the mountain, and

also of the artistic difficulties he may have faced as he developed his ontological-hysteric, atomic theatre.

Foreman graduated from Brown University in 1959, an educational time slot in which liberal studies students, including this burgeoning playwright and director, would have been taught mainly Newtonian physics. But his writings about what he wanted to accomplish in theatre sound remarkably like he was educated in the basic quantum dilemmas. He says of his writing process,

"Humm...I *MIGHT* write such-and-such..." and through that "I *MIGHT*"...of writing, the rest of the world of the not-written is still somehow available, and the writing... is a training in a certain psychic posture of keeping all alternatives and departures from THAT moment and THAT impulse available. To "MIGHT write" is to stay in the center of where writing arises... Only it's not a center... it's an everywhere. (Davy, Ontological-Hysteric Theatre 28)

There is a holding onto all possibilities until the spectator (or physics experimenter) chooses the perceptive stance that actualizes the outcome. Foreman experiments with his theatre form the way a physicist might experiment with electrons. He wants to place his reader/audience into a fresh awareness of his/her own consciousness by breaking down stale associations "producing a kind of 'vibration' [...] given a number of possibilities, the audience 'vibrates' between alternatives."

Ontological-Hysteric Theatre is a form of "concrete theatre" in which the moment-to-moment resistance and impenetrability of the materials worked onstage are framed and re-framed so that the spectator's attention is redistributed and exhilaration slowly invades his consciousness as a result of the continuous

presentation and re-presentation of the atomic units of each experienced moment. (Davy, Plays and Manifestos xiii)

Rather than a flow, there is attempted the discontinuity of quantum-like atomic events. His "Manifesto I" speaks of chance, accident and arbitrary, of objects within the play distorting other objects, of a new possibility being an insertion between logic and accident.

Foreman is doing to theatre what quantum does to physics, pointing out a system that does not follow the old rules, is not understood by cause and effect, deterministic thinking. Just as each sub-atomic event is considered complete in itself without relating to a previous or subsequent event (without such a chronology of any consequence whatsoever), Foreman proposed a theatre filled with segments that also were not connected in any emotionally meaningful sequential manner. His reasons for doing so revolve around an idea of allowing the random workings of the unconscious to *become*, to manifest in a conscious form but still reflect the happenings of the unconscious. Interviewer and author David Savran introduces his conversation with Foreman pointing out that his plays are "marked by what appears to be an almost total absence of character development or plot. Composed in a language richly allusive and yet utterly concrete, they abound in absurdities and *discontinuities*" (my italics 36). Foreman considers himself a poet, and poets of that mid-century era (Allen Ginsberg, Lawrence Ferlinghetti, Gary Snyder, Sylvia Plath, Denise Levertov) played with those types of discontinuities, testing and breaking traditional boundaries for the

literary form called poetry. The juxtaposition touches what author Leonard Shlain proposes, that art and physics seem to often, without even knowing, parallel each other in their historic developments. Shlain's thesis will be developed more in the next chapter.

Foreman claims the very creative author Gertrude Stein as one of the primary influences on his writing method, technique and style. Davy spends some paragraphs summarizing the important tenants of her work for understanding a study of Foreman (Plays and Manifestos xi). Stein developed a theory called the "continuous present" which is a way of structuring a play in the absence of a developing narrative, story or plot. This creates words and segments that exist in suspended time. I relate this to the "still point" of T.S. Eliot, the point of beginning and end (or with no beginning or end) with no other points influencing, or to the "zero degree writing" of Roland Barthes whom Foreman claimed as an early influence on his literary style (Schechner, "We Still Have to Dance and Sing" 113). These are also moments of *being* a wave or a particle for an electron... not of changing from one to the other but of existing in a singular form.

Stein furthered the idea of the continuous present by placing it in a static or "landscape play."

When reading a landscape or picture the eye moves from object to object, perceiving the relationships between individual elements presented simultaneously. In any landscape there are certain features which are always there and the relationships between these features are always, objectively, present. Like theatre, the landscape exists in time because it takes time to see a landscape as the eye moves from feature to feature in a definite

order or pattern; the exact pattern is determined, subjectively, by the viewer. (Davy xi)

First, it is notable that she understands the role of the observer in determining the outcome similarly to the experimenter determining and changing the outcome of an electron trial. The other interesting connection is how this idea of landscape resembles the concept of the quantum field.

*Quantum Field Theory* developed to help explain how particles instantaneously come into existence and just as instantaneously disappear. It seems that particles are actually interactions between fields. Whereas a particle is a point, a field is a larger area or void filled with electrical charge. When two fields interact, a particle is created (Zukav 199). Capra explains in this way:

The quantum field is seen as the fundamental physical entity; a continuous medium which is present everywhere in space. Particles are merely local condensations of the field; concentrations of energy which come and go, thereby losing their individual character and dissolving into the underlying field. (210)

That sounds almost sedate, but the field contains the potentiality for all forms of particles, and the dynamic of interactions is constant.

Richard Feynman was the physicist who came up with a way to diagram such comings and goings of particles taking into account a space-time framework. Where the "S-matrix" developed by Heisenberg diagrammed the beginning and the end of particle reactions, it drew an open circle for what happened in the middle (or to take it a step away from such ordinary linear terms, it specified the initial and final particles, but not the



detailed mechanism of the reaction - Capra 263). Feynman developed stick diagrams (looking something like part of a crudely drawn-in child's dot-to-dot book) that take into account the potential reactions within space-time, so that we "see" particles moving back or forward in time (towards one moment in time or another is more accurate since the chronology of Newtonian time does not exist in the quantum world) as well as accounting for various types of particles.

Applying this to Stein's and Foreman's landscape plays, the spectator chooses the reaction he/she is viewing; the eye moves from feature to feature creating a pattern. Time as well as space is a whole within this landscape and the observer may be seeing what is chronologically forward or backward, but draws his own diagrams of relationship between the features, the energy and interaction that happens to be important to him at the moment. The landscape is continuously present just as the quantum field is continuously present.

The concept of *Space-time* is a tricky one to get a liberal arts mind around fully and yet we play with it and are teased by it even in our ordinary Newtonian existence. When a child in the back seat of a car surrounded by beach towels and a picnic basket asks her mom, "how much farther?" Mom doesn't answer, "35.3 miles," but rather, "about an hour... that's how long *Sesame Street* is." Without even thinking, she has turned miles into time, and then immediately into a time frame that is within the child's experience. Even so, the child is still finding that hour to be a "long time" though she has

usually thought her favorite television show to always be over "too soon."

(This is something of the *kairos* nature of time that I spoke of in the introduction.) For the discussion of space-time, the equivalency of the distance and the amount of time to cover that distance is of importance. From junior high school astronomy we learned that the distance to the various astral bodies is measured in light-years (which is how far light travels in one year). Although a mental picture doesn't quite come into focus, the idea of space and time being entities on the same graph begins to form.

Any two points in space and time are separate when traveling slower than the speed of light but lose the meaning of separateness at the speed of light. Space and time are relative. Wolf offers us a further fascinating "Star Trek" thought:

Beyond lightspeed, an object or a consciousness would be completely free of the shackles of space and time. It could "drop in" at any time, past or future. It could visit anywhere at an instant. All points in the universe would be its home. Quantum mechanics was indicating a meaning for this poetic thought. The universe is not just a collection of separate points. It is what it is according to the observer and what he or she does. (182)

Zukav quotes Louis de Broglie:

In space-time everything which for each of us constitutes the past, the present, and the future is given in block.... Each observer, as his time passes, discovers so to speak, new slices of space-time which appear to him as successive aspects of the material world, though in reality the ensemble of events constituting space-time exist prior to his knowledge of them. (220-1)

Looking at this as at a quantum field/theatrical landscape, we realize we see the entire event/performance in one swoop; and it is our individual

observations (bordered by the slices of space-time chosen by the playwright and director) that begin to tell us the relative framework of before/after and here/there. But within the unit block of the space-time landscape, the options are myriad; the observed "story" can jump from one place and/or time to another at will.

An addendum theory that seems relevant and insightful at this point for application to the theatre world, but doesn't seem to have maintained a lot of attention in the physics world is the *Bootstrap Hypothesis*. Advocated by Geoffrey Chew at Berkeley in the early 1960s, it states:

that the world cannot be seen analyzed further. [...] the universe is seen as a dynamic web of interrelated events. None of the properties of any part of this web is fundamental; they all follow from the properties of the other parts, [...] an essential and universal interrelationship. (Capra 286)

This seems to fit in nicely with quantum field theory keeping in mind that interrelated events does not mean hegemonic determinism. Capra relates it to a worldview philosophy of *interpenetration of all parts*. It seems that such a poetic-sounding title-phrase of philosophy is upheld even on a Newtonian level of observation both in life and on the performance stage. The necessity of understanding the intimacy of relationships for maintaining healthy ecology of life forms attests to this. Approaching the idea through quantum, however, allows for any discontinuity of events to also be seen as a web, even while not a cause and effect web.

Richard Foreman became known for using strings criss-crossing his set and actors. I imagine these strings as a visual representation of this

bootstrap/interpenetration/web concept, and his own comments affirm

justification for using such vocabulary:

Most of my directing is just continual readjustment, mostly spatial, and also in time, in terms of adding thoughts and tics and pauses and whatever. Just framing everything to make whatever is there, in all its contradictoriness and ambiguity, terribly clear at each moment. (Davy quoting Foreman, Ontological-Hysteric Theatre 173)

I want to find ways to frame little details and relationships so that the audience takes joy, as I do, in seeing the intricacy of the way the world is put together, and all the different things coming together in joints. (173)

[...] Things were not clear enough for me. And as I started staging it, the space on stage wasn't – because it wasn't reinforced properly by the text – wasn't clear enough. I remember at a certain point midway in the rehearsals saying, ...ah, it could be clear, I see. She's making a cross like that. I'll have a string which will emphasize the space that she is creating by making a cross like that. (174)

A quantum theory that can boggle the imagination in itself as well as in relating to theatre theory is the *Many Worlds Interpretation of Quantum Mechanics*. This proposition (developed in the 1950s by three physicists: Hugh Everett, John Wheeler, and Neill Graham) suggests that when the possibilities under observation collapse into the one actuality, the rest of the possibilities have not vanished, but have actualized in co-existent worlds (Zukav 83). Not only has the actualizing of another possibility entered a different reality unaware of the one being observed, but the observer of that other actuality (for there is no leap without an observer) has also become real in that alternative universe. Since these worlds are not conscious of each other there is no problem in terms of our human/conscious reality and

observation. And yet... This is a most intriguing thought regarding its relevance to performance: the nature of theatre seems to allow the shadowy ghosts of those other worlds to hang out in the wings and filter through the audience unobserved but exerting energy. Foreman writes in his "Manifesto I" that he seeks the "seed/spark which forces the unseeable to cast shadows." Those shadows would be the alternative worlds making their presence known.

Fred Alan Wolf refers to the many worlds of actualized quantum events as parallel universes in that by definition they do not overlap (211). (Yet we know that in curved space-time, parallel lines do overlap!) He then proceeds to a lengthier discussion of how this idea of many worlds interweaves with consciousness in a Jungian, mythological sense, a connection I will discuss more in Chapter Two. Brian Rotman, in the article "Going Parallel" published in the journal Substance, A Review of Theory and Literary Criticism, expands on this idea of parallel and many worlds within his critical subject area of Comparative Studies. He introduces parallelism as a theory emerging from our currently growing technology-based culture that is causing "a revolution in what it means to be human." Besides being an illustration of how the many worlds concept can be adjusted from quantum to other disciplines, his arguments support broader application of quantum physics language despite any contrary insistence from scientists – application IS happening. Quantum-type vocabulary and thought has filtered into other systems of

theory, or perhaps has developed simultaneously in a many worlds/parallel worlds fashion.

Rotman begins by speaking of the historical dialectic argument between the use of words or images for theoretical discourse – the difference between discursive communication with a discrete, successive discourse of language, and presentational communication with visual images allowing the observer to grasp relationships in one act of vision (57). He posits that the dialectic ends in a stalemate with no unification or resolution and is best understood if left as parallel constructs letting each side work appropriately to its form.

It is the claim here that this rampant visualism and the mounting parallelist mode of thought of which it is a part are the beginning symptoms and collateral effects of a deep-lying, complex revolution – far beyond any question of “mere” technological changes – in what it means to be human. [...] Something large, unquantifiable and unknown is emerging, beginning to make itself felt across human culture on the outside of our skins and inside our heads. [...] Is it an “it,” an inevitable effect and replay of the all-powerful attractor, the singularizing *It* of Western monotheism, and not a “they” that is/are emerging? Is the future really singular, determinate, and already there, whatever we do? Or does it, like a quantum plurality of many superimposed states, collapse into a singular present? Or is what we are talking about many futures, a plurality of fates, co-occurrent, superposed and simultaneously present all the time? (59)

There is a sense here of heightened emotion getting carried away with itself, but as Rosemarie Bank and David E.R. George encouraged, Rotman is using other disciplines to expand and illuminate his own, and he is promoting something he is observing as nothing short of revolution.

The encouragement at this point, then, is to imagine and ponder a relationship between quantum physics concepts and theatre, letting each interpenetrate the other as one's consciousness, one's thoughts interpenetrate both. Richard Foreman's avant-garde theatre work is an early illustration and practice of such connection helping to make the leap into more broadly applicable quantum-inspired theorizing about theatre.

## CHAPTER TWO: CREATING A QUANTUM THEATRE THEORY

The question that David E.R. George purports in the title of his Quantum Theatre article - "a New Paradigm?" - is essentially asking: is this approach to theatre through quantum thought signaling more than just one of several applicable theories? Is it more like the invasive revolution encouraged by Rotman? George suggests considering a parallelism not unlike the serialism/visualism parallelism for the comparative literature scholar.

We may perhaps have to learn to live with and in such a "split universe", with one set (of laws) for the physical world and another set (of probabilities) for the nuclear world. Such a split universe is, of course, itself highly "theatrical": what goes on "behind the scenes" is, similarly, a play of possibilities which then become the more (but never totally) stable, repeatable (albeit never identical) text of performance. (175)

Thomas Kuhn analyses the happenings that precede and then identify historical paradigm shifts in scientific realms in his book The Structure of Scientific Revolutions. George quotes one of his two definitions for "paradigm": "the entire constellation of beliefs, values, techniques, and so on shared by the members of a given community" (Kuhn 175). But Kuhn asserts his second definition as the deeper one philosophically: "it denotes one sort of element in that constellation, the concrete puzzle-solutions which, employed as models or examples, can replace explicit rules as a basis for the solution of the remaining puzzles of normal science" (175). I propose that developing a language for quantum theatre includes as much of the more



specific elements modeling puzzle solutions as it does an exploration of overall value. Kuhn became a historian of science in writing his book, borrowing from those traditions that normally deal with historical analysis; even so, I borrow this idea of model/paradigm from science puzzle solving as well as paradigmatic ideology from quantum physicists in the endeavor to identify a shift in theatre theory.

The first borrowing (and one I consider of paramount importance) for the sake of modeling, is *Attitude*. Richard Feynman is the physicist whose attitude towards his work and his life exemplifies a commendable and exciting approach towards theatre through the quantum paradigm perspective. Theatre and film artist Alan Alda pursued the possibility of creating a play about Feynman after he read works by and about the physicist. His interest piqued when reading Tuva or Bust!, Richard Leighton's anecdotal account of his and Feynman's pursuit of the Russian-absorbed country of Tannu Tuva with its now famous (thanks to the efforts of the two men) throat singers. The eclectic interests of the Nobel prize-winning physicist made him seem an eccentric bordering on the mad scientist archetype, but reading the composites of his lectures and anecdotes gives a picture of someone who found all of life *interesting and curious*. Alda says this about the man he discovered:

Feynman was comfortable with not knowing. He enjoyed it. He would often move forward with an idea as if he believed it was the answer. But that was only a temporary belief in order to allow himself to follow it wherever it led. [...] "Not knowing," he said, "is much more interesting than believing an answer which

might be wrong." [...] He made up his mind never to work on anything that didn't interest him, that wasn't fun. (preface to QED, a Play by Peter Parnell vi)

Besides being a teacher and researcher, Feynman was a bongo player, an amateur artist, a raconteur, and a safe cracker. "His special talent was to approach essentially mainstream topics in an idiosyncratic way. [...] he seemed to treat the world as a hugely entertaining game [...and] he broke the rules whenever he found them arbitrary or absurd. [...he] had a fascination with the quirky and obscure" (Davies in preface to Six Easy Pieces by Feynman xi-xii). This is a paradigmatic attitude of extreme curiosity mixed with an incessant search for answers (or at least incessant questions), and an allowance for pondering imaginative (including "weird") outcomes. Even Feynman's 1965 Nobel acceptance speech recounting the steps of his quantum electrodynamic discoveries is filled with simple yet revealing phrases about his mind process.

"I was lying in bed thinking about these things... I imagined what would happen if... I don't know what it means, that nature chooses these curious forms, but maybe that is a way of defining simplicity... I got a kind of funny feeling that things weren't exactly right...I dreamed that if I were clever, I would find... by inventing and trying some rules... I did know from experience, from fooling around... you always have the psychological excitement of feeling that possibly nobody has yet thought of the crazy possibility you are looking at right now." ("The development of the space-time view of quantum electrodynamics," Nobel acceptance speech 1965 - random phrases)

In a lecture given in 1963, Feynman offers the excitement of discovery as the overriding goal:

[...] The things that have been found out. This is the yield. This is the gold. This is the excitement, the pay you get for all the disciplined thinking and hard work. The work is not done for the sake of an application. It is done for the excitement of what is found out. [...] You cannot understand science and its relation to anything else unless you understand and appreciate the great adventure of our time. You do not live in your time unless you understand that this is a tremendous adventure and a wild and exciting thing. (The Meaning of It All 9)

Within the disciplines of playwriting, directorial blocking, costume research, set building and any other work in the theatre arena including analyzing, critiquing and theorizing, such an attitude of discovery, of pursuing with great imagination the questions raised by a particular text and/or performance is transformational and revolutionary, for perhaps no one has thought of the crazy possibility being looked at right now, no one has had the unique, weird thought generated, the same obsession with a particular singular moment, the same sense of adventure revealed in a theatre performance.

The ideology of parallelism is another borrowing for quantum theatre that works on a few levels. The first level is historical. Leonard Shlain, a surgeon by career and education, experienced an epiphany while contemplating why he couldn't answer his young daughter's questions about the meaning of modern art around the same time he happened to be reading a popular book on the new physics. This serendipitous concatenation began an in-depth journey motivated by heightened curiosity to solve the puzzle of there being any possible "connection between the inscrutability of modern art and the impenetrability of the new physics" (Art and Physics 8). He gives a

succinct definition of “paradigm” as a belief system with premises so obviously certain that no one has to prove them anymore. “When the time comes to change a paradigm – to renounce one bedrock truth and adopt another – the artist and physicist are most likely to be in the forefront” (22). The compiled research paralleling 20<sup>th</sup> century works of art with quantum discoveries in science support this premise. Even when each discipline is little aware of the movements and new thoughts in the other (sometimes even arguing against each other), simultaneous parallel changes seem to be taking place. Although Shlain speaks most about the visual arts, literary arts apply here as well. Lewis Carroll wrote the story of Alice’s Adventures in Wonderland in 1865, certainly a story that distorts time and space and linear logic, although the relativity concept was still several years from being cohesively formulated.<sup>3</sup>

What quantum theatre can borrow from Shlain is the parallelism of the precedence of the perspective of the observer/painter in the visual arts being given credence at the same time the precedence of the observer/experimenter in new discoveries in physics was being given attention. The examples of various artists moving out of the Renaissance perspective and “vanishing point” realisms abound around the turn into the 20<sup>th</sup> century.

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<sup>3</sup> It is interesting that in 1995, Robert Gilmore published an allegory of quantum physics called Alice in Quantumland – the story does not have to reach very far to shift vocabulary. Rather than Humpty Dumpty explaining that his word “glory” means whatever he says it means, the Mechanic explains that complementarity means that there are certain things you cannot know, not all at the same time anyhow. “Complementarity doesn’t mean that,” protested Alice. “It does when I use it,” replied the Mechanic. “Words mean what I choose. It is a question of who is to be master, that is all. Complementarity, that’s what I say” (42). Touché.

Shlain points to the Impressionists who painted their... (ahem)... impressions, their personal perspective observations into their paintings. Objects appeared larger or smaller, less or more pronounced, more or less colorful, in or out of a recognizable framework other than naturalism and realism would suggest. The artist's perception of what was being measured, being seen by an inner as well as a physical eye became the important facet.

Jungian analyst and writer James Hollis connects the Impressionists even more directly to quantum concepts. "Their subject, then, was not the object, but light itself, [...] to convey for the moment that reality is a mass of stable light, even while light itself is energy and not mass. [...] The Pointillists broke light down into its component parts, favoring particle theory over wave theory" (110). An interesting point about the cubism developed by Picasso is how the flat cubist style painting would resemble what an observer would see in traveling around an object at the speed of light: virtually all the sides at once (Shlain 191).

The examples can go on for many pages as they do in Shlain's book, but I'll use Picasso as a reference to theatre since he is an artist who designed sets and costumes for ballet and theatre performance in addition to producing in fine art venues and mediums. One of the most noted of these designs was for the Diaghilev Ballet Russe production of *Parade* in Paris, 1917. The creation was the combined efforts of several rather avant-garde artists of the time: Jean Cocteau's theatrical ideas, Erik Satie's advanced musical composition, Massine's youthful and character-oriented

choreography, Picasso's visual designs for set and costumes, plus Diaghilev's impresario-style management which had already shocked the Paris audience into a riot with Stravinsky's *Rite of Spring* in 1913. *Parade* was labeled a cubist ballet; the description contains nonlinear, discontinuous elements that are revelatory when viewed through a quantum experimenter's curiosity of "Let's see what happens if..."

Satie's unassuming music "like an inspired village band" was to be accompanied by noises, a dynamo, a siren, a telegraph key, an airplane propeller, a typewriter – "ear deceivers" Cocteau called them.[...] Picasso painted the curtain himself [...] a skillful parody of popular scene painting. [...] When the curtain rose [...] stamping across the stage comes the French manager, a figure ten feet tall and completely covered except for his legs by a cubist construction. [...] The New York manager stalks on the scene, his stamping dance like "an organized accident... with the strictness of a fugue." He wears cowboy boots and cubist skyscrapers, and bellows in his megaphone the virtues of his protégée, the little American girl who, in Cocteau's words, "rides a bicycle, quivers like movies, imitates Charlie Chaplin...dances a ragtime...buys a Kodak." [...] The gigantic cubist managers like moving sections of scenery were intended by Picasso to dwarf and flatten out the dancers, turning them into unreal puppets. (Barr 98-99)

Picasso's designs were from a certain perspective, a relative perspective, exaggerated in some respects and minimized in others. It would not be correct to critique his sets from an Ibsenian standard of realism. Perhaps the operative word is *allow*. With a shift in vocabulary, theatre theory is able to allow for these different perspectives, not just for avant-garde and experimental performances (which conventional theory more or less ignores or relegates to a special circumstances category with its own special theory), but as a way to approach any anomaly in any of the various strata of a

performance. The question to ask may not be: what does it mean? But rather: what point of observation is this from? And what relationships are suggested?

As an older contemporary of Picasso and Einstein, Odilon Redon is a lesser known post-impressionist painter whose work is also focused from his personal perspectives and observations. His early life was solitary, isolated and sorrowful. Although trained using different mediums and all colors, he began using charcoal and black consistently and exclusively in 1875, when 35 years old. He married at 40; the couple's first child died as an infant in 1886. To Redon's great joy, their second child was born as he approached 50 in 1889. "It seems too beautiful," he wrote in a letter, "[...] The life that we unfold can also reveal joy." (Redon 71). There begins to appear in his work a fervency of color and of light that comes to fruition as the century ended. In such a kairos time of his life (see my Introduction), transitions into fatherhood as well as transformations of mid-life, color fully entered his work and he never returned to charcoal; vibrant blues especially stand out from his paintings and pastels. "Art obeys secret laws and also has a share in the events of life," Redon wrote (30). His personal perception did not only include his observation outward, but also how he observed what was happening in his subconscious, his soul; the ideology parallels studies in scientific relativity.

His subjects were sometimes traditional (although never expressed in the realistic or naturalist school): stain glass church windows, his wife, his

son, still life, butterflies – often with hints of shadowy figures or objects in the background. But he also focused on the mythological: Apollo's chariot drawn by winged horses, a Buddha, the Cyclops, Orpheus, the raising of Lazarus, a black sun, a mystic boat on a sea. One of the most interesting paintings is "A Winged Old Man With a Long White Beard," and the visual product is exactly what the title describes. However, the title itself refocuses the perspective of the observation onto the beard and away from the wings; otherwise the title would be "A Bearded Old Man with Wings". The spectator takes a quantum-like leap in his or her observation, thrown off balance for a moment as the wings first draw the eyes; then the title says, "look at the beard." Is one seeing a wave or a particle in this work?

A current playwright, Naomi Iizuka, also works with mythological images in a multitude of settings in her plays, forcing the spectator to re-evaluate the initial perception. There is a scene in the middle of the play Skin unrelated in any sense to the narrative, in which a man, "a cholo [...] a handsome young god", stands under a light so that the crowd (and we as audience) can see the tattoo of the Virgin Mary covering the skin of his back (181). One could ask, "What's the point?" In speaking of her writing style Iizuka comments, "I think writing for theatre is (and should be) unparaphraseable. It should evoke the more elusive, inexplicable realms of human experience, at the same time making possible a renewed attentiveness to the concrete realities of the world" (161). So, as with Redon's painting, the spectator's/critic's question must shift from "meaning"



to perception. In a quantum world, a quantum theatre, rather than search for meaning with which the broader population can identify, the discussion focuses towards what the images show and tell about what the artist is observing, and then about what the spectator is observing, and even what the spectator is observing the artist observing. In a similar way, quantum physics narrows in on the relationship of the observer and the object.

Shlain introduces what is another construct in the borrowing from other disciplines that I am proposing: the realm of human consciousness as understood through the work of Carl Jung, who also repudiated linearity in the psyche to something much more mythological, with leaps and connections being made internally that don't necessarily have any causality from quotidian events. Jung developed this shift away from Freudian psychological understandings near the time of the physicists' famed convening in Copenhagen. The pictures and observations of the two artists Redon and Iizuka in the previous paragraphs are examples of a quantum-like shift in consciousness and its expression. Jungian James Hollis reflects on 20<sup>th</sup> century art that, "the center has been entirely relocated from the object to the psyche. [... This] recalls us to the notion of Teilhard de Chardin that matter is spirit moving slowly enough to be seen" (111), which also relocates us back to space-time relativity – just as space and time are not separate, so consciousness and the object of consciousness are not separate and need to be considered as a whole, a unity.

The following understanding of consciousness seems applicable to performance theory as a further understanding of the necessity of perception in the quantum leap from possibilities to actuality allowing for an inner process while encountering something outside itself, and the formation of a new *thing*. The fuller development of the individual out of all the energies within and around a person is a unique event not unlike the formation of a discrete sub-atomic particle out of the interaction of quantum fields. From The Creation of Consciousness by Edward Edinger, Jungian scholar and analyst:

The process whereby a series of psychic contents – complexes and archetypal images – make connection with an ego and thereby generate the psychic substance of consciousness is called the *process of individuation*. This process has as its most characteristic feature the encounter of opposites, first experienced as the ego and the unconscious, the I and the not-I, subject and object, myself and the “other.” Thus we can say that whenever one is experiencing the conflict between contrary attitudes or when a personal desire or idea is being contested by an “other,” either from inside or outside, the possibility of creating a new increment of consciousness exists. (17-18)

The application of this idea allows for a multi-layered experience of theatre; it allows for different experiences/perceptions/observations by the author, director, designers, actors, and individual audience members, within themselves, in interaction with the material, and with the others. In more quantum language, it allows for the various fields of individuals to interact with the quantum fields/landscapes of the stage. It contains an aspect of emerging new consciousness that can filter through all of those fields. The “many worlds” that in the quantum universe would not be aware or conscious

of each other *are* aware through this consciousness, and are able to interact with one another to some degree within this theatre world. (Similarly, complexes and archetypes interpenetrate with the ego to form a new individuated being.) So, I may find myself in argument or even silent disagreement with another spectator regarding an aspect of a play, but our divergence will actually play upon each other's consciousness allowing, virtually creating, different energies, "a new increment of consciousness". The psychological "individuation" identified by Edinger translates to any singular ("individuated") production of a play.

In analyzing Richard Foreman's play Particle Theory, Florence Falk also defers to Jung,

who believed that events may be related in ways that are "meaningful" without being causal, that relationships may exist independent of space and time. Once linear progression has been abandoned, our accustomed sense of purpose and progress is necessarily altered. Since the units or sequences in Foreman's works don't develop predictable results, we are obliged to consider the possibility of relationships independent of temporal progression and causality. (399-400)

Falk raises the question, "how do we register information that is contextually dissociated?" (403). Carl Jung speaks to the same question regarding the understanding of archetypes in the new psychology:

Clear-cut distinctions and strict formulations are quite impossible in this field, seeing that a kind of fluid interpenetration belongs to the very nature of all archetypes. [...] Every attempt to focus them more sharply is immediately punished by the intangible core of meaning losing its luminosity. [...] It has a potential existence only, and when it takes shape in matter it is no longer what it was. (Psyche and Symbol 153)

Archetypes are like electrons; there is an interaction or interpenetration among them, and while analyzing one, another becomes blurry; when something collapses or actualizes, a new entity is created. The labyrinth of thought has a mythological nature because of the close connection of archetypes and myth, and I propose we look at myth and myth-methodology to help us live consciously within an altered quantum-like theatrical framework.

Prof. Harvey Birenbaum has a helpful approach to myth in his book Myth and Mind, usefully calling it

an activity of the imagination coping with its own experience [...] a *nonlinear* narrative [...] archetypal, [...] because it reflects the very basic structure of the psyche, a structure which has enormous implications for our sense of life and which stirs within us, inevitably, the most powerful sorts of feelings. (xv)

He has effectively moved myth into the quantum realm of basic structures (like atoms) that interact in a non-sequential way but with great potential ("power" as well as "possibility" according to David George). Myth is like the side of Rotman's parallelism that is presentational through visual images rather than serial and discursive through text.

A mythological image is complete in itself - whether on stage without words like the cholo in Iizuka's play, or a discrete verbalization or verbal interchange stepping outside the story and changing its perspective, as when, for example, the actor playing Song Liling in David Hwang's M. Butterfly speaks to the audience before intermission and then spends that break time publicly doffing his one character for another. The *imago* is

recognizable on a level that is not necessarily cognitive or semiotic, nor even metaphoric – it simply *is*, containing power in its is-ness. The moment makes connections between the deep roots of the soul and religious icons such as the mother of g/God, or between the psyche and a visual representation of transformation and metamorphosis, touching an audience beyond what the image means or doesn't mean within the framework of a story.

Birenbaum connects us back to quantum language in his book's appendix regarding properties or functions of consciousness, here quoted using *italics* to emphasize the quantum language connection.

*Energy: the non-stuff that makes up being, the universal flow, here manifest without apparent embodiment. Whatever else it is too, consciousness is a process or event that exerts itself. It is dynamic, it does, goes, happens, operates. I have it happening. I speak of it awakening, moving, focusing.*

*Correction: Consciousness is not energy; it's a field of energy. It is a context created by the play and interplay of energy, it is the interplay of energy, energy creating its own context.*

Consciousness is minimal in one sense although it is total in another. It is *merely* so, as it stands by watching. It is in this way passive, soaking in the whole of what makes its world at any moment. But it is a paradoxically passive activity, going on, reaching out into the world, carrying on the manifold business of life. And waiting.

The *duality* of active and passive is a *split* that consciousness itself develops in order to get perspective, to "mobilize an attitude," to operate its energy. (215-216)

There are some scholars and theatre practitioners since Richard Foreman who have consciously borrowed from quantum physics in their

studies and work as they move theatre into the 21<sup>st</sup> century, and I will acknowledge them at this point. There are also others who have been much more negative about theatre in the present and for the future, and I want to acknowledge them with the intention of offering them another way to think about theatre in order to preserve the integrity of the art.

Others interested in adjusting theatre/performance theory to meet the characteristics of today's works have also borrowed from sub-atomic and other scientific realms. Natalie Crohn Schmitt is one of the most articulate; her book, Actors and Onlookers, is referenced by many commentators and theorists since its printing in 1990. She helps bridge the cross-over from traditional to contemporary review and analysis by keeping Aristotle close to her discussions either through re-defining or pointing out the exact place of dissension in comparing his classic views to modern theatre. For example, she reads John Cage's (1960s' avant-garde musician/performer/writer) unique approach to music and art as also from the Aristotelian assumption that art should imitate nature's processes. The two men merely see nature differently so that Cage just *looks* like he is defying Aristotle (5). This points to a connection with the Copenhagen Interpretation asserting the essentialness of the observer. Critically, many audiences found Cage's work inaccessible because of its *process* nature with often hardly a beginning or end, making no concession to organization or any type of deterministic flow. This juxtaposition of the classic (Aristotle) to the experimental (Cage) is not unhelpful and moves us in an almost gentle manner towards an adjusted

perspective in viewing works on stage as she explains the basic tenants of quantum theory.

One of her most interesting applications is to the Broadway musical success, A Chorus Line. Michael Bennett's conscious development of this "backstage" musical was to play with softening the "fourth wall" of the proscenium of the stage, the invisible barrier between the performance and the audience. Schmitt writes at length about the "interpenetration" aspect of this musical: depending on the point of observation, the actors shift from being characters in a play, to representing real actors in exactly this auditioning process taking place on that specific stage but also down the street in some audition hall. The mirrors placed upstage facing out suggest the setting of a dance rehearsal studio/audition hall, but also through the mirrored reflections, bring the audience onto the stage. There were various reactions to the closing glitzy production number of the show: from feeling it is happy and uplifting to viewing it as a total put-down of the integrity of show-biz mystique – seeing it is a sham (82-91). This supports the assertion that spectators are individual observers consciously seeing and thereby producing different conclusive events (is it a wave or a particle?).

Schmitt's point of interrelatedness of actors as people and as characters and the audience is well substantiated, although my research indicates less scientific weight is applied towards interpenetration (the bootstrap theory) than for other quantum principles. However, Schmitt's analyses do corroborate the idea that the shadows of the many worlds that

split and develop from a collision, do not disappear but remain as shadows for the theatre. She highlights the celebration performance in 1983 that used 332 past and present performers of the musical as an appropriate model displaying interpenetration (90). I would say it illustrates, in a most quantum theatrical style, the simultaneously existing multi-universes ("a multiverse") that inhabit A Chorus Line; the space-time of the entire run of the show became a singular unit.

The nice juxtaposition in Schmitt's work is her applications not only to a Broadway musical, but also to John Cage's experimental performance creations, as well as those of the Wooster Group (a long-term viable avant-garde performance company). At least part of the point of a theory is broad application, and she has found viable connections in these divergent places. In my next chapter I will begin application towards theatre that is in the liminal realm between the labels of avant-garde and mainstream. If we maintain an attitude of intense curiosity like Richard Feynman, and an allowance through consciousness, and a borrowing of language and concepts from quantum physics, what will we find in those in-between spaces; how will we talk about such works that today are gracing our stages, especially our regional and local stages?

Cara Gargano, head of the Film, Theatre and Dance Department at Long Island University's C.W. Post campus, has advanced application of this new science to analyses of various types of performance. Her initial article making a foray into the linkage of science and theatre was published in the



French-Canadian journal Religiologiques, and proposes connections among several frameworks: scientific theories of chaos, of quantum, of fractals, of dissipative structures alongside consciousness, myth, and Eastern mysticism. The driving connective dynamic delves into the levels of the myth of Orpheus which reflects the dual nature of man: body and spirit. The mythologians in ancient times were, at base, the physicists who changed the gods into cosmic forces, and the Orphic myth is the image that connects man and the most basic elemental forces of birth-death/dismemberment-rebirth. Orpheus in his consciousness is able to influence the unseen forces in the underworld and is granted the return of his beloved Eurydice to the surface (just as a physics experimenter might shift things with his careful observation.) As he leaves Hades with Eurydice following, he is participating in the thought experiment of Schrodinger's cat: there are two Eurydices: one dead and one alive until he turns and by his observation actualizes the dead Eurydice while the live one disappears. The quantum possibilities collapse to a singular observable event. This article (and Prigogine's scientific theories regarding chaos) is Gargano's encouragement to proceed in weaving together, making a "grand reconciliation" of what can be observed in human spiritual reality/metaphysics with the science of physics, between "being and becoming" ("L'etre et le devenir").

Gargano's other articles are direct critiques and analyses of performances using what she has garnered from the scientific fields of quantum and chaos theory. She chooses performances that are not

accessible using traditional modes of critical reference. The first is of Maria Irene Fornes' Mud.

Her work has disturbed and bewildered critics and audiences alike. There is a troubling quality to Fornes' plays; they elude categorization, and the reader or the audience has the uncomfortable sense of being on the unstable edge of an important metaphysical truth located just out of reach, on the other side of the liminal zone [...]. I believe that discussing it through the lens of the changing scientific paradigms offers new access to the play, both as drama and as theatre. ("The Starfish and the Strange Attractor" 214-215)

Indeed, it is just such a stage space-time/mythological essence that should be re-evaluated within the concepts and language offered through the new sciences. Gargano is eclectic in which theory she chooses to apply, so that it is tricky to evaluate the categories of the theories themselves, for clearly chaos theory is substantially different from quantum theory, yet she uses them almost interchangeably. The other performances she looks at are: Rent, the current Broadway musical, Interfacing Joan, a single person performance piece, Richard Foreman's The Universe (ie. How it Works), and several dance pieces of contemporary choreographers ("Complex Theatre" and "Bodies, Rest, and Motion"). Her exploration of current theatre using the newly verbalized connections of art and science are commendable, and I will borrow her method as I practice application of quantum aspects towards Anne Bogart's work and Naomi Iizuka's plays in Chapters Four and Five.

Chaos theory is more closely (more than quantum theory, that is) related to Newtonian ordinary physics in that it follows an orderly pattern that then seems to suddenly (and nonlinearly) move into something more

chaotic, but then regulates itself to a new orderliness; the focus is the macroscopic rather than the sub-atomic world. William Demastes summarizes this way:

Chaos theory identifies systems of *unpredictable determinism*: there are causes and effects (determinism), but we cannot always know all the causes (butterfly effect) [the idea that a butterfly moving his wings in China could eventually lead to a tornado in Texas] and so cannot anticipate future events (unpredictability) with anything near to the certainty we once felt we could. (Theatre of Chaos 71)

Physics Professor Dr. Lui Lam more clearly defines the scientific understanding:

Chaos is a technical word representing the phenomenon that the behavior of some nonlinear systems depend sensitively on the initial conditions. [...] In the chaotic regime, the behavior of a deterministic system appears random. [...] The *apparent* unpredictability of a chaotic, deterministic, *real* system (such as the weather) arises from the system's sensitive dependence on initial conditions and the fact that the system's initial condition can be measured or determined only approximately *in practice*. (17; 20)

Chaos theory offered scientists a handle to tackle problems from any field of their liking. "A psychological barrier was broken; no complex system was too complex to be touched," defining a "complex system [as] one which consists of a large number of simple elements or 'intelligent' agents, interacting with each other and the environment" (37).<sup>4</sup> It is easy to see the complexity within a theatrical production, but it seems to me that something looking like "the butterfly effect" on stage could be imagined as the extreme of cause and

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<sup>4</sup> Dr. Lam has developed a principle of *active walks* that "describes how elements in a complex system communicate with their environment and with each other, through the interaction with the landscape they share" (38). Future understanding and contemplation of this principle and its possible analogy to theatre practice and theory will be a useful endeavor.

effect, and perhaps some of the discrete moments of theatre within an overall arc that could be critiqued using chaos, are better understood with the consciousness applied from and to quantum.

A French movie was released in 2000, known by the English title *Happenstance*, but by the French title more directly translated as *The Beat of the Wings of a Butterfly*. The narrative follows an intricate series of unrelated events that lead to a young man and a young woman finally meeting. To them it is happenstance, but the viewers (through the eye of the director and camera) are privy to all the odd circumstances with no direct conscious relationship that light the path to the moment where the two turn and see each other. These random circumstances, complete vignettes in themselves, are similar to quantum fields as they interact with other fields/circumstances causing the creation of new elements that then interact with.... etc. etc. These "butterfly wings" seem to be an indeterminate system when viewed through chaos but waves or particles when seen through quantum lenses.

Dean Wilcox, in writing an article about the connection of chaos theory to art for Modern Drama, comments that chaos theorists have devised a methodology to approach systems "that *appear* to move in completely random directions" (699). He phrases his summary definition differently than Demastes but closer to Lam:

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. (701)

When a person exclaims he doesn't know what will happen next, he is presupposing some sort of unknown causality – "next" implies chronology and cause/effect, even though unknown. The qualitatively variant emphasis is that using chaos as analogy focuses on dynamism rather than product. In this sense "it does not reveal hidden causal processes [...] that yield law-like necessity [...] but *reveals patterns*" (700). This makes chaos more a science of process than state, and of "becoming rather than being". We are reminded of Cara Gargano's rendering of the myth of Orpheus in light of Prigogine's statements that chaos melds together metaphysical reality and physics.

There does seem to be some confusion in sorting out what is most useful to theatre discussions: application of quantum theory or chaos theory. Michael Vanden Heuvel explores the connections between theatre and science for New Theatre Quarterly, and writes about quantum physics with a sarcastic enough attitude to cause his statements to be borderline incorrect. "In quantum dynamics, reality itself is perceived as hovering between random fluctuations of matter or energy and the sudden appearance of order [...]" (255). Yes, and no. His words are imaging pictures that belong in Newtonian existence (remember, the quantum theories are mathematical equations, not mental images), and identifying the quantum leap of possibility to actuality as a "sudden appearance of order" doesn't seem to do

justice to the beauty of the electron maneuver. Vanden Heuvel is more obvious with his motivation when he writes that "chaos is once again conceived of as a powerful creative force in its own right, a prologue to meaning" (256). The point he wants to enforce is not really a performance theory, but a moral obligation. He confronts artists like Richard Foreman and Robert Wilson and other theatre experimentalists with the question, "how (or if) such artists intend to confront the contemporary world and use the theatre as one vehicle for helping spectators to draw productive experience from it" (257). His Aristotelian goals are peeking out.

Writing in 1993, Vanden Heuvel comments that although applications of chaos have been analyzed in various forms of literature, "little has been written regarding chaos theory and its connections to theatre, a significant oversight which needs to be addressed" (257). This is strangely reminiscent of the end of Natalie Crohn Schmitt's article from 1990, "There are, then, important relationships between some of the interests manifest in current critical theory [referring to all she has written regarding consideration of quantum] and in the interest in performance as a form. This relationship deserves more attention elsewhere" ("Theorizing about Performance: Why Now?" 234). Do these two recommendations – one for chaos theory application and one for quantum theory - need be reconciled dialectically into one view, or resolved so that one has hegemonic precedence, or is the viability of both explorations allowable within discussions so that they can exist in a parallelism?

In his approach to chaos and theatre, Dean Wilcox clarifies a methodology that is in line with what this research is trying to accomplish if one reads "quantum" instead of "chaos" in the following statement.

[I am interested] in employing the philosophical ramifications of the systematic study of chaos [*quantum*] to allow a unique perspective on the modern theatre. [...] This essay will endeavor to move beyond a metaphoric application of chaos [*quantum*] theory to utilize the ideas generated by this new science as an analytical tool on par with semiotics and deconstruction. (698)

[...] Conceivably the most important comparison between chaos [*quantum*] theory and imagistic theatre is a shift in focus. [...] as [Thomas] 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.' (708)

Alongside this developing conversation between quantum and chaos in finding new workable language for theatre theory, a language that encourages energetic discussion about contemporary theatre, is an impetus for theory to act as protectorate of current dramatic explorations in response to some highly vocal negative viewpoints. Philip Auslander (*Liveness*) would convince us that television is more "live" than theatre because it is close up and is made up of the technical energy waves, and that audiences now expect live performances to resemble mediatized ones (25). He argues his points using the weight of the legal system, copyright laws, and subsequent suits from "illegal" reproductions citing that even memory is subject to regulation. His last chapter defines the legal system and courtroom as "one of the few sites left where liveness continues to be valued," and summarizes:

I have argued here that the qualities performance theorists frequently site to demonstrate that live performance forms are ontologically different from mediatized forms turn out, upon close examination, to provide little basis for convincing distinctions. Mediatized forms like film and video can be shown to have the same ontological characteristics as live performance, and live performance can be used in ways indistinguishable from the uses generally associated with mediatized forms. Therefore, ontological analysis does not provide a basis for privileging live performance as an oppositional discourse. (159)

Theatre artists and theorists cannot let such arguments sit undisputed.

Robert Brustein, founder of Yale Repertory Theatre and renowned theatre critic, takes a hegemonic stand on the type of theatre that he considers good theatre, and it seems to be a fairly narrow type, at least as acknowledged in his article published in 1992, "The theatre of guilt." Much theatre seems to fit into his "bad" category of victim-filled "theatre of guilt": including some of Shakespeare, Tennessee Williams, August Wilson, David Henry Hwang, and the many plays dealing with sickness, disability, and the AIDS epidemic. Natalie Crohn Schmitt noted that Brustein's opinions don't always move the art forward consciously, that while saying he champions new theater, he also "assumes that whereas the 'cherished dramas of the past' present reality, the avant-garde imagination presents merely 'fantasies and magical transformations'" (Actors and Onlookers 2), effectively removing contemporary theatre from something that has significant implications. Yet in his own article, Brustein claims for the theatre artist his obligation to "penetrate the puzzles of the human heart: to honor complexity, expose secrets, invade dreams, seek out the unknown" (6). It seems that such a



worthy goal should not be limited in expression, and the unique/eccentric theatre that becomes more accessible because of quantum language *is* part of the puzzles and dreams.

Brustein is confusing and self-contradictory in his myriad of published writings and speeches. His collected writings from 1994-2001, The Siege of the Arts, includes a speech to the American Theatre Critics Association in which he questions the weighty amount of judgment in theatre criticism in relation to "the elucidation of works of art" that T.S. Eliot suggests as an important function of criticism. He bemoans the fact that critics are often those who are just fast writers with strong opinions often de-structive rather than con-structive, but disclaims his own destructive, judgmental writing as being privileged because he was "writing for a periodical - *The New Republic* - most of whose readership, so far as I can tell, haven't been to a play in twenty years. I [can] say what I think without killing the hopes of the playwright, without affecting the employment of actors, without reducing the royalties of directors" (61). Most of the critical essays of individual productions included in this volume are negative, destructive, and discouraging of innovative risk. Such writings, because of their negativity from such a highly visible dramatic figure, are argument for a shift in the style and language used to discuss contemporary drama in order to encourage the playwright's (and therefore the audience's) exploration of the heart and imaginings of humanity.

In a manner similar to Auslander, Baz Kershaw, professor of drama in England, expresses vehement angst with current performance. "The problems of performance, in any of its many aspects, are now so pervasive that it is difficult to know how best to approach them" (204). He becomes overwhelmed by all the problems as he sees performance in the same broad sense as Erving Goffman, that performance is "the *sine qua non* of human endeavour."

[...] The distinctions between image and belief, illusion and reality, stage and society begin to collapse. The traditional drama – play-scripts staged in a theatre – hangs on by the skin of its cobbled-together illusion [...]. There is more than enough drama on radio, video, and television, in the computer games, at the multiplex cinemas, in the shopping malls, heritage centres, and theme parks, and on the streets – so that drama as the staging of a play-script in a theatre may now be coming to seem, despite its sometimes still evident power, hopelessly quaint and inadequate. (208)

He proposes that the paradigm shift is in the exchange between technology and performance implanting a theatrical paradigm in everyday culture. I cannot say that helping to clarify a shifting theatre/performance theory will answer the questions he raises in regards to culture - although it was out of disgruntledness with Goffman's theatricality of everyday life that David E.R. George began to articulate his journey towards "quantum theatre" – but Kershaw's comments certainly add weight to the importance that our artistic, theatre culture's protectorate needs clarity about what is happening on the stage so that other "theatricalities" within the culture cannot absorb focused stage-work and possibly nullify it.

Professor of Theatre Studies Arnold Aronson, takes the historical premise that "the development of the theater building always follows the development of dramatic literature" ("Technology and Dramaturgical Development" 188), and turns it upside down while also applying it towards technological advances. He posits that the ruling class/state has used theatre edifices as a source of exhibiting and sustaining their power including over the artistic choices that are dynamically displayed therein. The producing powers exploit new technology and garner more popularity for the theatre houses as buildings with wonderful technological toys, an exciting place to be seen in; but overall these architectural and technological advances have little influence on the pace of change within the depth of the dramaturgy of a given cultural timeframe (190). Evolution in theatre on its multi-levels of artistic endeavors, is more a "factor of the prevailing societal norms and world-view than any specific technical or stylistic development in the art" (191). Moving into familiar territory, he suggests that shifts in understanding of time and space caused much more change, and allow for the serendipitous developments in stage architecture, dramatic aesthetics, and dramaturgy. "Today we exist in a singular world in which all things may exist simultaneously. [...] Contemporary audiences are comfortable with rapidly shifting barrages of images and sounds presented in overlapping, incongruent, dissociated juxtaposition" (192).

There is much quantum-type language in Aronson's analysis, even as his point focuses on the incorporation of the dynamics of the computer age

and cyberculture into drama thereby making theatre acceptable and interesting to the current culture. "Proximity and coincidence have replaced cause and effect (narrative) as a structural principle in postmodern theatre" (195). Notably he refers to Suzan-Lori Parks, Paula Vogel, Robert Wilson, Mac Wellman, Richard Foreman, the Wooster Group - some in regard to their work with nonlinearity and seemingly irrelevant relationships among the objects and actors on stage, and some in regard to their incorporation of technology in their work. But he mixes the idea of this age's technology with an overall applicable theory.

He comments about Kushner's Angels in America as being a play that reflects the prevailing nonlinear, juxtapositional, hypertextual world of cyberculture", not because it has anything directly to do with cyberspace but because the "flow of images and ideas replicates the perceptual processes of contemporary audiences who are shaped by the hyper-textual world of electronic media" (196-7). Direct application of quantum language and theories thereby approaching Angels in America from a quantum theatre perspective would rather be much more suitable, since one could work directly with the event/*mise en scene* and its relationship to the spectator rather than the entire vague techno-cultural cloak surrounding the audience. For example, Kushner includes split scenes in different locations where the characters cross over and interact with each other in each other's spaces - an interpenetration of quantum fields that produce a new understanding of the relationships involved. If cyberculture aids the assimilation of quantum

language, then so be it, but mixing theatre theory with all the other performance aspects of cyberspace is too confusing. Theatre is not a downloaded video game.

Aronson closes his article with reference to Anne Bogart's performance work; that her creative process of collaboration and collage lead to performances understood because of the current technological sensibility (even though her pieces use simple stage technology). He seems to be making concessions to the pop-electronic, non-scientific mindset, searching for another way to attract an audience to productions on the basis of their comfort with MTV culture. He uses a quote from Bogart: "Physicists now say that nothing touches, nothing in the universe has contact; there is only movement and change" (quoting Viewpoints 11), but he is bypassing her point that is particularly speaking about the rehearsal/creative process: "in the best theatre, moments are highly differentiated. An actor's craft lies in the differentiation of one moment to the next. A great actor seems dangerous, unpredictable, full of life and differentiation" (Viewpoints 11). Aronson's article becomes a case in point that there is a shift going on in theatre theory and understanding, and the various authors cited above illustrate that the discussion is fresh and dynamic and at this point inconclusive – a time for close observation as the energies interact to possibly produce something that could be recognizable as renewed theatre theory.

### CHAPTER THREE: ANNE BOGART IN A QUANTUM WORLD

Anne Bogart is a chameleon-like creature in her position as director/producer in the art world of the theatre. Influenced by eclectic theatrical exposure in travels to Europe and Asia, she realized that discovering the essence of "American" theatre most attracted her. Eelke Lampe, who thoroughly researched Bogart's personal history, directing techniques, and production history, claims that her "insistence on non-realistic dissociative acting styles supports her placement in the arena of postmodern directors" ("Disruptions" 105). Although out of the same time frame and experimental theatre venues as Richard Foreman, Robert Wilson, and Peter Sellars, however, she seems to have experienced more cross-over than the others into the mainstream theatre venues from the avant-garde.

I could speculate some reasons for this acceptance using feminist theory: that critics just don't expect (or perhaps don't allow) women to be as "far out" as their male counterparts, but that would indeed be pure speculation. I do think that her one-year stint as artistic director for Trinity Repertory Theatre in Providence, RI (1989 season, directly after Trinity's much beloved Adrian Hall retired), probably allowed her name to be associated with more mainstream circles than it might otherwise have been. I can project there would have been a psychological connection for the established theatre watchers of that region even though the subscribers in general did not like her work and the board was unwilling to rethink their

goals (plus panicking over what had been a growing financial possibility of needing to close doors entirely), or that it was unable to imagine a future different from their past. Curiously, Hall himself was known for edgy theatre and also struggled with the Trinity board during his lengthy tenure. Bogart did speculate that if she were a man she would have been allowed a second season to use what she had learned in that first rocky year (Gussow, "Iconoclastic and Busy Director" 11). So, released/fired after one season (the various reports are oblique about the details), she nevertheless remained convinced of her desire and need to have a theatre company as a home providing freedom and support to develop a style and depth of work not possible when moving from venue to venue as a contracted director.

In 1992, the collaboration she developed with Tadashi Suzuki after attending a workshop at his training center in Japan, birthed the Saratoga International Theatre Institute (SITI), a summer program housed in Saratoga Springs, NY, with a charter determining the institute to be a world-influenced cultural center for "continuous active dialogue about the role and function of theater" and whose worldwide network exchanges would be "artistic, economic, and spiritual" (Lampe quoting the SITI program, "Collaboration and Culture Clashing" 148). In the fury of administrating the initiation of this center and concept, Bogart and Suzuki decided to each direct a play for the joint first-year summer session allowing their individual strengths to flex artistic muscle. The language of quantum theatre becomes helpful in interpreting the outcome.

Bogart picked Mee's *Orestes*, an adaptation of Euripides' *Orestes* collaged with contemporary references including the Persian Gulf war, the Robert Chambers murder trial, the Anita Hill-Clarence Thomas hearings, the William Kennedy-Smith trial; Suzuki reworked his production of *Dionysus*, a personal adaptation of Euripides' *The Bacchae*, sprinkled with *Macbeth* and a radio play by Beckett. (149)

The discontinuity among the conjunctions of the different origins for the plays is able to be discussed and found to be meaningful when viewed as energy fields intersecting and reacting to one another. Each segment can be talked about without needing it to be part of a flow within a chronological narrative, and yet related to the other parts. Lampe comments that Bogart's production "demonstrated how [her] aesthetic of disruption intelligently serves Mee's images of a disjointed reality" (149), language reminiscent of the discontinuity issues of the Copenhagen Interpretation. Interesting is that this inaugural program for SITI included a symposium called "A Theatre for the 21<sup>st</sup> Century" with an emerging theme of celebrating theatre as a specific live medium separate from the growing electronic media (151), a protectorate stance supporting that a millennium shift is necessary in theatre theory along with my addendum that quantum language can be vitally dynamic for such a shift.

How is it that such seemingly disparate story pieces such as those within Bogart's *Orestes* actually come to be in conjunction? Anne Bogart is truly a collaborative script developer and director; indeed, this could be the clearest signature and strongest aspect of her work. Joan Herrington has written at length about SITI's play *Cabin Pressure* (a play about



actor/audience interaction and audience response, specifically to SITI's rehearsal process and production of Noel Coward's Private Lives), as it developed for performance at The Humana Festival in Louisville, KY (1999). Through interviews and the company's notes and videos, Herrington puts together a collage of images revealing the collaboration process unique to this group.

What is, perhaps, most remarkable about the Company's process is the unique way in which the entire company creates the staging, [...] While audiences tend to think that the SITI Company's shows are Bogart's conceptions, in point of fact the productions are group products. Bogart's idea is the birthing place. But she presents this starting point to the Company with the expectation that they will open it up, restructure it and reform it. [...] Members of the SITI Company consistently remark on the power not only of Bogart's vision but of her ability to change as she gets input from her creative partners. As [Ellen] Lauren says, "She has incredible instinct for the truth and when people are on it. She has the generosity of intelligence and spirit to allow the act of creation to be about that and not about her." (123; 139)

Such restructuring and reforming are like individual quantum fields interacting with each other's energy causing new particles to appear, disappear, and reappear. The hegemony of one person gives way to the potentiality (power and possibility) in a web of relationships. And the interaction of several creative brains allows initially unconnected sources and images to find relationships within the web, to actually create the web and the relationships.

Author Nick Herbert, in Quantum Reality, gives us a verbal picture of Richard Feynman's diagrams (the ones that influenced awarding Feynman a

Nobel prize) that seems to relate. He quotes Feynman who named his approach to quantum mechanics, the *sum-over-histories*: "The electron does anything it likes. It just goes in any direction, at any speed, forward or backward in time, however it likes, and then you add up the amplitudes and it gives you the wave function" (53). Herbert further explains the image of an unmeasured electron having no choice but to take all available paths at once. A path's *phase*, any particular location based on the history that brought it there, interferes with other paths' phases canceling them out so the observer is left with a classical wave pattern (115-116). This is like the sum of negative and positive numbers in more simple arithmetic. If we replace the electrons and paths with Anne Bogart and SITI Company members plus the questions that Bogart uses to fuel the creative process, we begin to see a similar picture of movement on all possible trajectories with some eventually canceling out others, but leaving an interesting measurable wave function or performance piece in the end.

Another fascinating observation in discussing Bogart's work with quantum physics language is in focusing on the physical practice she uses with her actors: "Viewpoint Theory", of which the director became aware while a teacher at NYU. Originally conceived by Mary Overlie, a dancer/choreographer, Viewpoints in the actor setting is not exactly postmodern dance but "a blending of widely divergent techniques, in its refusal to privilege one aspect of its system over another, in its respect for the contingencies of various performance spaces and context and in its 'use

what you will, discard the rest' spirit" (Drukman 33). There is a non-hegemonic attitude with allowance for multiple possibilities. Wendell Beavers, one of the earliest teachers of Viewpoints in actor training, says that "sense-memory" motivation (a reference to the Stanislavsky acting method) is replaced by a "perceptual landscape [...] divided and labeled as Space, Time, Shape, Movement, Story and Emotion" (33). Bogart divides the practice into four Viewpoints of Time: Tempo, Duration, Kinesthetic Response, Repetition; and five of Space: Shape, Gesture, Architecture, Relationship and Topography. This "perceptual landscape" echoes both Foreman/Stein's play landscape and quantum field theory, inviting perception to be the most dynamic and influential operative. The practice encourages non-hegemonic, intuitive reactions bypassing any particular ego's reasoning. The space-time of the practice becomes a unified moment for the actors – all is a oneness for the duration of the stated Viewpoint practice, an alternative consciousness.<sup>5</sup>

Like a good physicist, "a director asks simple and meaningful questions propelled by curiosity. [...] In the exquisite moments of curiosity and interest,

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<sup>5</sup> "The Viewpoints allows a group of actors to function together spontaneously and intuitively and to generate bold theatrical work quickly. It develops flexibility, articulation, and strength in movement and speaking, and makes ensemble playing really possible" (Herrington, "Breathing Common Air" 129). A SITI Co. member, Tina Landau, describes an example exercise in which the nine Viewpoints would be used. Each group of five actors will create a 6-minute piece as an expression of a "Chekhovian" world, and must include: a setting in the actual rehearsal building, revelation of space (as a door opens and we see inside a room), revelation of object (as lifting a lid to discover...), a surprise entrance, music from an unexpected source, 15 seconds of simultaneous unison action, a staged accident, two uses of extreme contrast - possible objects, sounds, actions are listed as well as the only possible text allowed. And "you have 20 minutes to make your piece. Go" (Viewpoints 28-30). This allows no time for idea planning, but only for action and intuitive response/reaction to the group's dynamics.

we live in-between, we travel outward with inquiry. [...] It is not the director's responsibility to produce results but, rather to create the circumstances in which something might happen" (Bogart, A Director Prepares 131; 124). The Viewpoints practice becomes the set-up of an experiment for subsequent observation of whether a particle or wave is being measured, whether we can identify the location or the velocity, or even of how all the paths are being traveled at once. The idea begins to become clearer when one begins to view the results, the actualized event, in SITI's productions themselves. Without negating all the dynamics of the process, this paper is most interested in what the audience finally observes, experiences, and thinks about.

Analysis of Bogart's productions is limited because the texts generally are not published, SITI's office commenting that the collaborative efforts of play development preclude publication. I assume that the copyright laws and royalty issues become difficult to maneuver when the author is not one or two but a group of twelve to fifteen individuals. However, there are segments of script in the Humana Festival compendiums, a published reader's version of Small Lives/Big Dreams in Anne Bogart, Viewpoints, as well as published texts of War of the Worlds written by Naomi Iizuka and bobrauschenbergamerica by Charles Mee, which were directed by Bogart and acted by SITI. Other comments and thoughts are gleaned from my own viewing of a few productions and reviews from newspaper and magazine sources.

An initial problem in approaching a Bogart text is that it doesn't always tell the reader very much about the actual production because for this company, setting the movement precedes setting the text. "One of the most intriguing qualities of creating a physical score and then adding text is that it negates the assumption that the onstage movement is merely an illustration of the dialogue" (Herrington, "Breathing Common Air" 134). Herrington ruminates on this fascinating concept in another article more directly focused on Viewpoints practice, stressing that the text is layered over the choreography with often an apparent incongruity between the physical movement and the spoken word. She quotes Bogart:

I think that's what people do in life, I think what's strange is when people onstage illustrate what they're saying with what they do because people don't do that in life. I mean, rarely do we actually do what we're saying, we're usually doing one thing and saying another. ("Directing with the Viewpoints" 162)

[I think I hear a Mother saying, "do as I say and not as I do."] Whether one agrees with this assessment about life or not, Bogart's modus operandi begins to become more clear in looking at "Movement Two" of Small

Lives/Big Dreams:

In an attempt to reconstruct their lives, they hold a tea party and put on a play. [...]

I: It's hot!

CO: My father punched me in the face with his fist. I remember it as if it were today.

TS: It was raining.

CO: A bull in a china shop.

TS: I don't want to think about it.

UV: From morning until night I am always-

UV: Not a moment's ... Music!... I lie in continual. Life itself-dirty. Life swallows – I might play! Drags

you – like this.  
Little – you become strange – never notice –  
(Viewpoints 171-172)

The sense of this being a tea party and a group of woe-be-gones dysfunctionally passing the time by attempting to entertain each other is merely a glimmer of what might be observable on stage. As this play pieces together bits of Chekhov, I can imagine an essence of the collaborative understanding shimmering as a shadow might. In one moment, complete in itself, something emerges from the shadow. The character CO monologues what is historically understood to be Chekhov's criticism of the state of his contemporary Russian theatre as from the mouth of the character Treplev in

The Sea Gull:

She knows I don't respect contemporary theater. She imagines she's serving humanity, the cause of sacred art. But as I see it, our theater is in a rut – it's so damn conventional. The modern stage is nothing but an old prejudice, nothing but a sad and dreary routine. [...] We must have a new formula. That's what we want. And if there are none, then it's better to have nothing at all. (Viewpoints 179)

And the closing monologue clearly echoes Olga's lines closing Three Sisters:  
"We must go on living. We shall live through a long chain of days and weary evenings. We shall patiently bear the trials that fate sends us. We shall say that we have suffered [...]" (199).

One critic quotes Bogart acknowledging the inspiration for this play being a television news report about Rwanda that included an image of refugees staggering down a road. "The play is about five people after some catastrophe, trying to recreate their civilization from bits of language, like the

shards of a Greek vase" (Hulbert 19S). In this sentence is the coalescing of several ideologies garnered from readings about and by Bogart. As in her direction for South Pacific, A Streetcar Named Desire, and On the Town, the play asks the question, "who needs to do this play today?" which immediately removes it from the pure entertainment environment that is a piece of the audience world's sequence of "first we go to dinner, then we go to a show". Survivors need to do this play, and survivors need to see it; so the script includes survivors performing for one another.

Her reference to the shards of a Greek vase points towards theatre-making as modern myth-making, an idea she speaks of in the introduction to A Director Prepares.

National and international cultures as well as artistic communities are currently undergoing gigantic shifts in mythology. [...] We are living in the space between mythologies. It is a very creative moment, brimming with possibilities of new social structures, alternate paradigms and for the inclusion of disparate cultural influences. (3-4)

"Recreate ... the shards" also reflects a re-emergence, re-focusing of memories performing an important function within the mythos that will propel one into the future. "The act of expressing what is remembered is actually [...] an act of *re-description*. [...] Our task, and the task of every artist and scientist, is to re-describe our inherited assumptions and invented fictions in order to create new paradigms for the future" (28). Certainly this is further encouragement towards pursuit of connections, applications, and relationships between theatre and quantum.

Not everyone is as interested in the myth-making aspect of theatre as Bogart is (or as Naomi Iizuka whose work is addressed in the next chapter). Ben Brantley of The New York Times, while not disparaging the play completely, is clear that Small Lives/Big Dreams is not *his* kind of theatre.

The world, as Ms. Bogart appears to see it, is a bleak musical farce in which the score can change, or be brought to a halt, at any given moment. [...] The actors deliver [the selections] in a variety of voices that precludes identifying them as single characters, against the sounds of piano sonatas, electronic thunderstorms, music hall songs, a stuck record needle and howling wind. [...] But the approach is finally reductionist, turning all dialogue into a homogenized series of epitaphs for an age. And though the sequence of music suggests some sort of cultural chronology, Ms. Bogart, working as usual in a nonlinear manner, gives equal weight to all sequences. Which by the way, nearly all seem to make the same points. (14.5)

Although difficult to accurately judge without having seen what Brantley saw, I would suggest that rather than observing with curiosity and celebrating each moment, each measurement, as a quantum physicist might, he has attempted to mush all aspects together wishing them to fit into some sort of more traditional chronological narrative system... at which the play fails miserably. He does at least allow for those of a "very particular taste" to find it appealing. However noncommittal the emotion and reaction expressed, this review does raise a noteworthy aspect about music in Bogart's work.

The soundscape for her productions is treated as another performer, a character on stage with the actors. The vibrations coming through the speakers of the theatre house are as practiced and accomplished as the rehearsed acting, and in their own way even participate in the rehearsal



Viewpoints practice and play development. Joan Herrington includes substantial analysis of this aspect through her observations and her interviews with Darren West, SITI's resident sound designer, who seems to be as often a dramaturg and sometimes co-director as he is a key collaborator in the creative process.

During the working process West will frequently stop and start the rehearsals, both responding to the actors' physical work and shaping it with his own sound selections. There is always discussion of the music by the full Company. Once the music has been chosen, it is carefully coordinated with the physical score, often with significant input from West as he places the text and movement at specific moments within the music. "I think the impetus of all the choices, for me, is making the scene clear and understandable, especially in light of the nature of the deconstruction that we do. So it's all about providing the right amount of hints to the audience as to how to watch the piece and how to participate in the play. ("Breathing Common Air" 135)

I find this fascinating as I contemplate my own experiences designing sound. Most directors I have worked for regard the text spoken by their actors to be the first and continually highest priority of importance in connecting the audience to the performance. Given the traditional narratives of those plays I would often agree, but not always, or at least not at every juncture. Hegemonic use of a play's elements can be turned on its side as in the addition of text *after* setting physical movement – action doesn't necessarily need to illustrate text; in the same way, sound does not necessarily need to illustrate or merely support text. Sound/music becomes equal to another actor in the performance space, whose field must relate and

interact with the other fields to create the wholeness of a quantum event.

Herrington relates this story from Company member Ellen Lauren:

We started to work on the audience ballet and Darren went 'Stop. Oh, my God, for five weeks I have been playing the wrong piece of music. You've been choreographing this to the wrong music.' He just got it. It was the day before we opened. He put on a completely new piece of music. We scrapped everything and we Viewpointed to this music and built the audience ballet in 20 minutes. Bang. (143)

This is a theatrical image of a quantum leap from potentialities to actuality.

To juxtapose SITI Company's own creation with their performance of another's playscript, I look briefly at bobrauschenbergamerica by Charles Mee. One reviewer of the premier at the Humana Festival 2001 gives much credit to the staging and talent of Bogart and SITI for its success. He describes the play as "no traditional narrative, but the nostalgic piece is awash with warmth and has a vibrant emotional and intellectual center" (Jones 43). Mee calls the work a collage of America based on the collage art of Rauschenberg. He uses pieces of text from the eclectic members of a writers' workshop, as well as from Rauschenberg, Walt Whitman, John Cage, Merce Cunningham, and Allen Ginsberg. "Then I thought: How do I keep the audience from feeling hopelessly lost in all the scenes and images? Well, the one story we all know is the love story [...] so there's forward progress without violating the collage aesthetic" (Mee 58).

Bobrauschenbergamerica reads as a bridge piece between traditional stage narrative and Bogart's way with story. The segments, although disjointed, are longer and have more internal narrative structure to them.

Characters come and go and return. There is not a singular beginning/middle/end, yet the vignettes are familiar and filled with Americana. The lack of teleological purpose caused reviewer Markland Taylor to become wearied by the play – “One’s final reaction to the surreal mayhem is essentially, ‘So what?’” (44) – but the scene of the bad chicken jokes immediately following the assassination of the character Carl who then resurrects himself to open an art show, is best viewed with a healthy dose of quantum allowance, an acceptance of the nonlinearity on stage as an observation of the discontinuity that can be perceived in American cultural phenomena and reaction – non-sequential events that realize an observable energy in their relationship. Reading between the lines of different reviews indicates a pervasive sense of play, of good ol’ American fun.

After reading much about the weave of quantum physics theory with Eastern thought and mysticism, I was not surprised to have my attention piqued by the personal involvement of Anne Bogart in Tai Chi practice as well as other references in her work to Asian based concepts (which I surmise would also have enhanced her initial interest in and subsequent collaboration with Tadashi Suzuki). Eelka Lampe considers the impact of Bogart’s studying the philosophy and practice of Chinese and Japanese martial arts on her directing to be “subtle but all-pervasive” (“Disruptions in Representation” 105). Lampe expounds on how she sees Asian thought invading Bogart’s works; that Tai Chi Chuan being based on Taoism, is inspiration for the non-autocratic way of directing.

Principles like non-interference, being open to what the other has to offer, and letting go of the restrictive investments of the self, have allowed her to develop [the] collaborative, non-hierarchical, kinesthetic composition technique [Viewpoints]. [...] Permitting the force and influence of others to determine the aesthetics of a piece partakes in Taoist ideas: to be grounded in a stillness which allows for a deep responsiveness to the world around oneself.[...] The notion of freedom inside the form is a fundamental principle of East Asian aesthetics which martial arts share with performance traditions, such as Beijing opera or Japanese Noh. (105, 106, 107)

This reflects, too, the ability of Suzuki and Bogart to have such disparate demands on their actors (whom they often share between their individual productions) yet with no judgment of the other, and obvious respect for the actors' work in either setting.

Ellen Lauren trained first with Suzuki before she met and studied with Bogart. She comments that working with Suzuki requires the conscious dealing of only time and space; he teaches that there is calm on the other side of concentration and courage for the asking. Bogart's work refuses to find one image more significant or beautiful than another. "If Suzuki reveals your depth of personal character, Anne reveals your ability to live the life of the imagination" (Viewpoints 64-66). Actor Tom Hewitt uses this description: "Suzuki creates a dangerous space where the actor has to give up his ego and Bogart creates a safe space where the actor can try out dangerous things" ("Collaboration and Culture Clashing" 153). And Tom Nelis says the same with different words: "I'm always testing my own limits inside of [Suzuki training], trying to refine my concentration, my center, myself. And then when I go to Anne's training, it's something quite different

- it's about everybody else. It's about listening with your body to everybody else and responding to everything that's going on" (Coen 3). Lampe sums up the two approaches by referencing a lecture by Bogart: "the Suzuki Method is about facing and checking oneself every day, and the Viewpoints are about facing one another" (Lampe 109). Bogart herself has encapsulated, "One is vertical; the other is horizontal. One is you and God; the other is you and the people around you" ("Balancing Acts" 33).

The connection to the quantum world is through David Bohm, a physicist who studied the relation between consciousness and matter in a scientific context. In the early 1950s, Bohm proposed a way to understand an electron's behavior by suggesting that the distinct wave/particle aspects are not aspects of one electron, but two entities (different than two electrons); that the wave acts as an antenna rendering the attributes of the particle sensitive and responsive to its environment (Herbert 49). Capra points out that Bohm used the hologram to help illustrate the concept; that as one image is illuminated, the other is *enfolded*. The unbroken wholeness is enfolded in the dynamic nature (Capra 319-320). (An important side note is that Bell's theorem requires the model proposed by Bohm to be correct.)<sup>6</sup>

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<sup>6</sup> "Bell's Theorem" states (through mathematical formulas) that there is no hidden variable understructure to quantum mechanics that would presuppose some sort of communication between independent particles. For example, the spin of two electrons must equal zero. Therefore as soon as one of a pair is observed to spin in one direction, the other spins in the opposite direction... even if an arbitrarily large distance separates them. The quantum world is a complete universe. Nothing else influences the outcome. (The Tao of Physics, 311-313 and Taking the Quantum Leap, 193)

Reviewing the above illustrations of Bogart's style of creativity with this quantum vocabulary allows one to parallel her work with the Eastern mysticism that considers all basic phenomena as being parts of a unified, non-hegemonic whole, which parallels quantum interconnectedness and enfolding of the various aspects of its wholeness, which parallels Jungian ideas of consciousness and collective unconsciousness – an individual's connection to the broader consciousness of all peoples (Capra 309). She and Suzuki are sensitive to each other's emphases without judgment, and they each work within their own fields to create interrelated wholeness in their actors and their performances, although it is not necessarily a wholeness that the Western cultural mind is used to or very familiar with. The word that comes to mind from Jungian study is *integrity*, which at its root is about being whole, integral, being one in itself, of entirely itself.

SITI Company's productions, Room and Bob, are examples of such work of interconnectedness and integrity since each is a "bio-drama" of an individual presupposing the necessity of the oneness of a singular person. The task is to reflect and project something of the essence of each subject - author Virginia Woolf in Room or avant-garde theatre creator Robert Wilson in Bob - so that something true and authentic can be perceived by the spectator. With no sense in either of these performances that truth resides in merely the facts of time and place of a person's life (few of which are given), the plays enact the mutual perceptions of Woolf/Wilson seeing the world and the world seeing Wilson/Woolf.

When Ellen Lauren's performance of Room is viewed from a traditional theatre corner, discontinuity is the most obvious notoriety. One reviewer commented, "the ritualized hand gestures and full-body movements [...] have little connection to the words." And that "the encoded color patterns [of lighting] share no obvious connection with Lauren's facial grimaces and body contortions, and provide no cues to the text" (Stasio 32). Such cues only have meaning if the text is of hegemonic importance. The power of this production is in the mutually significant (not to be understood as signifiers in semiotic notation) importance of each aspect: sound, lighting, set, costume, actor, and even the audience. The grammar becomes a hologramatic structure as a spectator chooses for a particular time to attend more to one element than another, yet each element enfolds the others.

The concentrated, intense energy on stage might lead an audience member to think the fourth wall is a one way mirror with the audience looking in, even though Lauren as Woolf begins by sitting in an auditorium seat and walking to the stage within the convention of being the speaker at some sort of group meeting. But during a talk-back after the San Francisco performance, March 7, 2002, Lauren made it very clear that she could sense how the audience was responding throughout – where they felt a little lost, where their energy boosted her own. She praised them for maintaining dense focus for a 90-minute stretch. This type of production allows for a slip of an audience member's gaze, for when the distracted spectator re-enters the immediacy, there has not been the loss of a substantial moment of plot

crucial to appreciating the entire evening; lack of hegemonics allows for the integrity of the whole to be visible within each part.

Bob requires similar audience perception to create the essence of the play. One reviewer comments,

Ms. Bogart's production attests to her aversion to the linear. The circuitous "Bob" tells the story of Mr. Wilson's relationship with and attitudes toward art through a seemingly arbitrary arrangement of images and the articulation of career-summarizing aphorisms. [...] "You can't explain theater, you have to experience it," [the character Bob] says. (Marks 16.5)

It is a clear hint to the audience as to what is expected of their participation. Especially curious regarding this production is that the portrayal of "Bob" is very close to what Robert Wilson the dramatist presents on stage himself:

The text for a Wilson scenario is not really a dramatic text at all, but an aural collage composed of sentence fragments, rhymes, word play, bits of dialogue, excerpts from letters, personal observations, bits of advertisements, radio and TV jingles and other assorted remnants. They are fragments of language which make sense in the context of some whole, but which have been dissected and intermeshed with new material to become dissociative and sometimes unintelligible. (Dietrich 60)

The shadows of the possibilities always seem to be playing around the edges encouraging perception to define the event.

The oft-performed Shakespeare play, A Midsummer Night's Dream, as directed by Anne Bogart, performed by SITI Company and produced by San Jose Repertory Theatre (SJ Rep), January/February 2004, is not an oft-viewed style of performance. The following observations were made during the rehearsal of January 15, 2004, which was open to public viewing (as were most rehearsals in San Jose), and during two public performances:



noon on January 28, 2004, and 7:00pm on February 1, 2004. The focus of the following pages is an application of quantum theatre theory to demonstrate its usefulness towards thinking about a contemporary performance that practices non-traditional *modus operandi*, as well as discussing this particular production for further illumination.

Shakespeare's narrative follows the stories of three groups of characters as they intertwine one another – an Elizabethan fiction that could be discussed as quantum fields interacting, forming and re-forming a web of relationships. The groups are distinct in their disparate characteristics: the Athenians include the upper and middle classes of power and money, but with male/female relation difficulties; the lower class mechanicals serve the Athenians through their labor and their attempts at providing entertainment, and are most concerned with getting the job done; the immortal fairies are invisible at will, not subject to the Newtonian laws of time and space, yet experience very human emotions of love, loyalty, jealousy, and anger with repercussions reaching beyond human bounds affecting even the vagaries of the weather. Our modern theatre productions more often portray the fairies as spoiled, petulant children than as demi-gods with power reaching to the heavens, but Bogart's conception searches with little pity through the mud and ether of the power struggles of both fairies and humans to find some understanding about desire, grace, and redemption.

A concession made to the budget of SJ Rep presented the play with only eight actors playing 20 roles, five of them performing in each of the

three groups. Always they were recognizable physically as their individual selves; although changes of costume marked different characters, the costumes were simple and minimalist, and there were no masks or wigs or other disguises, nor were there set changes that could help a spectator through mere visual appearance easily and clearly recognize the shift in scene and in group. The hosting theatre, SJ Rep, realizing this could become a problem for some, provided a program insert with an outline and synopsis of Acts and Scenes. However, these multiple roles by one actor carried some other subtle implications. Keeping in mind the Many Worlds Theory, one perceives an actor becoming like a human bridge between different worlds/characters, yet since always the same person, carrying shadows of the other worlds within him or her while acting a distinct role. Although the science theory asserts the various worlds as being unconscious of and to one another, here we can see the actors holding within themselves the consciousness of the others.

During the post-show talk-back on January 28<sup>th</sup>, a question asked of the actors was what this multiplicity felt like and was it difficult to perform the several roles. One reply was a reference to our night dreams, and how in a dream our teacher could instantly become our grandmother. This shapeshifting is not foreign in the dream world, and dreams are what this play is all about, so that switching characters actually made sense and was helpful to reach nearer the heart of the play. Jungian depth psychology understands that night dreams are images of the many worlds within an

individual, and within the broader collective human unconscious that developed throughout history and became illustrated consciously through myths and cultural folktales. Although an actor is performing three distinct characters, yet all three are contained within as in the sense of the enfolding of a hologram that David Bohm used as an illustration of the dual entities of wave and particle within a single electron.

Another side of this fictional dream world was also pointed out at the talk-back. Bogart spoke about the questions she asked in initially thinking about this play and as rehearsals proceeded. (Her inquiring process of discovery is reminiscent of Richard Feynman's incessant curiosity about nearly everything that crossed his path.) What is magic now, in our world? How do people live when they have nothing? – contemplating that the lovers awaken near the end realizing they own nothing, know nothing, and understand nothing. What do people dream when they have nothing? How do you *do* a fairy? What is a fairy? Where do we go when we go to sleep? (These questions are gleaned from the talk-back as well as the several articles and reviews on Midsummer listed in the bibliography.)

Some of the questions, with maybe hints of the answers, are in the set design. All is cleared away on the stage: no curtains, no wings, no representations, only a large stretched canvas upstage with a photo print of clouds and a mirror-like reflective floor with grid-like markings probably where the seams of the material are taped. For most of the play, the color pallet is muted tones as in most dreams; it is at the end, when the waves of

possibilities have finally coalesced into recognizable relationships that the striking candy colors emerge in the costumes of the court. As in Feynman's sum-over-histories, the dream has taken all available paths but as the paths interfere with one another canceling out each other, we are left with that final scene. Lest we forget this is only a moment of actualization that could randomly interact with another field and be changed in a blink, the character Puck (a fairy rather than one of the mortals) offers the epilogue speaking directly to the audience apologizing for any offense and looking for affirmation of all they just witnessed.

The magic is in the process, and the process is the energy of the collaboration that eventually materializes into the acting choices seen by an audience during performance. In the rehearsal of January 15<sup>th</sup>, one 30-second sequence was worked on for over an hour as every imagined possibility of staging was attempted. Bogart said very little but gave intense attention (described as "vigilant" in an interview with [Metro Silicon Valley](#)) to all that the actors talked about and tried out. The director's stance as observer becomes the set-up for the experiment, and then she just watches for the event to happen. It is she as observer who allows for the actuality. Interestingly enough, none of the possibilities from that particular rehearsal became the 30 seconds seen in the public performance, although bits of the different trials remained; even the music being played during rehearsal shifted in the finalized staging. Bogart's observation technique works on her

own behalf as well as that of the actors and the audience. Marianne Messina continues in her Metro article,

This vigilance ultimately brought her to understand fairykind. she [Anne] says the concept came to her while watching the actors evolve into their fairy roles. "I think what I've learned is that when we go to sleep we all become fairies. That we lose the limitations of the body. So fairy is the other side of the day. That's what I've learned in rehearsal. (47)

Similar to a physicist, her careful observation led her to the suitable answers for her original questions.

It seems that there is also a great deal of self-observation on the part of the actors in this collaborative effort. The character Puck (played by the only actor who does not double or triple roles) has a couple specific gestures that don't signify something particular as in a semiotic analysis, but do indicate some aspect of who Puck is. One of these gestures is a slow motion side bend to his left ending with both hands holding the stand of the ghostlight set-piece, and a big grin on his face. Perhaps in rehearsal at some point this seemed like the correct intuitive reaction to what else was happening, so without defining it, the actor has kept it. Another is a shorter freeze in a position like a cartoon runner captured mid-jog. This captures an essential characteristic of Puck who is always on the move, never still. In contrast there are a few moments when Puck or another character walk off stage as a person might walk out of a room in a normal setting, losing whatever movement had developed for the immediate stage role... a signal of the many worlds (including the audience's world) coinciding. Such

perceptions of individual discrete moments is a way to understand performance through a quantum perspective as the overall arc of the play fades into the background for the sake of concentrated observation and thought regarding an intimate moment.

Perhaps it was also such self-observation on the part of the actors that moved them to walk and run and stand on tiptoe when in the role of fairies. The out-of-balance of such action seems to capture an essence of the not-cute, demi-god fairies along with the screams and hisses of reaction enacted by these creatures. The actress playing the fairy queen Titania, Ellen Lauren, commented to Karen McKeivitt of Theatre Bay Area magazine that a developed character is "a composition of your energy informed by the physical and imaginative information the situation gives you" (25). Just as dreams are not always safe, neither are these beings who are able to enable love and destroy love with ease and disinterestedness. In this production, these fairies invisible to other characters remain on the stage in careful observation of the experiments they have released into action, a most quantum-worthy posture.

The use of the ghostlights as set pieces is noteworthy. At the talk-back Bogart commented that she considers the use of the ghostlight on an empty stage (which is for the safety of anyone entering in the dark) to be a beautiful representation of all that is theatre, and chose to use one because of its intimate connection to when nothing is happening on stage. To me there is a small quantum leap in her thoughts from staging this play with a

concept of poverty to the idea of a poor stage. As quantum is about a web of relationships, so the seemingly disjointed pieces in this Midsummer relate to one another through interacting energies rather than linear cause and effect. This means that an audience observer could certainly understand the seven ghostlights that end on stage as trees in the forest, or stars in the sky as the play moves deeper into the dream. Yet these stands with bare lightbulbs could also just be ghostlights dividing the space and giving points in a stage landscape to help the observer observe and the actors perform, giving a point or points of focus, and in this way moving away from the hegemonic need for a metaphoric, representational meaning.

In a similar way of not providing distinct meaning, the lighting plays among the actors enlarging and diminishing shadows cast by them or by other pieces of stage equipment often in random fashion rather than as a supportive clarification of the action or text. (I am reminded of Peter Pan's shadow refusing to be an easily understood, attached part of the boy, but becoming its own independent character for the duration of its escape.) The rapid lighting shifts move with the rapid acting shifts indicating a change in setting, but are not naturalistic or realistic in either the pre- or post-shift look. And the mirror-like, reflective floor causes the lights as well as the actors to observe themselves and each other furthering that energy-exchanging aspect through perception that is at the crux of quantum understanding.

And a final note on all the observers built into this production: Puck enters first, before the play begins, while the house lights are dim but not out, walks to the middle of the stage and for a moment observes the audience. Then Ellen Lauren, wearing a loose kimono, not as any character in the play, crosses diagonally to the downstage right corner and observes the weather and the moon with the same words Titania speaks in Act 2. She enters again but wordlessly in this dress just before intermission and again just as Part II begins. She, along with the audience, is the observer of this dream; although we may not see exactly what she sees, she has given us a point of view after Puck has acknowledged our conscious presence. In an ethereal, zen-like way, she does for us what the mechanicals want for the audience of their play at the court, to make sure everyone watching is alert but at ease. So the world of the play and the world of the audience enfold together to participate in the dream. (A parenthetical note: it would seem that not all audience members appreciate their position or this style of presentation as there have been those who have chosen not to return to their seats after intermission.)

The work of Anne Bogart and SITI Company have much that I describe as quantum theatre: an attitude of curiosity and allowance, an understanding of the energy of intense observation, a non-hegemonic collaborative effort of creation, the use of making intuitive leaps in connecting seemingly disjointed aspects into some relationship, an understanding of the dynamic nonlinearity of myth and images, the ability to



hold the shadows of many worlds within their own, and a willingness to keep watch until the “right” event actualizes. Discussing A Midsummer Night’s Dream illustrates and illuminates the usefulness of quantum language to contemporary theatre.

## CHAPTER FOUR: EXPLORING NAOMI IIZUKA'S PLAYS WITH QUANTUM

Naomi Iizuka's playwriting is a fruitful contextual field to observe and discuss the association of theatre and quantum language. She collaborated with Anne Bogart's SITI Company for the Humana Festival 2000, where her play, War of the Worlds, on the life of Orson Welles, was performed, but her works have been performed in a breadth of venues from the tiny experimental Campo Santo + Intersection for the Arts in the Mission District of San Francisco, to various theatres in New York, to the brand new 650-seat main stage of the Berkeley Repertory Theatre. In a journal article, Misha Berson comments that Iizuka's critics would place her in alternative theatre because of her "avant-grimness," but mainly she seizes opportunities wherever there are "people of like mind to work with [...] people who'll take risks with you" (57).

I like theatre that startles me, and that makes me reappraise my relationship to the real. I think that's probably more readily accessed by going towards myth, or going toward something that's not, strictly speaking, realistic. (quoting Iizuka 56)

Iizuka is comfortable in the *between* spaces both in terms of the physical venue and the created space of her play. She does not demand the realistic, the deterministic cause and effect, that makes a cohesive narrative, but presents various quantum fields that explode into energy events when they relate to each other, and can be perceived to be/mean one thing or another depending on the observer.

I have this sense that if you try to speak about your writing in the context of preexisting categories and definitions that are out there in the world, you risk misrepresenting the work, and robbing it, in different ways, of its power. Also, I'm suspicious of the tendency to pin down a writer's demographic or aesthetic identity. I dislike the way a piece of writing can get classified, the labels that are used to say this person is "this kind of writer," and they're writing "this kind of play" which will speak to "this kind of audience." (Out of the Fringe 160)

In light of this aversion to labels, placing a theoretical system like chaos theory over one of her plays would presume too much chronological human sense and detract from her intuitive use of mythology that allows potential to rise from the not-conscious/unconscious/pre-conscious side of man into an observable, but not systematic or deterministic, consciousness.

"This is about a kind of magic. If you find the right words, if you say them in just the right way, you make the air electric with ghosts. That is a powerful and worthwhile thing. The ghosts have a lot to say" (Iizuka, "What Myths May Come" 79). Perhaps it is her own culturally eclectic background that allows the playwright to consort with ghosts. Her American mother is of Spanish descent and her father Japanese; her parents' ancestral cultures are historically accepting of the ghosts that fringe life; this could partially account for Iizuka's comfort in and allowance for the potential that is caught in peripheral vision and occasionally moves into full sight, the energy waves that actualize for a moment as a wave or particle with an "ahHA! There it is!" – that can be identified and describable at least momentarily as *wave*, as *particle*. Such a nonlinear moment in any play can be thought about and discussed using the language of quantum theatre. The seeming discrepancy

in narrative can be bypassed for the sake of observing, experiencing and appreciating the moment itself. While regarding Iizuka, I will first return to the scene referenced in Chapter Two.

In the play, *Skin*, scene 11 is one half-page in length and is presentational in that the written scene is only stage directions for what is being enacted on stage; there is no dialogue. The preceding scene 10 is a discursive picture of the character Jones at his job. The Manager/Boss speaks of linear, chronological time that's necessary to do the job correctly: "one step at a time. [...] time is tight, every minute every day every cent counts, it's how we do things here. figure it out" (179). He gets angry at Jones who doesn't know how to plan for a future. Jones says he has to "take a piss," and then scene 11:

Jones goes outside and takes a giant piss. and the world turns bright yellow. the sun turns bright yellow. the sun is a yellow flower. it is the color of golden piss sprayed against the blank white sky. and it is ecstasy. whereupon Jones beholds a beautiful cholo standing on the street outside gaslamp liquor. and the cholo is naked from the waist up. and the skin on his back is brown like something you want to eat. chocolate. meat. he is a handsome young god, and the crowd moves up close to him, wet-eyed and hungry for something they do not know. they shove and push to get a better look, and see that on his beautiful brown back is the virgin mary

the virgin of guadaloupe  
the virgin of san juan de los lagos  
la milagrosa  
mother of god.

she's carved into his nut brown flesh, her face frozen in a divine smile, her eyes half closed, her mouth forever shut, her hands fused together flesh fused in a stance of eternal rapture. she stands atop a mountain of flowers. the cholo turns and shifts his weight. the muscles of his back ripple beneath the skin. and

as he does this, the flowers open up and shiver with divine  
delight. god's coming.

"oh dulce corazon de maria sed mi salvacion." (181)

Scene 12 jumps to the characters Mary and Navy Man 1 at Mary's apartment.

There is no other reference to the cholo or his amazing tattoo.

It might be possible to analyze the scene semiotically and metaphorically. What might each deconstructed segment symbolize and mean for the other characters in the play? - a longing for transcendence, for an eternal mother to take care of the lostness they feel; a hunger for mystery rather than machines, for spirit inside the flesh; a sexual union represented by the opening flowers, that would be one's salvation. The cholo could be researched and understood through the history of the Chicano Zooters and Cholo graffiti, or through studying the history of tattoos and religious symbolism and significance. None of this would be wasted for a dramaturg or director, but the language of quantum theatre will capture more of the experience of the production and even of the reading.

The energy moving through the narrative segments suddenly coalesces, actualizes into the scene above. It didn't evolve from the sequence nor fit into a chronological sequence anywhere in the play, but suddenly Jones "taking a piss" touches a world that does not exist in his quotidian universe, and for a moment an alternative universe reveals itself. A "god-ness" that shimmers as a ghost or shadow around Jones moves out of peripheral vision into full sight. Using Foreman's language, "the unseeable casting shadows" suddenly becomes actualized and clearly visible. In closing

the scene there is a single line of speech, in Spanish, with no reference to whether it is spoken aloud by one of the crowd surrounding the cholo, or is part of the tattoo itself, or is a thought belonging to Jones that the audience is not privy to. A reader or director is not necessarily led into the specific meaning intended by Iizuka, but must allow his/her own energy field to interact with the line, thereby once again actualizing a new wave or particle with the not-chosen choices hovering like shadows in their alternative worlds.

36 Views is a more recent play by Iizuka that opened at the Berkeley Repertory Theatre on September 12, 2001, without her attending due to the terrorist attack on September 11<sup>th</sup>. That fact in itself is irrelevant to the content of the playscript, yet it is not irrelevant to the consciousness of the spectator at the time of the production experience. The San Francisco Chronicle reviewer Robert Hurwitt notes that the play "spun a multitextured web that became completely engrossing – a welcome relief to minds overburdened by two days of national tragedy and worries about its aftermath" (SF Gate website). There is not a cause and effect relationship between the attack and the play, yet the fields of energy do connect; the relationship exists.

The play, 36 Views, includes a story of swindle in the art world based on what is considered authentic and/or inauthentic; much definition has to do with perception and who is doing the perceiving. Hurwitt himself seems to have experienced the play in such a quantum manner. He references moments and visuals, the kimonos, the Kabuki clappers, the punk rock

music, the complex tale offered by the art assistant as individual events and layers that he never attempts to judge according to whether all flow into and out of a cohesive narrative sequence. Mark de la Vina of the San Jose Mercury News observed and commented on an opening week performance of the play from within the questions it asked: who is honest? what are the motivations – revenge, money, prestige, the love of the game? what constitutes authenticity? He observed a production “with vitality. The result is theater that’s as real as it gets” (34).

On the other hand, Dennis Harvey reviewed the show a week later for Variety, and wrote in more negative terms. He presumes that Iizuka was imitating playwright Tom Stoppard’s wit and fell ghastly short of the latter’s expertise; that there is no “organic center” in 36 Views, that the play is about greed and fraud (as opposed to truth and authenticity), that it is “at once too complicated and too obvious,” uncovering and discounting the cathartic revelation that changes everything. He criticizes the acting, but lays the blame on the playwright for caricatured stylization, and while condescending to the “first-rate” design contributions, finds them to function poorly for the play (70).

Harvey clearly wanted to see a different play and had no consciousness at his disposal through which he could filter 36 Views. He decided the closest comparison was to Stoppard’s well-done intrigues. William Demastes spends many pages outlining Stoppard’s works according to Chaos Theory in such a way that a unified system of analysis could be laid

over the arc of those plays. (See his book, Theatre of Chaos.) Iizuka's work does not fit into that system and according to Harvey, fails when such a matrix is applied. Rather, the interested critic and reader should note the inscription preceding the text of the script: "Only a part of what is perceived comes through the senses from the object; the remainder always comes from within" (Iizuka, script of *36 Views*, American Theatre 33). Here is Iizuka's hint about understanding her play, and it is a quantum comment that could be easily attributed to the Copenhagen Interpretation, that the observer and his particular perception is crucial to the outcome.

Included in Berkeley Rep's program for 36 Views is a collage of the more pertinent facts about the buying and selling of art and a brief history of the definition of "authenticity" which has shifted through the centuries. That shift in itself reveals something of the exploration in the play as it struggles to define for these characters, in this framework, what is authentic and what is not. Also included were definitions of many Japanese terms that are referenced in the play. Similar to any research into the semiotics and history of the cholo figure and Virgin Mary tattoos, these are all helpful points of reference. The reader of the program would then observe and experience the energetic actualizations within discrete, measurable moments of the production in a unique manner from one who didn't read the references – what is perceived comes from within.

In the interview accompanying the script of 36 Views published in American Theatre, Iizuka speaks of her inspiration, the 19<sup>th</sup> century



woodblock prints of Mt. Fuji by the same title. "Each print is a representation of the mountain from a different perspective, in different seasons. [...] the question of authenticity - What is authentic? What is true or real? - became as mysterious and somehow omnipresent as the mountain in Hokusai's study" (32). It seems that the more accurate matrix for the play is to speak of 36 perspectives of the same thing with each scene/visual revealing or questioning that *thing* a little differently. Which is the *true* perception? As in the quantum theory of complementarity, all need to be considered as true properties describing the event, the Kabuki-style removing of layers of the kimono as well as the parties in the museum as well as the surprise homosexual relationship between two female characters. One reviewer commented that "In the play, nothing - and nobody - is what it seems" (Dominquez 51), but alternative phrasing might be that everything and everyone are exactly what they seem after one puts all the "seems" together.

One fascinating perception in such charting of scenes is the repetition that is utilized: the words from the supposedly ancient and newly discovered Japanese pillow book become a chorus refrain, beautiful in their lyricism so distinct from other dialogue. Yet these are truly the most false of words, for they are not from an ancient pillow book at all. On the other hand, they are the most authentic of words, a high art form carefully crafted. We meet them:

A list of beautiful things:  
The curve of a lover's neck, delicate, white.  
The touch of a lover's finger tips.  
The weight of a lover's hair, the scent: clove and sandalwood.  
The rustle of silk undone,  
Warm breath against one's skin – (American Theatre 35)

The next time we hear them, they are a bit changed:

A list of beautiful things:  
The curve of a lover's neck,  
The touch of a lover's finger tips,  
The weight of a lover's hair, the scent,  
The rustle of silk undone,  
Your tongue, your lips,  
The taste: salt and wet,  
Warm breath against one's skin. (38)

And later:

The Rustle of silk undone, Your mouth, your tongue, your fingertips. The hollow of my neck, the inside of my thigh, your tongue, your lips, the taste, salt and wet – (42)

What should be made of the differences in the quotes? Would an audience member pick up the differences? Or are they similar enough that the time lapsed would have dulled the exact memory of what was heard in a previous scene? Is the author subtly showing us a progression in the sequential changes made by the character-author of the newly penned "ancient" pillow book, or does each shift in the poetry reflect a shift in the energy of the scene from the previous one so that the object is the same but seen from a different perspective?

Quantum theatre language discusses these moments with observation and consciousness but without value judgments – without: "it should've been... it would've made more sense if... why didn't she...". The questions to

ask are about the relationship between one moment and the next, one object and the next, one observation and the next. What does the kabuki-style stripping of the kimono say about what is going on? What does the setting of a museum reception tell us that an individual meeting doesn't? The story itself pushes us away from the judgmental issues as the perpetrator of the fiction becomes the hero and writer of best selling fiction (what is his relationship to his creation?), and even though some egos are bruised and relationships ended and begun, the playwright does not turn this into a life and death or even criminal issue.<sup>7</sup>

The coda-like finale, scene 36, has two characters again interacting after an undefined time lapse, but conversing as if they are outside of themselves looking in, still not convinced whether to be waves or particles, whether to measure location or speed and direction, and re-using a conversation from scene 18 with an echo of the opening monologue from scene 1. In a copy of the rehearsal script from a week prior to the opening at Berkeley Rep, this ending scene has the characters Darius and Setsuko exiting together before the closing visual of the mosaic hanging tiles shift into a larger single picture. But in the copyrighted script in American Theatre, the woman turns down the offer to go for a drink and exits, leaving Darius alone as at the start of the play, and the tiles then shift. I saw the

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<sup>7</sup> The name of the hero (antihero?) happens to be "John Bell," the same name as the physicist who developed Bell's Theorem. See footnote 3, p. 77. This may be no more than artistic coincidence, but this character is the one who sets in motion the question of authenticity/inauthenticity. When the spin of one electron changes, the spin of the other in the pair must change also; as one notion of authenticity shifts, so do others related to it.

play twice; I cannot remember which ending was produced. Each possibility contains a different perception of these characters and what is in their future; however, I am left with the sense that both endings simultaneously exist in the alternative universes that were actualized in the writing and re-writing.

Language of Angels, another Iizuka play, was first produced in entirety in February 2000 by Campo Santo in San Francisco. Iizuka is enamored with mythology. The myths are play-grounds for her in that she grounds her plays in mythos, sometimes more substantially as in Polaroid Stories, that directly correlates stories in Ovid's *Metamorphoses* to the stories of street kids in Minneapolis through her characters' names and scene titles, and sometimes less so as in the singular scene, the myth-like moment of the cholo's appearance in Skin. She views myth as the connecting point between the old and the new because it belongs to both, and in quoting Bogart speaks of these connections in her article "What Myths May Come" in American Theatre.

'We are between myths... we need new shapes for our present ambiguities.' – Anne Bogart.

What will those shapes be? How do we recycle the pieces of our past and also our present to make something astonishing and beautiful, something necessary and new? (80)

'In redescribing our inherited assumptions, new truths are realized.' – Anne Bogart.

Or, if you don't believe in magic, look to physics for your metaphors: The universe is unstable. The truths about our universe are Rashomon-like. They change depending on the spatial and temporal angle from which we look. New solar systems appear in what we thought was a void. (19)

Language of Angels asks us to think again about the myths we know or used to know: Dante's journey's through the dark forest, the labyrinth of the minotaur, the underworld of Hades/Dionysus/Pluto, the stories of Echo, Orpheus, Persephone, Jacob's ladder, angel visitations. But in this play we look at them re-lived/recycled in the Appalachian Mountains. There is a new interaction of worlds that implodes with quantum-like energy as one's consciousness observes and connects the mythos with the logos of the dialogue and visuals of the play.

Myths can be understood theatrically as doing more than, or at least *other* than connecting the old and classical stories of mythology with current stories. In quantum theatre theory, concatenations of old/ancient and new/modern are indicative of the many-worlds interpretation of quantum mechanics that does not have to be referenced within a sequential time frame. To reiterate the science using the explanation of the physicist Bryce DeWitt:

Quantum mechanics is a theory that attempts to describe in mathematical language a world in which chance is not a measure of our ignorance but is *absolute*. [...] Our universe must be viewed as constantly splitting into a stupendous number of branches, all resulting from the measurement-like interactions between its myriads of components. Because there exists neither a mechanism within the framework of the formalism nor, by definition, an entity outside of the universe that can designate which branch of the grand superposition is the "real" world, all branches must be regarded as equally real. [...] it follows that every quantum transition taking place on every star, in every galaxy, in every remote corner of the universe is splitting our local world on earth into myriads of copies of itself. Here is schizophrenia with a vengeance! (The Many Worlds Interpretation 178-179)

He continues to explain that just as we do not feel the earth move (and in the time of Galileo, how horrifyingly unbelievable was the idea of the earth rotating), we cannot realize such a splitting with our senses; "the laws of quantum mechanics do not allow us to feel ourselves split" (179).

What if we view what might be identified as "ancient" or "classical" mythology in Iizuka's play without the chronos timeline implication. Rather than saying she is rewriting a myth for modern time, I would say she has found a door into one (or perhaps several) of the many worlds that exist for the particular story she is telling. To apply quantum reasoning (an oxymoron since quantum in itself does not follow progression and therefore is not understood through traditional deductive logic), when a certain historic myth was being developed (when the event was originally being observed), its specifics were splitting off from other specifics. The historic myth became perhaps Theseus and Ariadne (Labyrinth and the Minotaur), while the split off became the basis for Iizuka's play Language of Angels: a cave in Appalachia, the characters Seth and Celie dealing with a maze of tunnels, and an alternative ending.

Marvin Carlson, in his recently published book, The Haunted Stage, explores this phenomenon in more traditional performance language but names it "ghosting".

Within the theatre, [...] a somewhat different aspect of memory operates in a manner distinct from the other arts [...] in which audience members encounter a new but distinctly different example of a type of artistic product they have encountered before, [so that] ghosting presents the identical thing they have

encountered before, although now in a somewhat different context. (6-7)

"Ghosting" is an appropriate naming of the mystery that permeates a performance of a play as Carlson elucidates the energies that move in and about on stage. P.C.W. Davies named one of his books on quantum mechanics, The Ghost in the Atom, also in response to the mystery in the science that causes disagreement even among physicists as to what actually is going on in the microscopic realm.

Myths are also reminiscent of the Jungian identified, psychological archetypes, which fit into quantum theatre exploration in their unique recognizable form. Archetypes suppose a concept complete in itself without logical sequence to a specific linear history. For example, the *anima* is the universal feminine within each individual that manifests in specific ways according to the life and observation of said person. But the deeper understanding refers back to certain goddesses (Aphrodite and Venus are two), that pop up at historical intervals in other disguises: as the Fair Maiden in Arthurian legends, or the good witch in fairy tales, or the Virgin Mary in the Roman Catholic Church. We have fewer mythologically recognized outward cultural manifestations today (although they certainly exist in pop-culture disguises), and I would argue that theatre is a phenomenon where these archetypes still manifest in a manner that a spectator can interact with – the quantum fields of the play and of the audience member intersect each other creating a reaction that triggers the energy of an archetype.

Quantum theatre theory allows us to understand the setting of the cave in part one of Language of Angels on these various planes without forcing us to conclude that it means one thing or another, or demanding the tightness of a specific allegory or metaphor. The ghosts of other caves shimmer and cast shadows, yet the cave is complete in itself as the cave where Celie and Seth both died. The minotaur is in the deepest recesses waiting to devour the sacrifice. Orpheus is descending into Hades in hopes of convincing the gods to release Eurydice. The Cave of the Nymphs as described by Edward Edinger, is "the place where heaven and earth meet, where souls descend from heaven [...] where spirit and matter interpenetrate" (The Eternal Drama 122). As in quantum mechanics, any particular observation will cause one of these connections to actualize for the observer; the playwright becomes the experimenter who sets up the observation even while the potentiality of others still exists. The final split-off occurs when the spectator displaces the playwright and creates his/her own field of interaction.

The audience member's interaction is not necessarily an easy dynamic to understand either for oneself or in criticism and analysis. Clearly entranced by the play, Steven Winn of The San Francisco Chronicle, reviewed the opening of Language of Angels at Campo Santo, yet struggled to connect story and energy, preparing his readers for a performance that was not a linear mystery/drama.



[A] splendidly realized drama about small-town tragedies [...]The information is delivered with a tabloid, throwaway ease. [...] She's [Iizuka] not particularly concerned with handling information about Celie's death in a suspensefully controlled manner. But in penetrating its individual moments so completely, 'Language' captures the pattern of things below the surface. It finds the echoes that tap ordinary lives and even the most sordid, sorry events into a deep, reverent mystery. (C1)

The general theatre culture reflects the deeply engrained sense that the stage should show us at least a strong resemblance of realism and/or naturalism. Film and television culture have certainly added weight to the desire for a show to have at least a base in realistic life. Consider that the choices for "relaxing" entertainment are sit-coms, romantic comedy, action dramas in realistic settings, realistic narratives in other-world settings, nature shows, etc. There is little reference, explicit or implied, to the gods and god-like energies that affect our inner lives and motivations and psychological, holistic health. Iizuka's allusions to the ancient myths remind us of the myths we live out consciously, or that will live out lives within us if we remain unconscious of them. Such energies and dynamics on stage are easier to recognize when put into the context of quantum theatre – the individual moments... deep reverent mysteries.

Iizuka describes some of these mysteries only within the written text giving a director/design team a chance for their own interaction with her field to see actualized a wave or particle according to their own choosing. It is as if she consciously challenges these creative observers to experiment. The written text of 36 Views begins with a literary reference to perception and

illusion; Language of Angels begins with the ending lines of a William Blake poem:

God appears & God is Light  
To those poor Souls who dwell in Night,  
But does a human Form Display  
To those who Dwell in Realms of Day. ("Auguries of Innocence")

The opening lines of this poem are more recognizable and are implied in the ones above simply by being the bookend of a poem that is included in many poetry anthologies:

To see a World in a Grain of Sand  
And a Heaven in a Wild Flower  
Hold Infinity in the palm of your hand  
And Eternity in an hour. (Blake, The Complete Poems 506)

Perhaps the verse is only for the dramaturg to include in the research required when developing a production; perhaps the epigraph will be included in the program. (The quote for 36 Views was not.) Perhaps it will be projected on the set as a prologue to the play, or whispered through the speakers as part of the soundscape, or none of these, remaining as Richard Foreman's "unseeable casting shadows".

There are other moments in the script's stage directions that would also force choices in order to be actualized. These often read as oxymorons:

The after-image of a sound hanging in the darkness... (11)

The echo of CELIE's laughter. It hits against the walls and fractures into pieces... (12)

The sound of deep, darkest space... (12)

An ancient voice. A young girl's voice. A voice that would break your heart... (14)

ALLISON's voice is heard. It surfaces from the deepest part. Still water. A ripple in the surface gives it away. A schoolgirl's lesson, a witnessing... (18)

And the world goes back to how it was... (24)

A moment in time that came before..." (29)

These moments become the joy or the nemesis for a director. Clearly important to the sense of the play, such self-contained images are the describable properties of a nonlinear segment similar to the cholo scene in Skin.

Quantum physics is, as a science, a world adjacent to our human-sized existence; one that breathes with its own unique set of dynamic patterns. Theatre is also such a world, resembling human endeavor, yet breathing a different atmosphere, needing to be approached through a side door with a warning sign above it: "warning! all who enter through this door are subject to non-realistic connections and may have to interact with energies beyond their control." Naomi Iizuka is one of the contemporary playwrights holding the door open for those who would enter.

## CHAPTER FIVE: THE STAGE IS A WORLD

The concepts of quantum physics are significantly *other* than the laws governing Newtonian physics, yet both are dynamic in the broader universe within their own arenas of microscopic or macroscopic operation. The stage of theatrical performance can also be viewed as a world in which both sciences apply, but askew from the usual understanding within the greater human world. The laws of Newton cannot be minimized on the stage, for the physical stage itself is a three dimensional material entity with consequence if physical laws are ignored. In fact, the limitations of a performance space require that heightened, conscious, concentrated attention be paid to these laws as the set is being built, the actors movements are being blocked, the rigging system is being weighted and balanced, as all the *matter* aspects are being put into relationship. Ignorance could lead to serious mishaps, maiming and even death. Laws that we take for granted and think little about in our everyday movements must be in the forefront of thought and controlled on stage in order to create a safe environment that might look effortless to the spectator.

The sub-atomic quantum world exists contentedly in its miniscule place (at least relative to *Homo sapiens* size and stature), while we humans live unaware of its aliveness and energy even as it makes up what we understand so far to be the basic units of existence. In a performance, however, the basic energy units and fields of interaction can resemble these

quanta packets of energy, and the quantum science acting as analogy and springboard inspires the discussion of such theatre, and gifts us with its language. Performance, or moments of performance, whose interactions with the spectator cannot successfully be spoken of using systems of theory such as semiotics (where language and action and matter point to direct meaning), or systems of analysis (such as diagramming the plot structure of a story), can be explored with the consciousness of alternative understanding through quantum's discourse.

Unlike semiotics, the words of the conversation do not signify the meaning, but *are* the meaning, so to speak. The analogy to quantum allows us to consider the focus of the discussion within its own limits, without quickly forcing a meaning within a grand scheme or even within the context of a complete play. Quantum allows for discrete measurement, a singular look, a perspective that does not have to take into account all perspectives. Perhaps in this way, it is amoral in the same way that myth is amoral, a visual description of an underlying consciousness that is not meant to act as a value judgment but as a description of what is. Michal Kobialka, published theatre historian, summarizes his understanding of quantum theory in relation to his work in this way:

[...] Quantum is a strategy or a tool rather than a method, that is, a conceptual theory that predicts for any quantum entity which values of its physical attributes will be observed in a particular measurement. Quantum physics is, then, about probabilities rather than certainties, about open-ended rather than closed systems, about instabilities rather than stabilities, and about practices produced rather than facts discovered. (90)

When one chooses to attend a theatre performance, one has already chosen to enter an alternative universe. The reasons for this choice and expectations therein are individual, but the spectator walking into this set-aside space acknowledges that this event is something *other* than his conventional life; the rules are different, even from other types of "performance" entertainment. While a football game attendee can assume that the general rules of football apply to the game he is about to watch, such an expectation does not exist in the art of theatre. But the "rules" here are not that "there are no rules", but that the rules have to be rediscovered each time to a greater or lesser extent because each stage performance participates in some re-creation of the rules. Quantum language and concepts are paths to such a discovery when assumed rules don't seem to apply.

In this quantum theatre the studies and language of experience and consciousness overlap those of the physics creating a visionary vocabulary unique to the shifting genre of contemporary drama. Even when the words are the same, the meaning will be shifted by the art form. Bonnie Marranca, founding editor of Performing Arts Journal and theatre scholar particularly known for her studies of the avant-garde, imagines (from a 1995 vantage point) what could happen in theatre as it moves into the 21<sup>st</sup> century:

Theatre hasn't at all confronted the provocation of the enormous changes in the intellectual and cultural environment in a world of new technologies, and previously unimagined possibilities of experiencing time and space and text. Where is the impact of the

new physics and sciences in the theatre of today? Where are the new conceptions of character, language and sound, where is the new imagery? As we prepare to enter the twenty-first century, theatre needs to become more visionary, and not attempt to compete with other media, but simply to create its own contemporary vocabulary. [...] In this realm one can discover qualities increasingly disappearing from contemporary experience, such as privacy and intimacy and spiritual feeling. (56)

As the art is impacted and answers her questions, response appropriate to the newness must also have a contemporary vocabulary to match what is being created and visualized and observed on our stages. As the understanding of human response shifts through continuing discoveries in psychology and science, so do the ways to talk about theatrical observations. The world's thinkers, philosophers and theorists have not been idle while the physicists were developing their theories, and their often more humanities-based vocabularies help in the interpretation and application of the science.

Peter Douglas, as part of his doctoral studies, speculates on Nietzsche's writings through quantum and chaos concepts, reinterpreting the philosopher within these frames. Using Prigogine's ideas of *being* moving towards *becoming* in searching out chaotic systems, Douglas comments on Nietzsche's search for truth observing that "A world of *being* entails a belief in stable origins and linear teleological growth, whereas in a world of *becoming*, everything exists in a dynamic and nonlinear relationship with everything else, in a process that erases its own history as it evolves" (137). The introduction to his article quotes Nietzsche: "this, my *Dionysian* world of the eternally self-creating, the eternally self-destroying, the mystery world of

the twofold voluptuous delight, my 'beyond good and evil'" (132). The fascinating juxtaposition is with the article by Cara Gargano referenced in Chapter Two, in which she proposes that the Orphic myth, which includes the Dionysian ecstasy of dismemberment and re-birth experience, is an essential myth that pictures understanding the world in the way of the new sciences. The connection to the sense of amorality concerning the use of this Nietzschean type of theory towards theatre is notable – "beyond good and evil" places the conversation outside the courtroom of judgment.

The point here is that working with quantum theatre is not a tightly bound system. In describing Picasso's set design for the ballet *Parade*, I urged that theory *allow* for the difference in perception. If a world were disassembled and reassembled, might there not indeed be an unanticipated product according to the assembler's current and possibly momentary perception? Including the heightened inner state suggested by a Dionysian dismemberment insists on a deeper experience than of merely connecting tinkertoys. Richard Foreman's adaptation of the word "hysteric" in his Ontological-Hysteric theatre becomes a particularly interesting choice in light of these thoughts. He takes the classical psychiatric understanding of hysteria, interprets it as the confrontation, emotion and conflict addressed by drama, and links it to ontology, the science/study of properties of existence, of being (Davy, *Ontological-Hysteric Theatre* 16-17). The hysteria causing the frenzied action in the Orphic myth becomes an object for Foreman,



removing the emotion from a cause/effect situation and shifting to something more similar to the wave/particle collapse or actualization in physics.

The possibilities for future exploration are as many as paths for electrons in the sub-atomic realm. In his book Einstein and Beckett (1973), author Edwin Schlossberg imagines a conversation between the two men. Contemplation of Absurdist Theatre using quantum theatre language would be a worthwhile endeavor filled with the possibility of new insights into the ontology and detachment of that eccentric genre.

Cirque du Soleil has been creating its own version of performance since its street-fair beginnings in 1982. With very loose story structure, it is a theatre of dynamic images where the question, "What does it mean?" might be answered through individual perceptions, and might not be answered at all. The published program for the Cirque production "Alegria" includes the following story as a supposed explanation of the search for the celebration of joy within the suffering process of life:

The king and the nobles gathered round to listen. The fool cleared his throat and began to explain. "It's really perfectly clear: if I were a king," said the fool, "I would need a fool. And if the fool were king, then the fool king's fool would truly be a paragon of folly. Folly so foolish as to be wise, since if the fool were king, then the king would be fool and the one would be the other and the two would be one, like the tail and the head, together, to lead the world, because who is boss depends on whether you walk north pointing south or vice versa, all relative to which way you look. You see?" And the nobles and the king could not see, so the fool took a deep breath with just a hint of a smirk and started all over again: "You see, it's really perfectly clear..."

Clear meaning is obviously not the goal, but personal experience as a fool or

as a king is.

In an interview for American Theatre magazine, Anne Bogart comments,

Theatre is not about understanding what's going on. It's about meeting something you don't know. The function of theatre is to stop us in our tracks. I want to create work that creates questions rather than answers. As soon as you have an answer, you fall asleep, but with a question you're irritated and awake. (34)

Physicist Richard Feynman used the same style in his approach to physics, and even when answers seem to be had, the unceasing round of questioning both the answers and the original questions continues in the science departments. The questions become the only way to not be stuck half-way up Foreman's mountain wishing one hadn't even started.

Peter Malekin and Ralph Yarrow struggle in an almost systematic/schematic way to prove the necessity of acknowledging the presence and transmuting nature of consciousness as one finds meaning in or relates to theatre performance.

Meanings are made, they are the work of the moment, and they always have to be remade. Anthropology, semiotics, psychology, deconstruction may all help to make, unmake and remake them. Drama, being active, goes on: over against, or beyond, the systems of interpretation. (Consciousness, Literature and Theatre 130)

The pluralisation and relativisation of ideologies within the complex of postmodernism at least allows them all to be seen as localized forms of truth, and demands a multiplicity of ways of knowing to approach them. (163)

Consciousness as a corollary to perception and observation, the evaluating and contextualizing by the perceiver or experimenter, becomes another

worthy object of deeper study. In his analysis, "The Quantum Mechanical Structure of *The Playboy of the Western World*," author Daniel Davy states that "an unread or unperformed play is indeed, in Heisenberg's language, 'in the middle' between its 'idea' – pure thought in the playwright's mind – and its 'event' – the coming to life in the theater or through reading through contact with human consciousness" (130). The circling of thought around quantum theatre, consciousness, Jungian analysis of the collective unconscious, myth and the creation of mythos gives a theorist much to work with. The beginning is with a slight shift in imagination - each shift which can actualize as a moment of quantum theatre.

A theatre that invokes imagination fully must be instinct with consciousness in all possible dimensions – mental, physical, and affective – and on all levels – from the external and obvious to the internal and barely sensed. It is able to do so because it partakes in "theatreing"; it taps into form's initial stages of emergence as active process within the stillness at the base of mind. (Malekin and Yarrow, "Imagination, consciousness and theatre" 73)

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