Time, Space, Timespace, Spacetime: Theatre History in Simultaneous Universes

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> *The Garden of Forking Paths* is an image, incomplete yet not false, of the universe as Ts'ui Pên conceived it. In contrast to Newton and Schopenhauer, your ancestor did not think of time as uniform and absolute. He believed in an infinite series of times, in a dizzily growing, ever spreading network of diverging, converging and parallel times. This web of time--the strands of which approach one another, fork, intersect, break off, or ignore one another for centuries--embraces all possibilities. We do not exist in the majority of these times. In some you exist and not I; in others, I and not you; in yet others both of us exist. In the present one, in which chance has favored me, you have come to my gate; in another, while crossing the garden, you found me dead; in yet another, I utter these same words, but I am a mistake, a phantom.
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> Jorge Luis Borges *The Garden of Forking Paths*[1]

In October of 1927, the fifth Solvey Conference convened at the Hôtel Metropole in Brussels. Present were the founders of relativity physics and quantum theory, among them Planck, Einstein, Bohr, de Broglie, Born, Schrödinger, Heisenberg, Kramers, Pauli, and Dirac.[2] Though the Conference is best remembered for the articulation of the Bohr-Einstein debate concerning complementarity (the Copenhagen Interpretation)--wave-particle duality and its continuity or discontinuity when observed[3]--the Solvey Conference also served as the departure point for a January 1986 New York Academy of Sciences meeting devoted, as the conference nearly sixty years earlier had been, to quantum measurement theory (see note).[4] The six decades spanning these two gatherings curve over the landscape not only of twentieth century physics, but of attempts to adjust the topologies of philosophy, the hard and soft sciences, literature, history, and the arts to the relative universe. There are many signs bearing witness to their intersection: the impact of non-Euclidean geometry in earlier twentieth century art and

architecture,[5] Joseph Frank's 1945 essay "Spatial Form in Modern Literature" and the subsequent identification of "spacecriticism,"[6] the Fall 1948 issue of *Dialectica* offering philosophers and physicists a chance to discuss three-value logic and quantum mechanics,[7] the first New York Academy of Sciences conference (1977) devoted to what is generally known as chaos research,[8] and the development in 1985-87 of the Society for Literature and Science,[9] name a few outcroppings in an intellectual and artistic terrain imprinted by relativity physics and quantum mechanics.

To these twin pillars of twentieth century cognition might be added chaos studies, the nonlinear, unpredictable dynamics observed in fields as diverse as astronomy, chemistry, math, ecology, economics, geography, and biology. Taken as the century's third revolution in the physical sciences, wherein relativity eliminated Newtonian absolute space and time, quantum theory a uniform measurement process, and chaos the Darwinian dream of deterministic predictability, it is the latter revolution that "applies to the universe we see and touch, to objects at human scale."[10] Not unlike the theatre itself, which stands at the intersections of intellectual and cultural processes, the very richness of relativity physics, quantum theory, and chaos studies makes them at once remote and familiar, useful and useless, clear and clouded in their possible application to contemporary theatre research.

> But a practitioner of a discipline should not seek to avoid the professional anxiety generated by the unavailability of an analytically pure object of study that defines his or her field with clear and distinct precision. Instead, the necessary anxiety inherent in any mode of cultural or social study should be converted as much as possible into a source of tension that stimulates work whose import cannot be safely confined within disciplinary walls.[11]

It is in the universe of indeterminacy that the present discourse operates. This essay will first consider those principles of relativity physics and quantum theory of the Solvey generation that bear upon the development of the theory of parallel or simultaneous universes, which received its most public acknowledgment at the 1986 New York Academy of Sciences conference. The impact of first generation relativity and quantum physics upon literature, the arts, and concepts of cognitive authority in history will lead to a consideration of the theory of simultaneous universes and its potential for contemporary historiography and historical research. The essay will then apply these ideas, as an example, to one question in theatre history in Jacksonian America (c. 1830-1860). My discourse attempts to map an historical timespace[12] within spacetime as contemporary physics reads it, consisting of multiple co-existent universes such as those Borges describes. In pursuing this topology, I seek to illustrate Einstein's observation that "time and space are modes by which we think and not conditions in which we live."[13]

I.

The universe which Einstein proposed in 1915 is not only curved, it is anisotropic, that is, the shape or geometry of space varies in different directions.[14] In thinking this elasticity, it is useful to conceive of time as a dimension of space.[15] The physicists gathered in Brussels had few disagreements concerning these displacements of traditional spatio-temporal concepts. Rather, their revolutionary rearticulation of the nature of the universe found its field of controversy in the question of measurement and the impact of the observer. Just prior to the fifth Solvey Conference, Werner Heisenberg had articulated the principle of indeterminism, generally identified as the uncertainty principle,[16] which holds that it is impossible to know both the location of a subatomic particle and its energy or momentum simultaneously.[17] In accepting Heisenberg's description of the position-momentum problem, Niels Bohr argued that though the values to be ascribed were uncertain, they were complementary,[18] that is, that Heisenberg's particle could be seen as a particle or as a wave as the observer chose. This duality implied that a phenomenon could never be fully measured in an observation because there was always a "hidden real" caused by the observer's intervention.[19] Einstein found the idea of observer influence obnoxious and countered, in 1935, with the argument that an object must have both position and momentum before prediction can be made; the observer merely chooses which quantity to predict.[20]

The observer-measurement issues are fundamental to the quantum universe, both in how it deviates from Newton's cosmology and in the "reality" problems it suggests. The Einstein-Bohr/Heisenberg dispute focused upon the tension between a theory which represents objects themselves and upholds continuity and causality (Einstein) and a theory representing the probability and discontinuity of a thing occurring (Bohr-Heisenberg).[21] The latters' uncertain universe relative to the position of the observer both accepts temporal indeterminacy and Heisenberg's *potentia*, that is, that events are tendencies, an "intermediate layer of reality, halfway between the massive reality of matter and the intellectual reality of the idea or the image."[22] In such a universe, there are no objects "out there" in "reality" taking a pre-existing course of action; that potential course or object is what measurement supplies.[23] Epistemological questions are evoked by these quantum concerns: in terms of what does an observer create "reality"? Do we give cognitive authority to "being" or "doing" when we choose between "being" and "being seen"? Can we arrive only at three value logic's third position--neither affirmative nor negative, but indeterminate?[24]

In the 1930s, John von Neumann began to formulate a quantum calculus for space that affected both mathematical physics and logic.[25] Von Neumann observed that "quantum mechanics is in compelling logical contradiction with causality . . . that there is at present no occasion and no reason to speak of

causality in nature--because no equipment indicates its presence . . . and the only known theory which is compatible with our experiences relative to elementary processes, quantum mechanics, contradicts it."[26] With Garrett Birkhoff in 1936, von Neumann attempted to construct a measurement structure for the quantum universe that sparked considerable controversy, in its application if not in the appropriateness of its task.[27] Von Neumann subsequently concluded both that discontinuous change could not be reduced to continuous change, but was itself irreducible, and that "it is impossible to formulate a complete and consistent theory of quantum mechanical measurement without reference to human consciousness."[28] As the first generation of physics went into its final years, quantum and relativity seemed related in an observer-created "reality."

In the course of pursuing their scientific investigations in relativity physics and quantum mechanics, one historian of science notes, "more epistemology was produced than in the process of philosophical speculation."[29] The impact of Einstein's relative and Heisenberg's uncertain universe registered in a host of humanistic fields and artistic practices, including philosophy, and found a general audience as well via the widely publicized eclipse experiment of 1919 that confirmed Einstein's theory concerning the curvature of space. Artistic practice in the movements that succeeded Cubism in art[30] also reflect relativity physics, for example, the work of painters like Duchamp, the poets Khlebnikov and Gertrude Stein, the filmmaker Eisenstein, architect Buckminster Fuller, scene designers Claude Bragdon and Norman Bel Geddes, and the work of playwrights-theorists Tristan Tzara, Apollinaire, and Andre Breton.[31] While concepts of spacetime in the arts at the time of the Solvey Conference were not necessarily informed by the complexities of quantum relativity, they quickly became so. The *Manifeste Dimensioniste* of 1936, for example, fielded an impressive list of signatories in support of the new physics in literature, painting, sculpture, and theatre at a moment when "reality" itself was undergoing concentrated re-examination.[32]

As an idea whose time had come, quantum relativity was brought into the service of numerous assaults upon logic and "reality," as witnessed by Breton's essays[33] and Salvador Dali's discussion of Einstein in the context of his own famous melted watches ("the extravagant and solitary Camembert of time and space").[34] While, as contemporary painter Tony Robbin notes, "in the development of new metaphors for space, artists, physicists, and mathematicians are usually in step,"[35] the first generation of quantum physics also had wide repercussions for literature between the wars. At heart was the inability of a classically constructed language to express quantum "reality." As Bohr put it, "We are suspended in language in such a way that we cannot say what is up and what is down,"[36] while Heisenberg observed that "it would be a self-contradiction to describe in natural language a logical scheme [i.e., quantum mechanics] that does not apply to natural language."[37] As mathe-

matician David Finkelstein noted in 1963, with classic understatement, "We are in a delicate position, using logic to study the need for changing logic."[38]

The numerous experiments with language in fiction and theatre during the interwar years need not be rearticulated here, and, indeed, the view that the conventions describing what literature is are themselves grounded in Newtonian metaphysics has been much considered from the 1920's to the present day.[39] With a revisioning of how a character might be created, an idea or point of view expressed, and how a literary work might be structured, drama, fiction, and poetry all engaged discontinuity, relativity, observer influence, absence, the curvature of timespace, duality, and the relational nature of "reality." Not surprisingly, theory and criticism expanded its consideration of these elements in both language and literature. For example, linguists and the major figures in semiotics, phenomenology, and structuralism emerged during the years between the wars.[40] The occupation of the quantum landscape by these concerns and their articulators was captured in Joseph Frank's 1945 essay,[41] identifying the attempt by literature and criticism to overcome temporality, a region whose explorers have been subsequently identified as spacecritics.[42]

Though of the post-Hiroshima generation, historian-philosopher Michel Foucault, whose schematization of history as power/knowledge is spatial, may be taken as exemplary of the influence an informed reading of first generation physics has had/may have upon historiography and historical practice in post-Hegelian times.[43] Visible at once in Foucault's work are classical postulates such as Einstein's sense of local (or field) histories, the exploration of a multitude of small events wherein matter and energy (things and processes) are joined.[44] Foucault's examination of the "curve" of local discourse at specific temporal and regional points might find a relationship to Einstein's general theory. Further, modulations of Heisenberg's probability and uncertainty (analyses are probable and indeterminate), Bohr's complementarity (binary theories of negation give way to necessary difference), Pauli's exclusion and conservation (the absent event and the chart of prohibitions are legitimized as information), and Dirac's formulation of antimatter (that histories, like particles, have doubles representing different states of the same energy/event moving backward as freely as forward in time) are evoked in Foucault's observation-located history.[45] In the universe of early quantum physics, Foucault's power/knowledge suggests a way of replacing "Newtonian-Cartesian conceptions of causality, time, space, subject and object with systematic relations in which the subject is merely a variable function, objects have no fixed substance, space and time interact, and change is discontinuous."[46]

II.

The rearticulation of the legacy of early twentieth century quantum physics to philosophy, artistic practice, literary theory-criticism, and historio-

graphy--history detailed in these pages (and elsewhere in this issue)--serves two functions: first, to remind us that quantum physics already has a long demonstration in the arts and humanities, including applications in theatre practice and theatre research; second, to encourage us to move on, as physics has, to further expansion of these concepts as they may enrich our theory and practice in theatre. No concept seems more compelling today than spacetime, whose identification "with causal relations on epistemic grounds has its origins both in general empiricist and positivist claims about the association of meaning with mode of verification, and, of course, in Einstein's critique of the notion of simultaneity for distant events."[47] The impact of such a linkage of time and causality upon historiography will be evident, but it had a strong role to play in the measurement and observer dispute in post-war physics as well.

In 1957, physicist Hugh Everett took on the observer problem troublesome to Bohr and Einstein, and offered the following picture of multiple universes:

> Throughout all of a sequence of observation processes there is only one physical system representing the observer, yet there is no single unique *state* of the observer . . . Nevertheless, there is a representation in terms of a *superposition*, each element of which contains a definite observer state and a corresponding system state. Thus with each succeeding observation (or interaction), the observer state 'branches' into a number of different states. Each branch represents a different outcome of the measurement. . . . All branches exist simultaneously in the superposition after any given sequence of observations. . . . From the viewpoint of the theory *all* elements of a superposition (all "branches") are "actual," none any more "real" than the rest.[48]

What Everett proposed was to escape the dualistic quality of early quantum measurement theories, which posed two modes of behavior ultimately dependent on the observer, by rejecting the idea that a wave packet collapses or pops due to observation.[49] Instead, he posed only waves that branch, each branch in a different universe (superposition) which object and observer both occupied.

Subsequent formulations of Everett's theory in the late 1960's sought to verify his position, but the theory remained in contest not least for the threat it seemed to pose to all non-multiuniverse theories, including those of the first generation of relativity physics sketched here.[50] In two papers in the 1980's, however, John Cramer suggested a reconciling interpretation wherein he recalled that when a quantum wave "popped" because observation takes place, according to the Copenhagen Interpretation, the wave is said to collapse from possibility to fact. To measure this collapse, a mathematical "conjugate" is used. If we imagined the conjugate as a wave, he argued, one running

backward in the same spacetime through which the quantum wave moves forward, the collapse of the wave function occurs when the conjugate wave and the original wave intersect and modulate each other.[51] It's not flow (unobserved) or pop (observed) but both.

Simultaneous with giving voice to the time dimension in measurement, the temporal aspects of the observer were also scrutinized by second generation physics.[52] Between 1978 and 1981, John Wheeler articulated the Bohr-Einstein debate in terms of a delayed choice experiment, wherein the experimenter could decide *after* a photon had taken one of two paths which path it would take, in a sense placing an effect before a cause.[53] Wheeler's experiment, verified in 1985, added to the acceptance since Einstein's day that movement in time could be faster than light the knowledge that time does not flow in one direction only.[54] Since both relativity and quantum theory separately predict simultaneous universes, it seemed the two theories might be joined if physicists could be satisfied they had a consistent explanation.[55] For our purposes, an elastic time in anisotropic space provides a flexible spacetime that can be mapped topologically in all directions.[56] At human scale, to "travel" knowingly in simultaneous universes and to conceive of interaction, as in Cramer's waves, as past and future, assumes a reading of history that is both fluid and relational.

The search for the topological dynamics of a number of fields in recent years has been embraced as chaos studies. The legitimation in it of irregularities, random patterns, and complexities adds to physics' dynamics the topological elements of stretching, contracting, folding, and flow in the much faster scales of earthly change.[57] At issue in chaos research is what happens in systems (e.g., the formation of shorelines, heartbeats, population growth) that work on themselves again and again, and what can be read of dynamic systems when they are jelled in physical forms.[58] These "fractal" processes (fractal is used as both a noun and adjective to evoke brokeness and irregularity) are not the final states of systems, but the dynamics whereby systems choose among competing options.[59] Fractal dynamics help an historian articulate the discontinuous relationships that define an historical timespace within the multiple universes of contemporary spacetime.

Our concept of the universe at human scale has been profoundly affected by post-Hiroshima readings of space, time, "reality," knowledge, memory, and evidence. Nobel physicist Eugene Wigner argues "the 'past' is theory. The past has no existence except as it is recorded in the present. . . . What we call reality consists . . . of a few iron posts of observation between which we fill in by an elaborate papier-maché construction of imagination and theory."[60] Philosopher of science Gaston Bachelard similarly argues that "history [rid] of its conjunctive temporal tissue," allows us to see "the theatre of the past that is constituted by memory, the stage setting [that] maintains the characters in their dominant rôles. . . . In its countless alveoli, space contains compressed time."[61] These timespaces find parallels in literary and historical studies

wherever time does not dominate space, for example in readings of pluralism and difference, doubles and gaps, or spaces within language that see time as multi-directional, fractal, and folding.[62]

In the multiple universes of second generation physics, Foucault's practice again helps us to identify the dynamics of a transgressive spatial strategy of historical displacement that may be useful in theatre research. "There is nowhere a barrier or boundary, nor is there a centre or edge" in either the quantum universe or in Foucault's legitimation of histories that transgress the limits of authorized readings.[63] This unbounded history is displaced not only in the sense of there being no absolute history, no deterministic causality, no accumulation of information in time, no observer authorized "true" history, history is displaced in terms of itself. In Foucault as in the theory of simultaneous universes, no universe (history) is more real than any other, and the existence of one depends on the others. Rather, "history" (event/account) is set against "history" (event/account) in a search for the relational dynamics that access simultaneous events/universes, since, as Aronowitz observes, "*relations*, not things [are] the true objects of inquiry."[64] Transformations in these universes occur continuously and simultaneously, as time-related events find systemic expression in terms of some option, which the historian submits to the confluence of agreements (other historians) of his or her own multiple universes.

III.

How does a playhouse become a whorehouse? Current theatre scholarship tells us that numerous protests were written and published between 1830 and 1860 against prostitutes in American theatres, that "decent" citizens were encouraged to and did stay away from the playhouse, that theatre gained a (deserved) bad reputation, indeed that so considerable were the numbers of prostitutes in the theatre that they had their own section in the gallery, known coyly as "that guilty third tier."[65] Now often repeated in general as well as in theatre historical accounts,[66] the "event" has acquired a life of its own. In the pre-relativity universe of absolutes, an observer-scholar who wanted to contest this view would observe that the evidence marshalled to support the interpretation is flawed. Sources from the eighteenth century and early nineteenth century[67] are vague as to time and place or the phenomenon they describe, while memoirs published after the Civil War [68] are questionable as authoritative readings of Jacksonian era theatre. Further problems derive from twentieth century histories that do not verify their sources which are in turn cited by other twentieth century histories that should.[69] Most prominent among questionable evidence are the obviously biased accounts of those who created prostitutes in the theatre as a discourse in the first place, nineteenth century ministers and social reformers, and the theatre actors and managers

who accepted their view and tried to convert it to serve their own economic or social interests.[70]

In the nineteenth century positivist universe of science and of history conceived as science, the search for "truth" in the matter of prostitutes in the theatre in Jacksonian America would not be relegated to footnotes, as those who have read the extensive ones accompanying these paragraphs see has been done here. Rather, "truth" would assume focus, itself becoming the event in a battle for interpretative authority.[71] It will be clear I find "that guilty third tier" less locatable as a "real" object than do some scholars. Important here, however, is not the power play of verification, but how objects/events are viewed in a timespace. Jacksonian theatre is exemplary of the sudden onset of multiple discontinuities that signal the presence of a systems-wide transformation, shifts of power which, Foucault notes, occur when cognitive authority --what "truth" is and who gets to decide--is challenged.[72] This dynamic process in theatre is considered here as the presence of multiple simultaneous universes in a state of chaotic (discontinuous) relationship with each other. The overarching question will be: why does the morality of audiences attending the theatre in Jacksonian America become an historical discourse to ante-bellum New Yorkers and to us?

Contrary to twentieth century impressions, sex in America has not always been a matter for public regulation. The years prior to 1830 are nearly void of any laws or printed matter about cautionary sex.[73] The onset of the Jacksonian era is marked by the publication of a range of works concerning sexuality, broadly conceived, in scientific as well as ethical terms, ranging in topic from birth control to masturbation to abstinence.[74] In addition, numerous regulatory agencies, such as the New York Female Benevolent Society, the New York Society of Public Morals, the New York Female Moral Reform Society, and the American Female Guardian Society were created between 1832 and 1846.[75]

We may read twentieth century preoccupations with sex and contemporary "moral majorities" into the issue of prostitution in Jacksonian America, but there are a multitude of socio-cultural differences between that time and our own. First, there was no statutory definition of prostitution in New York until the early twentieth century. In the nineteenth, "when prosecuted, prostitutes were usually treated as disorderly persons or vagrants, and if convicted, it was a misdemeanor not a felony. Prostitution was only a crime in a public street. No law prohibited soliciting in a saloon, dance hall or furnished room[ing] house,"[76] nor in a theatre. Second, prostitution was most typically casual or occasional, rather than habitual or occupational, that is, that sexuality could be exchanged for cash as well as companionship by working women without risk of committing a statutory offense,[77] presuming the act was not consummated in public. Indeed, deplorable and uncertain wages for women and the poverty they produced were cited as the cause of occupational prostitution by William W. Sanger in his 1859 survey of the problem.[78]

If prostitution lacked statutory definition and prostitutes a clear occupational signature, the locus of the activity in antebellum New York was similarly fluid. Unlike many European cities, where prostitution had been geographically segregated for centuries into clearly marked districts, such an erogenous zone did not exist in New York until the 1850's. In 1830, most residents were a ten minute walk away from a brothel, for they were found in every neighborhood, including the most exclusive.[79] Though brothels were scattered over the city, they tended to concentrate close to ferry landings, hotels, and theatres, centers of transient population.[80] (The Chatham, Bowery, Broadway, Lafayette, and Park Theatres all shared their blocks with brothels.) In addition, the favorite promenades of *femmes du pave*, such as the Bowery and Broadway, were avenues adjacent to theatres. The danger moralists saw, then, was threefold: one had to walk through prostitutes to get to the theatre, one encountered them inside the theatre, and they used the theatre as a place to contact clients.

The creation of theatre audiences as a "problem" in antebellum New York leaves us strongly dependent upon contemporary perceptions as to which women attending the theatre were prostitutes, since then, as now, prostitutes wore no identifying tokens. Contemporary accounts locate "prostitutes," working and not, in all parts of the playhouse.[81] Indeed, there was little reluctance in some quarters about identifying them or demanding their regulation, witness the editor of the *New York Morning Herald*'s description of an audience at the Park Theatre in 1838:

> On Friday night the Park Theatre contained 83 of the most profligate and abandoned women that ever disgraced humanity; they entered in the same door, and for a time mixed indiscriminately with 63 virtuous and respectable ladies. . . . Men of New York, take not your wives and daughters to the Park Theatre, until Mr. Simpson pays some respect to them by constructing a separate entrance for the abandoned of the sex.[82]

St. Louis theatre manager Noah Ludlow was equally sure his private constable and ticket takers could separate the sheep and the wolves.[83]

The recourse of choice for theatre managers in dealing with such criticism seems to have been the low road of discouraging solicitation on the premises, a course advocated by Sanger in his study: "[M]any of the managers of our best theatres have abolished the third tier, so called, and if any improper woman visits them she must do so under the assumed garb of respectability and conduct herself accordingly."[84] Such a response to prostitutes was consonant with low regulatory interference between theatres and their audience, a tradition captured in this framing of the Astor Place riot of 1849:

> The public and magistrates have been accustomed to look upon theatrical disturbances, rows, and riots, as different in their character from all others. The stage is presumed to be a correction of the manners and the morals of the public, and on the other hand the public has been left to correct, in its own energetic way, the manners and the morals of the stage; and magistrates, looking upon it as a matter between the actors and the audience, have generally refused to interfere, unless there was a prospect of a violent breach of the peace, when they have usually ordered the house to be closed.[85]

The significance of such privatized arrangements increases when we remember that a police force as we know it did not exist in New York City until 1845.[86]

To prostitution may be added other examples of social rupture: [class] tensions, a dramatic increase in riots during the antebellum decades, unprecedented immigration, and political shifts that empowered those who had previously been effaced.[87] The press, whose radically increased circulation in New York City in the 1830's gave it considerable power in all these matters,[88] chose sides not only in political but in cultural affairs. At any time and for a variety of reasons, a newspaper editor hungry for respectability or influence might take up the campaign for decency in the theatre, shifting subsequent readings of prostitutes and audiences in the direction of the moral.[89]

Both theatre managers and the press in Jacksonian America understood quite well that cultural tastes and arbiters were changing, and clearly the argument for regulation of the theatre's "guilty third tier" was slanted against the people who could but afford to sit there. Regulation of theatre audiences is problematized by the issue of respectability, since those Jacksonians who advocated the high road of either excluding prostitutes from theatres or of segregating them in the third tier judged on the basis of appearance. Manner and dress, as can be seen in the observations of Jennings, Haswell, and Sanger,[90] signaled commodified availability to at least some "respectable" observers. Woe, then, to the working woman's preference for startling combinations of colors not unlike the bright dress of prostitutes.[91] If in addition she flirted, for fun or profit, with men, particularly the refined men who alternately judged and exploited her, she could be dismissed as not respectable, ejected from the third tier or barred from the theatre, and with her the independent, aggressive Bowery "rough" with whom she was associated.

The morality of audiences attending the theatre in Jacksonian America becomes a discourse not for moral reasons, but for reasons of social control. In one universe are ministers and moral reformers whose power to legislate conduct is eroding. In another is the press, seeking to capture both popular numbers and the power elite (or to join it). In another universe are working women, in another working men, forging an identity while trying to survive economically, alternately seizing power and losing it. In yet another universe is a precariously perched middle class perceiving respectability as a means to

upward mobility, both cultivating it and being appropriated by it. In another universe are prostitutes, exploiting respectability and being exploited in turn. And they almost all went to the theatre, a universe where the other simultaneous universes overlapped and interacted. A one-universe view of prostitutes and "that guilty third tier" as a moral issue, as ministers and reformers, often with the aid of theatre people, tried to make it, forces historians to legitimize a discourse that could not secure cognitive authority in its own day.

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The multiuniverse view displaces our usual readings of Jacksonian theatre, not as "a matter of emancipating truth from every system of power (which would be a chimera, for truth is already power), but of detaching the power of truth from the forms of hegemony, social, economic and cultural, within which it operates at the present time."[92] The fractal systems of chaos studies extended to theatre provide some dynamics for a spatial theatre historiography, not final states but choices among options: spin, velocity, position, direction, duration, angle and shift, interval, energy, density, color, rhythm, stretching, contracting, tension, folding, and flow. The dynamics of spatial linkage might include: inbetweenness, parallelism, simultaneity, self-consistency, self-reflexivity, transformation, isolation, succession, interpenetration, transference, reoccurrence, coexistence, and appearance/disappearance.[93] These dynamics may stimulate the location of theatre historical timespaces within spacetime. In Jacksonian theatre, for example, the velocity and direction of population growth (more, poorer people) affects ticket prices, choice of bill, and "that guilty third tier." The parallel growth of working women and protests about prostitutes may signal simultaneity or transference. Attempts to control young men by controlling young women suggests a tension in consistency between the man and his master and the man and his mate on a number of levels.

Finally, simultaneous universes keep the observer problem before us. We are not Jacksonians and they are not us, yet in our universe they have the "reality" we give them. Fortunately, our universes are also multiple and subject to the dynamics we empower in our scholarly confluence of agreements. If historical time flows in many directions, the past is not "out there" waiting to be discovered, but is somewhere inside the future. Indeed, a contemporary of Borges' suggests we knew this all along:

> Time present and time past
> are both perhaps present in time future,
> and time future contained in time past
> . . . . . .
> The end of all our exploring
> will be to arrive where we started
> And know the place for the first time.[94]

Notes

1. Jorge Luis Borges, "The Garden of Forking Paths," after the translations of Donald A. Yates, in *Labyrinths* (New York: New Directions, 1962) 28, and Helen Temple and Ruthven Todd, in *Ficciones* (New York: Grove Press, 1962) 100. Ts'ui Pên is a fictitious personage, the great grandfather of the character to whom this passage is addressed.

2. There are many accounts of this astonishing gathering and the work it generated/represented. Among the most useful to me have been: Max Jammer, *The Philosophy of Quantum Mechanics* (New York: John Wiley and Sons, 1974); John Wheeler and Wojciech H. Zurek, eds., *Quantum Theory and Measurement* (Princeton: Princeton UP, 1983); Fred A. Wolf, *Taking the Quantum Leap* (New York: Harper and Row, 1981/89); and Stanley Aronowitz, *Science as Power: Discourse and Ideology in Modern Society* (Minneapolis: U of Minnesota P, 1988). It is, perhaps, appropriate to observe here that these and many works written by physicists and historians of science can be clear, engaging, and accessible to theatre scholars who lack, as I do, a substantial grounding in mathematics and geometry.

3. The debate continued to Einstein's death in 1955 (and beyond) and has been characterized by Jammer as a "clash of diametrically opposed philosophical views about fundamental problems in physics" not less in magnitude historically than the discourse between Newton and Leibnitz (120-121). Significantly, the dispute posited different views of "reality," Einstein's causal and continuous, Bohr's (after Heisenberg) a description of uncertainty and discontinuity.

4. Measurement in physics means "the effect an observer of an atom or subatomic particle has on the system." Fred A. Wolf draws an explicit parallel between the two conferences in his *Parallel Universes* (New York: Simon and Schuster, 1988) 49, from whence this definition is taken, and in a note to the 1989 edition of *Taking the Quantum Leap* (273), where he identifies the New York meeting as "the first gathering of quantum physicists since 1927."

5. See Linda Dalrymple Henderson, *The Fourth Dimension and Non-Euclidean Geometry in Modern Art* (Princeton: Princeton UP, 1983), Roger Shattuck, *The Banquet Years: The Origins of the Avant-Garde in France, 1885 to World War I* (rpt. 1955; New York: Vintage Books, 1968), Bruno Zevi, *Architecture as Space* (New York: Horizon Press, 1957), Sigfried Giedion, *Space, Time and Architecture*, 3rd ed. (Cambridge: Harvard UP, 1954), Victor Zuckerkandl, *Sound and Symbol: Music and the External World*, tr. Willard Trask (Princeton: Princeton UP-Bollingen Series, 1969), Helmut A. Hatzfeld, *Literature Through Art: A New Approach to French Literature* (New York: Oxford UP, 1952), among many accessible accounts.

6. For the Frank essay and its impact see Jeffrey R. Smitten and Ann Daghistany, eds., *Spatial Form in Narrative* (Ithaca: Cornell UP, 1981). Also on this topic: Robert Nadeau, *Readings from the New Book on Nature: Physics and Metaphysics in the Modern Novel* (Amherst: U of Mass. P, 1981); Joseph A. Kestner, *The Spatiality of the Novel* (Detroit: Wayne State UP, 1978), Sharon Spencer, *Space, Time and Structure in the Modern Novel* (New York: New York UP, 1971), C.A. Patrides, ed., *Aspects of Time* (Manchester: Manchester UP, 1976), and indeed, the linking of time and space in literary criticism produces an endless bibliography. It would surely include Paul Ricoeur's *Time and Narrative*, Roland Barthes' *Critical Essays*, Gérard Genette's *Figures of Literary Discourse*, Jacques Derrida's *Margins of Philosophy*, Peter Brooks' "Freud's Masterplot," Wolfgang Iser, *The Implied Reader*, Tzvetan Todorov's *The Poetics of Prose*, among many others. For spacecritics and the impact of space and time in gender, see Ruth Salvaggio, "Theory and Space, Space and Woman," in *Tulsa Studies in Women's Lit.*, vol. 7, no. 2 (Fall 1988).

7. See Jammer 370-371. Time and space are eternal subjects in philosophy, whose twentieth century discourses in the early years included Henri Bergson's *Time and Free Will* and *Creative Evolution*, Charles Sanders Peirce's "The Conception of Time Essential in Logic" (ms. 237), and William James' *The Will to Believe and Other Essays in Popular Philosophy*. More recent and relativity-quantum oriented studies include: Aronowitz; Gerald Holton, *Thematic Origins of Scientific Thought: Kepler to Einstein* (Cambridge: Harvard UP, 1973); Hans Reichenbach, *The Philosophy of Space and Time*, tr. Maria Reichenbach and John Freund (New

York: Dover, 1958); Gaston Bachelard, *The Poetics of Space*, tr. Maria Jolas (Boston: Beacon Press, 1969); Jose Ortega y Gasset, *The Modern Theme*, tr. James Cleugh (New York: Harper and Bros. Torchbook, 1961); Max Jammer, *Concepts of Space* (New York: Harper and Bros., 1960); Bas C. van Fraassen, *An Introduction to the Philosophy of Time and Space* (New York: Random House, 1970); and Lawrence Sklar, *Space, Time and Spacetime* and *Philosophy and Spacetime Physics* (Berkeley: U of California P, 1974 and 1985). The intersection of philosophy and physics extends to history and culture and should include (again, among many): Jean-Francois Lyotard, *The Post-Modern Condition*, tr. Geoff Bennington and Brian Massumi, and *The Differend*, tr. Georges van den Abbeele (Minneapolis: U of Minnesota P, 1984 and 1988), and *The Lyotard Reader*, ed. Andrew Benjamin (London: Basil Blackwell, 1989); Frederic Jameson, *The Political Unconscious* (Ithaca: Cornell UP, 1981); Dominick LaCapra, *Rethinking Intellectual History* and *Soundings* (Ithaca: Cornell UP, 1983 and 1989); and virtually all the works of Michel Foucault, whose intersection as a philosopher-historian with quantum and relativity is addressed in Pamela Major-Poetzl, *Michel Foucault's Archaeology of Western Culture: Toward a New Science of History* (Chapel Hill: U of North Carolina P, 1983). Finally, in addition to the more sophisticated sources cited in note 2, a number of popular studies of the impact of physics on what is frequently identified as our sense of "reality" are addressed in Paul Davies, *Other Worlds* (New York: Simon and Schuster, 1980), Fred A. Wolf, *Star Wave* (New York: Collier Books, 1984), Nick Herbert, *Quantum Reality* (Garden City, New York: Doubleday/Anchor, 1985), John Gribbin and Martin Rees, *Cosmic Coincidences* (New York: Bantam, 1989), Stephen W. Hawking, *A Brief History of Time* (New York: Bantam, 1988), and the ever popular and frequently reprinted *The Tao of Physics*, by Fritjof Capra, 2nd ed. rev. (New York: Bantam, 1983).

8. James Gleich, *Chaos: Making a New Science* (New York: Penguin Books, 1987) 258-259. In two years, the dozens of specialists participating in this meeting had become hundreds, many of whom had endured years of marginalization by their disciplines and institutions.

9. Frederick Amrine, ed., *Literature and Science as Modes of Expression* (Dordrecht, Netherlands: Kluwer Academic Pubs., 1989) xiii. This Society's belated recognition of a relationship between science and literature (see note 6, and Schatzberg, *et al.* (1987), *The Relations of Literature and Science: An Annotated Bibliography of Scholarship, 1880-1980*) is mirrored in the volume's conservative editorial stance, which asks whether there is "some middle ground to be staked out between the extremes of positivist reduction and total relativism" (x), as if a reconciliation between Newton and Einstein/Heisenberg were not certain to fail for lack of what Lyotard calls "a rule of judgment applicable to both arguments" (see *The Differend* xi. Lyotard expands the concept of differend--a dispute in law that cannot be equitably resolved --in a discussion of Kant in *The Lyotard Reader*).

10. Gleick 6.

11. LaCapra, *Rethinking Intellectual History* 345. That the United States' educational and research establishments are fundamentally hostile to the transgression of field boundaries and traditions comes as no surprise to theatre scholars. See on this head Michel Foucault, "Truth and Power," in *Power/Knowledge*, ed. Colin Gordon (New York: Pantheon Books, 1980), Arthur Kroker and David Cook, *The Postmodern Scene* (New York: St. Martin's Press, 1986), and Jonathan Culler, "Criticism and Institutions: The American University," in Derek Attridge, *et al.*, eds., *Post-structuralism and the Question of History* (Cambridge: Cambridge UP, 1987).

12. Timespace might be conceived as a *topos uchronia*, a place beyond linear concepts of time. The term uchronia is used in Ortega y Gasset's "The Historical Significance of the Theory of Einstein" 146 in *The Modern Theme*, and in Linda Nochlin's "Seurat's *Grande Jatte*: An Anti-Utopian Allegory," in *Museum Studies*, vol. 14, no. 2 (1989) 135, wherein Nochlin employs uchronia to express nostalgia for a past that never was, a utopia of desire.

13. A. Forsee, *Albert Einstein, Theoretical Physicist* (New York: Macmillan, 1963) 81.

14. Einstein utilized Riemann's local geometry. Sklar (*Space, Time* 101) observes of anisotropy: "As soon as one contemplates the physical possiblity of the space or spacetime of the world being non-Euclidean in its metric structure [i.e., curved], one immediately begins to speculate about the possibility of its deviating from the Euclidean model in topological features as well." See also Davies 153.

15. Minkowski's (3 & 1) universe (three spatial and one temporal dimension), posed in 1908, made clear that our views of time were incorrect. As Minkowski observed: "Henceforth, space by itself and time by itself are doomed to fade away into mere shadows, and only a kind of union of the two will preserve an independent reality." See Herbert 247, Davies 43, and Wolf, *Parallel* 113. See Sklar, *Space, Time* 56-61, for the epistemology of Minkowski's geometry.

16. Heisenberg, in Wheeler-Zurek 62-84. Jammer points out (*Philosophy* 61-62) the difference between uncertainty and indeterminacy in Heisenberg's writing.

17. This principle is considered the cornerstone of quantum physics and is frequently discussed, for example in Wolf, *Parallel* 44.

18. Bohr, in Wheeler-Zurek 87-126.

19. See Jammer, *Philosophy* 108-158, for the Bohr-Einstein debate, and Wolf, *Quantum* 151.

20. The Einstein-Podolsky-Rosen experiment. See Wheeler-Zurek 138-141, and Jammer, *Philosophy* 159-247.

21. See Jammer, note 19, Wolf, *Quantum* 121-123, and Herbert 24-25, for explanations, Wheeler-Zurek for documents in the controversy.

22. Jammer, *Philosophy* 44.

23. Heisenberg contrasts this view to classical physics, which held "that the order of events in time is entirely independent of their order in space . . . that the events 'happen' in space and time independently of whether they are observed or not." See Werner Heisenberg, *Physics and Philosophy: The Revolution in Modern Science* (New York: Harper and Bros., 1958), a collection of lectures given in 1955 and 1956, 173.

24. See Jammer, *Philosophy* 340-416, for a discussion of quantum logic, Reichenbach, and both of Sklar's books, especially *Philosophy*. See also van Fraassen 198: "The causal theory of time may be summed up as follows: Whatever actual physical connections there are must be reflected in the logical space; a certain mathematical structure is such that whatever actual physical connections there are can be reflected in it in this manner; and we choose this mathematical structure as the logical space *time*."

25. Jammer provides a history of von Neumann's views at a number of points in *Philosophy*. Sklar's *Space, Time* takes up the epistemology of geometry in Chapter 2.

26. Jammer, *Philosophy* 270. Von Neumann's "'Measurement and Reversibility' and 'The Measuring Process'" are reprinted in Wheeler-Zurek 549-647, for those with a strong grounding in mathematics.

27. Jammer, *Philosophy* 350-353. The Birkhoff-von Neumann position held that quantum required "an orthocomplemented modular lattice," rather than the one developed by Boole and standard in earlier math-logic.

28. Jammer, *Philosophy* 476, for the irreducibility issue 480 for the quote.

29. Reichenbach xii.

30. Sigfied Giedion suggests a connection between Einstein-Minkowski and Cubism in his often revised and quoted 1941 history (86-89), but Henderson makes clear early avant garde artists did not know Einstein or Minkowski and used the term fourth dimension as a spatial not a temporal conept (355-358).

31. Henderson 342-352.

32. Signatories included Moholy-Nagy and Prampolini, in addition to Miró, Picabia, Kandinsky, Calder, Duchamp, and others. The *Manifeste*, written by the painter Charles Sirato, was prefigured by Maeterlinck's *La vie de l'espace* (Paris: Eugene Fasquelle, 1928; New York: Dodd and Mead, 1928), which referred to both Einstein and physicist A. S. Eddington. There are a number of works from the 1920's that evoke Einstein, Minkowski, and others (see Henderson).

33. Breton names Einstein in his *Surrealism and Painting* (New York: Brentano's, 1974) 152. the Surrealists effected a rather unexpected union among Einstein, Freud, and Marx. See *André Breton: Manifestos of Surrealism*, tr. Richard Seaver and Helen Lane (Ann Arbor: U of Michigan P, 1969), Anna Balakian, *Literary Origins of Surrealism* (New York: New York UP, 1947), and Helena Lewis, *The Politics of Surrealism* (New York: Paragon House, 1988).

34. Salvador Dalí, *The Conquest of the Irrational* (Paris: Editions Surréalistes, 1935) 25, Henderson's translation (347).

35. Tony Robbin, "The New Art of Four-Dimensional Space," *Artscribe* (London), no. 9 (1977) 20, as cited in Henderson 352.

36. Wheeler-Zurek 5.

37. Heisenberg, *Physics and Philosophy* 181-182. See this whole chapter on "Language and Reality in Modern Physics," as well as Heisenberg's earlier work in Wheeler-Zurek. See also Jammer, *et al.*, as cited in note 24, and Nadeau 11.

38. Jammer, *Philosophy* 416.

39. See Nadeau 183, for one example among many.

40. See Robert Con Davis and Ronald Schleifer, eds., *Contemporary Literary Criticism*, 2nd ed. (New York: Longman, 1989) for essays and useful introductions to some of these. Marvin Carlson's *Theories of the Theatre* (Ithaca: Cornell UP, 1984) remains the seminal historical-critical survey for the field.

41. See Smitten and Daghistany, which reprints Frank's essay and charts its impact.

42. Salvaggio 262-265. Bachelard speaks of "topoanalysis," an investigation of the sites of our lives (8), a view also privileging space.

43. See Judith Butler's review of Michael S. Roth's *Knowing and History: Appropriations of Hegel in Twentieth-Century France* in *History and Theory*, vol. xxix, no. 2 (1990) 258, where Butler notes: "The paradox of the Hegelian production and rejection of the post-Hegelian is precisely the problematic initiated by Hegel's claim that history is at an end. The questions left to pursue diverge over the issue of what to do in post-Hegelian times: on the one hand, there are those [Roth, in Butler's reading] who seek to establish in a subjunctive mode what the structure of historical change must be like for the Hegelian project to maintain its own credibility and to restore the current heterogeneity of the political field to an earlier hegemonic form; on the other hand, there is the genealogical task [Foucault's] of understanding how Hegelianism produced an opposition to itself that falls outside its very logic. This appears to be an opposition or set of oppositions that resists assimilation into the mechanism of dialectical domestication."

44. See Pamela Major-Poetzl's excellent discussion of Foucault and physics in the third chapter of her 1983 study 61-104.

45. See Major-Poetzl and especially Foucault's "Truth and Power," in *Power/Knowledge*. I have elsewhere considered Foucault's spatial view of history, for example in "The Theatre Historian in the Mirror," *JDT&C* (Spring 1989) 219-228.

46. Major-Poetzl 104.

47. Sklar, *Philosophy* 270-271. Relevant to this context are Edmund Husserl, *The Phenomenology of Internal Time-Consciousness*, tr. James S. Churchill (Bloomington: Indiana UP, 1966), and Martin Heidigger, *History of the Concept of Time*, tr. Theodore Kisiel (Bloomington: Indiana UP, 1985), and *On Time and Being*, tr. Joan Stambaugh (New York: Harper and Bros., 1972). More recently, Craig Owens notes in *The Anti-Aesthetic*, ed. Hal Foster (Seattle: Bay Press, 1983) 65, that for Frederic Jameson, "the loss of narrative is equivalent to the loss of our ability to locate ourselves historically; hence, his diagnosis of postmodernism as 'schizophrenic,' meaning that it is characterized by a collapsed sense of temporality."

48. "'Relative State' Formulation of Quantum Mechanics," reprinted in Wheeler-Zurek 315-323, with surrounding commentary. The quote is on 320.

49. See Wolf, *Quantum* 255-257, and *Parallel* 38-39.

50. See Jammer, *Philosophy* 509-521, for a summary of these moves.

51. Wolf, *Quantum* 261-263.

52. A 1959 experiment by Pound and Rebka established that time does not flow evenly. It is considered in C. Misner, K. Thorne, and J. A. Wheeler, *Gravitation* (San Francisco: Freeman Press, 1973).

53. See "Law Without Law," in Wheeler-Zurek 182-213. See Wolf, *Parallel* 225-233, for a visualization and description of the experiment.

54. See William C. Wickes, Carroll O. Alley, and Oleg Jakubowicz, "A 'Delayed-Choice' Quantum Mechanics Experiment" (1981), in Wheeler-Zurek 457-461.

55. Wolf, *Parallel* 106 and 170. Relativity theory predicts parallel universes due to distortions in spacetime, quantum theory because of the coalescence of possibilities. See 120-

130 in this work for the complexities of "Real Time, Zero Time, Imaginary Time and Real Space, and Imaginary Space."

56. Roy Kerr has done this for physics. See his "Gravitational Field of a Spinning Mass as an Example of Algebraically Special Metrics," in *Physical Review Letters*, vol. 11 (1983) 237-38. Kerr mapped the infinite parallel universes in 1963, infinite because the map extends forever toward the past and the future. The mapping is illustrated in Wolf, *Parallel* 166-169.

57. Gleick 253.

58. Gert Eilenberger, "Freedom, Science, and Aesthetics," in *The Beauty of Fractals*, eds. Heinz-Otto Peitgen and Peter H. Richter (Berlin: Springer-Verlag, 1986) 35, cited in Gleich 117.

59. The word fractal is claimed by Benoit Mandelbrot, a 1975 creation from the Latin *fractus*. In use, fractal describes shapes that are fractured and fragmented. See Mandelbrot's *The Fractal Nature of Geometry* (New York: Freeman, 1977). See Gleich 98, 113-114, and 233.

60. Wheeler-Zurek 194.

61. Bachelard 8-9.

62. Derrida, Lyotard, and Foucault come readily to mind. See the sources cited in note 6, especially Salvaggio's account of postmodern spacecritics 267-270, and the sources cited in note 7.

63. The quote is Davies 53. Concerning Foucault, see "Language to Infinity" 53-67, in *Language, Counter-Memory, Practice*, ed. Donald F. Bouchard (Ithaca: Cornell UP, 1977). Foucault suggests distance, dispersion, and difference are characteristics of language, not themes in it.

64. Aronowitz 250. Self-consistency in science requires that events, no matter how opposed, when taken together permit us to locate what Foucault would call a discourse, what physics might identify as a position-momentum event, but better is chaos studies' sense of a dynamic process, either fluid or jelled.

65. This view is summarized by Claudia D. Johnson, "That Guilty Third Tier: Prostitution in Nineteenth-Century American Theatres," in both *American Quarterly*, vol. xxvii, no. 5 (December 1975): 575-584, and *Victorian American*, ed. Daniel W. Howe (Philadelphia: U of Penn. P, 1976) 111-120. Notes are taken from the second source.

66. The testimony plays a role in, for example, Timothy S. Gilfoyle's excellent "City of Eros: New York City, Prostitution, and the Commercialization of Sex, 1790-1920," Ph.D. diss. (Columbia, 1987), especially Chapter 2 and 3, and Sean Willentz's *Chants Democratic: New York City and the Rise of the American Working Class, 1788-1850* (New York: Oxford UP, 1984), where 258 is illustrative.

67. For example, William Dunlap's *History of the American Theatre*, vol. I (New York: J. and J. Harper, 1832) 407-412, wherein Dunlap, in the course of mounting an argument favoring government regulation (and subsidy) of theatre, inveighs against allotting "a distinct portion of the proscenium to those unfortunate females who have been the victims of seduction." The context suggests he means actresses here, but Dunlap glides (in the next paragraph) from their "immoral display" to urge that "no separate place [in the auditorium] shall be set apart, to present to the gaze of the matron and virgin the unabashed votaries of vice, and to tempt the yet unsullied youth by the example of the false face which depravity assumes for the purpose of enticing to guilt." "The improper, indecent, and scandalous practice of setting apart a portion of the boxes for this most disgusting display of shameless vice" Dunlap attributes to England and America, but not subsidized Germany and France, and he extends his brief to the press and other modes of promoting "vice, immorality, or irreligion." Dunlap does not think it "practicable to exclude the impure and the vicious from public resorts, neither is it to be wished," for the play may have a good moral influence. Instead, he urges "that no female should come to a theatre unattended by a protector of the other sex, except such whose standing in society is a passport to every place." Throughout the account, Dunlap clearly allies himself with those who have "religious scruples about the stage," inveighs against native dramas (increasingly popular in the 1820s and 1830s), the size of playhouses (growing in square footage and audience capacity at the time Dunlap's history was published), and "exhibitions of monsters, and beasts, and other vulgar shows" (giants, dwarves, elephants, equine melodrama, and dog acts all found their way to the stage in the 1830s).

Nowhere in this chapter, however, does Dunlap clarify what period he is discussing (the external evidence suggests the date of publication [1832] rather than the period of the history [1752-1797]) and the only theatre he mentions by name is the Federal Street in Boston (built in 1793). I shall deal with the social implications in Dunlap's account in the text, but note here that Johnson's assertion that Dunlap establishes the third tier as a feature of the mid-eighteenth century onward American playhouse is unsupported in the pages of Dunlap's *History* cited.

Johnson's second early source, Moreau de Saint Méry's travelogue--see Kenneth and Anna M. Roberts, eds. and trans., *Moreau de Saint Méry's American Journey, 1793-98* (Garden City, New York: Doubleday, 1947)--is noted at second hand (via Hewitt). De Saint Méry observed of the Chestnut Theatre in Philadelphia in 1794 that "women as well as men sit in the pit, though not women of fashion. There are women also in the gallery and the Negroes have no other place." Though acknowledging de Saint Méry doesn't say so, Johnson concludes that if women were segregated with Blacks, they were probably "the same women whom Dunlap describes as prostitutes" (a word Dunlap never uses, but that is a cavil given the overall interpretation of these events/accounts--see Johnson 111-113).

Finally, there is a reference to John N. Ireland's *Records of the New York Stage from 1750 to 1860*, vol. I (New York: Benjamin Blom, 1966) 29--a reprint of the 1866 original--which seems to me to conflate the distinction between reserved and general admission in 1759 in Ireland's account in order to support a reading of the third tier as the area reserved for prostitutes, an interpretation then projected into the nineteenth century (see Johnson 116-117, and note 19).

68. The chief memoirs of non-clerical/reformist theatre attenders are John J. Jennings, *Theatrical and Circus Life, or Secrets of the Stage, Green Room and Sawdust Arena* (St. Louis: Historical Publ. Co., 1882), Charles H. Haswell, *Reminiscences of an Octogenarian of the City of New York, 1816-1869* (New York: Harper and Bros., 1897), and Philip Hone, *The Diary of Philip Hone, 1828-1851* (New York: Dodd, Mead, and Co., 1927). For my reading see "Hustlers in the House: The Bowery Theatre As a Mode of Historical Information," forthcoming (1991) in *Papers in Honor of Barnard Hewitt*. For our purposes, I note these sources lack dates and often theatre names. Jennings reports prostitutes throughout the playhouses of St. Louis and draws some interesting distinctions among them (see 66-67). Hone discusses the theatre (347-348, for example), but not prostitutes, though he lived within a few blocks of both. Haswell describes a Saturday night visit to the Bowery Theatre in 1840 (354-365), noting the occupants of the fourth tier and "rough-clad women," but only two "gloved women" (prostitutes?) who seem not to have been seated in the galleries. None supports--or contests--a reading of prostitutes in the third tier in Jacksonian theatre (see Johnson, who uses Jennings 113); two suggest their presence in other parts of the playhouse. As historical events, these memoirs and those cited in note 70 do not constitute sufficient observations in the binary yes-no tradition of positivist history to persuade.

69. There are notable offenders here, since prostitution, New York, and theatre are favored subjects of popularized accounts. John M. Murtagh and Sara Harris, *Cast the First Stone* (New York: McGraw-Hill, 1957) is an undocumented account of contemporary prostitution which makes a passing reference (204-205) to prostitutes among the ante-bellum Bowery Theatre's most ardent audience members: "They swarmed the galleries, using them not only for purposes of pickup, but also as places where their relations with unfinicky customers could be consummated." Less sensationally, Meade Minnigerode's *The Fabulous Forties (1840-1850): A Presentation of Private Life* (New York: G. Putnam's Sons, 1924), lists sources at its front and refers to them in the text, but has no notes. Accordingly, there is no documentation attached to his reference (155) to a "famous whispering gallery in the third tier at the Park, referred to by Mr. Haswell, which made it possible for practical jokers to inject disturbing remarks into the gallant negotiations conducted by all the young men about town with the denizens of the public haven. But it is quite obvious that 'the patronage of families' [a paraphrase of Haswell's account of the Bowery?] would scarcely have been compatible with so open an arrival at such covenants." To see how Haswell's two theatre visits are conflated and what he actually says, see Haswell. Johnson cites both Murtagh and Harris and Minnegerode, as do many historians (see note 68, for example).

70. Ministers and reformers inveighing against the theatre have left numerous observations of prostitutes there. The social implications of these are dealt with in the text. Specific sources are cited in Gilfoyle, Johnson, and in my forthcoming article. In addition to Dunlap's *History*, which in many ways set the conservative agenda in this discourse, see especially Olive Logan, *Before the Footlights and Behind the Scenes* (Philadelphia: Parmalee and Co., 1870) 537-543, and Noah M. Ludlow, *Dramatic Life As I Found It* (New York: Benjamin Blom, 1966) 478-479--a reprint of the 1880 original. As a female performer from a theatrical family that included management, Logan recalled, but only in hearsay, "the hideous abomination known as the 'third tier'" and cites at second hand the *Cincinnati Daily Enquirer*'s excoriation of it at the National Theatre there (period unspecified). Her own interests conflate prostitutes in the third tier with her *bête noir*, "the blond jiggers" ('scantily clad' showgirls and dancers) who appeared in the 1860's, both of whom she thought should be banned from the theatre.

Ludlow, who managed a company in St. Louis, reports refusing admission to his theatre in the 1830's to any woman not attended "by a gentleman, or someone having the appearance of a man of respectability, not even in the third tier." "Women notoriously of the *pave*" were never admitted, for which purpose Ludlow hired "a private policeman well acquainted with such persons by sight" and vigilant doorkeepers to keep out "lewd women and their bullies." The stake in respectability in both these accounts will be evident.

71. See in this context Foucault's "The Order of Discourse."

72. Foucault, "Truth and Power," in *Power/Knowledge* 112. The Jacksonian timespace in U.S. history is, in the extent of its transformations, not unlike the timespace that gave birth to quantum physics.

73. Stephen Nissenbaum, *Sex, Diet, and Debility in Jacksonian America: Sylvester Graham and Health Reform* (Westport, CT.: Greenwood Press, 1980) 26. Cautionary sex literature would include and is nearly limited to Cotton Mather's 1723 essay against masturbation and the anonymous *Onania* of 1724 on the same subject, and Parson Wadsworth's sermon against adultery in 1716.

74. For example, Robert Dale Owen's *Moral Physiology* (1829) and Charles Knowlton's *Fruits of Philosophy* (1832) on birth control, J. N. Bolles' *The Solitary Vice Considered* (1831) on masturbation, and Sylvester Graham's *Lecture to Young Men on Chastity* (1834).

75. These followed the 1820 founding of the New York Society for the Suppression of Vice.

76. Gilfoyle 22-23.

77. See Christine Stansell, *City of Women: Sex and Class in New York, 1789-1860* (New York: Knopf, 1986) 180-92, Marybeth Hamilton Arnold, "'The Life of A Citizen in the Hands of a Woman:' Sexual Assault in New York City, 1790-1820" 42, in Kathy Peiss and Christina Simmons (eds.), *Passion and Power: Sexuality in History* (Philadelphia: Temple UP, 1989), Marcia Carlisle, "Prostitutes and Their Reformers in Nineteenth Century Philadelphia," Ph.D. diss. (Rutgers, 1982) 89-100, for a number of issues pertaining to women, sexuality, and labor.

78. See both Gerda Lerner, "The Lady and the Mill Girl: Changes in the Status of Women in the Age of Jackson," and Stansell, "The Origins of the Sweatshop: Women and Early Industrialization in New York City," in Jane E. Friedman, et. al. (eds.), *Our American Sisters*, 3rd ed. (Lexington, MA.: D. C. Heath, 1987), for general conditions. See William W. Sanger, *The History of Prostitution* (New York: Medical Pub. Co., 1921), for specific connections between prostitution and poverty.

79. See Gilfoyle's chapter "Sexual Geography of New York, 1790-1860" 37-96.

80. Gilfoyle charts these on 84. See 102-108 for his general characterization of prostitution and theatre. Brothels advertised their proximity to theatres (see 82 and 105), with whom some shared walls and tiring space.

81. See Jennings and Haswell, note 68.

82. "Ladies of New York Look Well to This Thing," *New York Morning Herald*, 19 September 1838, 2.

83. See Ludlow, note 70.

84. Sanger 557. It is not altogether clear how "abolish the third tier" is intended, but likely a change in behavior there rather than architecture is meant. Sanger subsequently cites

(558) theatres where prostitutes were admitted to this tier, presumably meaning working prostitutes actively soliciting.

85. H. M. Ranney, *Account of the Terrific and Fatal Riot at the New York Opera House, on the Night of May 10th, 1849* (New York: June 1849, pamphlet at the New York P.L.-L.C.) 15.

86. Junius Henri Browne, *The Great Metropolis: A Mirror of New York* (Hartford: American Pub. Co., 1869) 562, gives the date 1847, but Wilentz (322) and others confirm 1845 as the year when the common constabulary in New York was abolished and a plan for 800 professional police was enacted.

87. For riots and theatre audiences see Bruce McConachie, "'The Theatre of the Mob': Apocalyptic Melodrama and Preindustrial Riots in Antebellum New York" 17-46, in *Theatre for Working-Class Audiences in the United States, 1830-1980*, eds. McConachie and Daniel Friedman (Westport, CT.: Greenwood, 1985).

88. Peter Buckley, "To the Opera House: Culture and Society in New York City, 1820-1860," Ph.D. diss. (SUNY-Stony Brook, 1984) 360. See also Frank Luther Mott, *American Journalism: A History of Newspapers in the United States through 250 Years, 1690 to 1940* (New York: Macmillan Co., 1941) 194-205.

89. The press and the theatre interacted to a considerable degree. Theatres produced reviewers' plays, had press agents who planted puffs, engaged in advertising wars, and even in horsewhipping. Such activities are detailed in my unpublished "Theatre and Democracy: Critical Bias in the Jacksonian Era."

90. For Jennings and Haswell, see note 68; Sanger is quoted in the text.

91. Stansell, *City of Women* 93-94.

92. Foucault, "Truth and Power" 133.

93. No attempt has been made at this point to eliminate overlapping in these terms and all have potential for linking historical phenomena to each other. I am grateful to Michal Koblialka for his assistance in formulating this list. Indeed, see his paper in this journal for the employment of some of the terms of spatial linkage. See Foucault, *The Order of Things* and *The Archaeology of Knowledge* for his taxonomy of functions.

94. T. S. Eliot, "Burnt Norton," in *Four Quartets* (New York: Harcourt Brace Jovanovich, 1971).