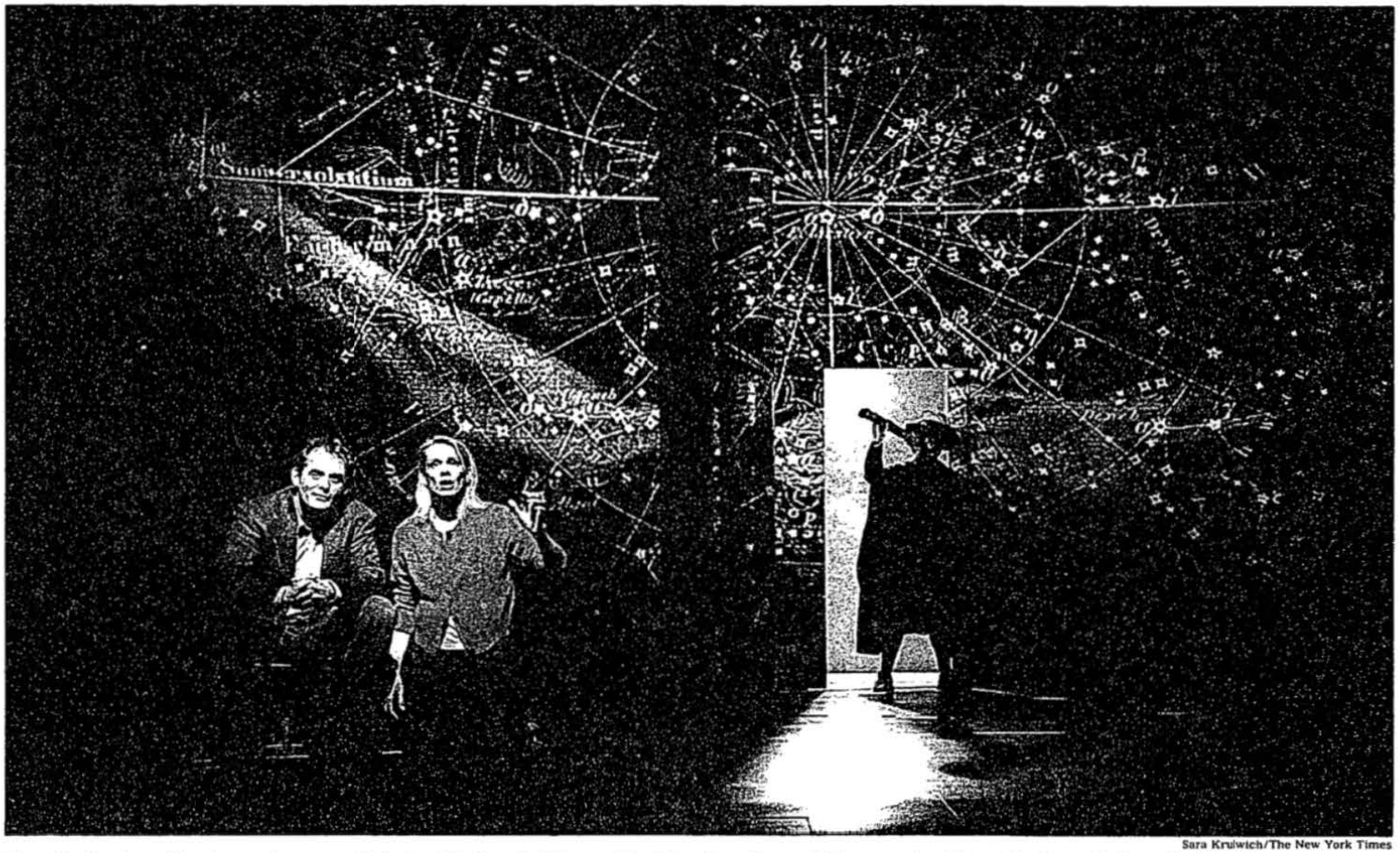


Sara Krulwich/The New York Times

Tom Irwin, Amy Morton and, at rear, Kristine Nielsen in "Space," by Tina Landau, which opens tonight at the Joseph Papp Public Theater.

Science, Infiltrating the Stage, Puts Life Under the Microscope

By ROBERT MYERS

Astrophysics, quantum mechanics, the uncertainty principle and chaos theory take on new life as metaphors.

IN 1959 the British writer and scientist C. P. Snow deplored the rift that he said existed between the arts and science. Scientists "have the future in their bones," he insisted, complaining that artists and intellectuals acted as if the future and the natural order did not exist.

As the future arrives in the form of a new millennium 40 years after Snow's "Two Cultures" lecture and essay, a number of theater artists in America and Europe appear to have science very much on their minds, if not in their bones. Indeed, they may agree with Peter Brook, the esteemed British director and writer who works in Paris, that the research methods refined by science are similar to the processes of theatrical development.

This season, in New York alone, a variety of productions involve scientific subjects. Among them is "Space," by the director and writer Tina Landau, which opens tonight at the Joseph Papp Public Theater. A meditation on astrophysics, it is based in part on investigations by Dr. John E. Mack, a psychiatry professor at Harvard Medical School, into patient accounts of alien abduction.

Robert Myers, the author of the plays "The Lynching of Leo Frank" and "Atwater: Fixin' to Die," is writing a drama about bioethics.

In the spring, the Ensemble Studio Theater will hold its second festival of plays about science. The British dramatist Michael Frayn is scheduled to speak during the festival. His recent play "Copenhagen," about the physicists Niels Bohr (the so-called father of the atom) and Werner Heisenberg (best known for his uncertainty principle, which has a role in the play) was a success in London last year and is expected to open on Broadway in April.

Currently at the Manhattan Theater Club, "An Experiment With an Air Pump," Shelagh Stevenson's play about scientific ethics set on the cusp of two centuries, continues its run through next Sunday

The American playwright Peter Parnell, meanwhile, is completing a work for the Mark Taper Forum in Los Angeles on the eccentric bongo-playing physicist Richard Feynman, who won a Nobel Prize.

"Defying Gravity," Jane Anderson's fantasy about science, art and the Challenger explosion, which has received several regional productions since it opened at the American Place Theater in New York in 1997, completes a run today at the Invisible Theater in Tucson.

Last summer, the Williamstown Theater Festival in Massachusetts presented "Quark Victory," a musical by Robert and Willie Reale about a young character's journey into an atom and through a subatomic world populated by dancing and singing electrons and neutrinos.

"Chaos," a chamber opera presented at the Kitchen last year, with music by Michael Gordon and a libretto by Matthew Maguire, involved chaos theory.

In Europe, the Piccolo theater in Milan, as part of a new series focused on science, has commissioned the Harvard paleontologist Stephen Jay Gould to write a play about Charles Darwin. The 19th-century naturalist was also the subject of a recent play in London by Timberlake Wertenbaker entitled "On Darwin."

Science and scientists have been theatrical topics at least since Marlowe's rendering of the Faust legend in the 16th century. Goethe, whose better known version was completed in 1831, was a naturalist who published numerous scientific papers and expected to be remembered more as a scientist than as a poet. Ibsen, whom Snow claims was the only writer to understand the Industrial Revolution, created such figures as Dr. Stockmann, the physician who discovers the contaminated water in "An Enemy of the People." The plays of Chekhov, who was a

Continued on Page 34

Science Leaves the Lab for the Stage

Continued From Page 7

naturalist as well as a physician, are frequently seen as diagnoses of a semifeudal society in its death throes.

In this century, everything from Karel Capek's "R.U.R.," the 1920 dystopian fable in which the word robot was coined, to Heinar Kipphardt's 1964 "In the Matter of J. Robert Oppenheimer" might fall under the rubric of plays about science, although Brecht's "Galileo," first staged in 1943, is arguably the most influential.

Among contemporary theater artists, Mr. Brook and the playwright Tom Stoppard have most consistently woven science and scientific theory into their work.

In "Hapgood," written in 1988, Mr. Stoppard constructs a spy story based on quantum mechanics. (The play's epigraph is a quote from Feynman, who refers to the basis of Heisenberg's uncertainty principle: that when an electron is fired toward two adjacent holes, it is impossible to determine which hole the electron went through without also disturbing its path.)

In Mr. Stoppard's "Arcadia," first performed in London in 1993, a literary mystery is imbued with the language of chaos theory, and a precocious female student anticipates the Second Law of Thermodynamics by 50 years.

Mr. Stoppard has repeatedly asserted that his chief interest in science derives from the fact that it is "a fertile form." At a seminar in February at the Berkeley Repertory Theater in California entitled "Mathematics in 'Arcadia' " and sponsored by the Alfred P. Sloan Foundation, which is also underwriting the Ensemble Studio Theater festival, Mr. Stoppard said: "I stumbled into a very good journalistic book about chaos, and I'm always desperately on the lookout for something to write a play about."

In the case of "Hapgood," Mr. Stoppard said: "Quantum mechanics struck me as an extremely potent metaphor for something. It took me a while to figure out that for me it was a good metaphor for the John le Carré world of spies and double agents."

Mr. Brook, who made his directorial debut with Marlowe's "Doctor Faustus," has in recent years developed plays based in part on the work of the neurologists Oliver Sacks,

As in any other field, there is a science to theater, says Peter Brook.

"The Man Who" (about perception), and Aleksandr Romanovich Luriya, "I Am a Phenomenon" (about memory).

During a rehearsal break at his Bouffes du Nord theater, Mr. Brook, whose parents were both scientists, said by telephone: "When you're a professional worker in the theater, you realize that just like in any other field there is a science. The only thing is that in the theater, from the moment one tries to say what the science is, then it isn't scientific. But it is also not accidental. Chaos theory shows that every single process in the universe, if understood, is precise.

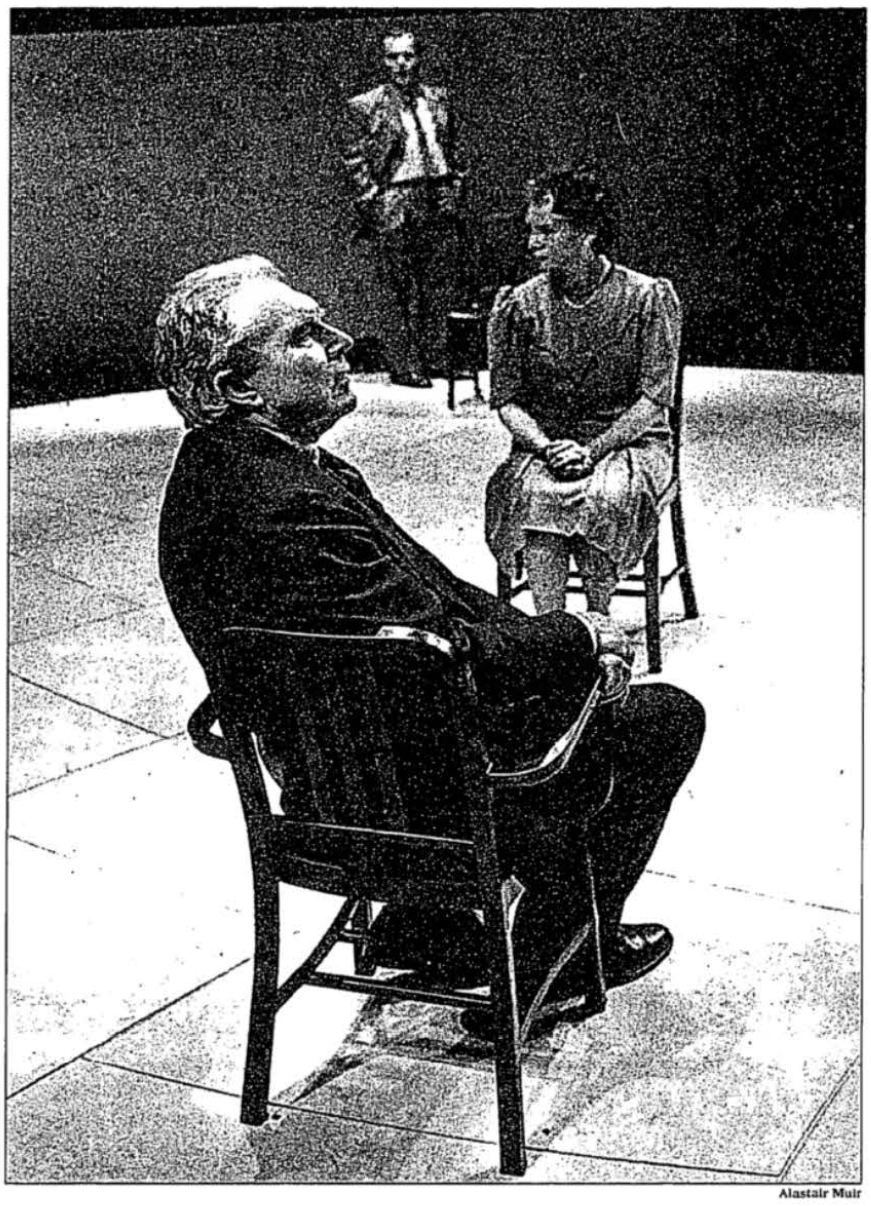
"If one takes the theater as being quite simply a microcosm in which you can look at life under a microscope, then in any situation you like, from the most banal to the most exotic, you see a series of processes. But what makes it possible to put those processes into a form that an audience can see? How that can be dramatized is a very difficult question. The fascinating things in science don't necessarily come in an obvious way through human beings."

Mr. Brook's interest in the intersection of science and theater is not confined to comparisons between theatrical development and the scientific method. "The century that we are just coming to the end of is a century in which science has taken an enormous leading part," he said.

Referring to the split between the scientific and the spiritual that antedates Snow's essay by several thousand years, Mr. Brook said that one of the functions of contemporary theater was to restore the balance between "the mystery-destroying nature of science and the mystery around the nature of science." It is, he said, "an opposition that can be transcended, that can be dramatized, as perhaps in a deep way one of the essential dramas of our time."

DR. SACKS'S studies of the brain and neurological anomalies piqued Mr. Brook's interest because of the scientist's description, in his book "The Man Who Mistook His Wife for a Hat," of the patients whose cases he studied as "mythic heroes."

"What has been rediscovered after 2,000 years," Mr. Brook said, "is what in the language of the ancient Greeks was destiny, fate and the hand of the gods. The human being struggling with his genetic destiny is no different from the hero of Greek tragedy struggling with a different form of implacable destiny. He is still a human being caught in a trap. And that's what the theater's about, and that's what tragedy's about."



Alastair Muir

David Burke, foreground, Sara Kestelman and Matthew Marsh in Michael Frayn's play "Copenhagen" in London last year. Below, Blair Brown and Robert Sean Leonard in Tom Stoppard's "Arcadia" at Lincoln Center in 1995.

Sara Krulwich/The New York Times

Mr. Frayn, who disclaims any scientific background, sees a sudden new interest in the subject in society at large, owing in part to a recent proliferation of books about science written for lay audiences. He said that in his play "Copenhagen" he was drawn to the relationship between Bohr, the renowned Danish theoretical physicist who left Germany in the 1930's, and Heisenberg, a German who stayed and headed Hitler's atomic program. The subject attracted him, Mr. Frayn said, because he was trained as a philosopher, and "the philosophical implications of quantum mechanics are so extraordinary."

The major analogy in "Copenhagen," he said, is the one "between the uncertainty of people's motivations and the uncertainty in the behavior of physical objects that Heisenberg and Bohr established in the 1920's." As the play reveals, Heisenberg's motivations for visiting his mentor in Copenhagen in 1941 remain mysterious, in spite of numerous historical studies. Was he trying to find out from Bohr if their former colleagues in America were building an atomic bomb? Was he, in spite of Gestapo surveillance of his trip, signaling to Bohr that he was trying to impede the construction of a Nazi bomb? "The journey to Copenhagen," Mr. Frayn said, "did seem to crystallize a lot of the puzzles about why people do what they do."

The playwright's participation in the Ensemble Studio Theater festival is just one aspect of what that theater's associate artistic director Chris Smith refers to as a "unique dialogue between theater and science and technology."

Mr. Smith and Curt Dempster, the theater's founder and artistic director, said a series of recent and forthcoming projects had developed largely as a result of a three-year $504,000 grant from the Sloan Foundation to foster new theatrical works about scientific issues. Among them is a seminar to be held later this month with Brian Greene, a Columbia University physics and mathematics professor and author of "The Elegant Universe," and a collaboration on a play (through next Sunday) about Darwin's legacy called "Monkey in the Middle" by Brighde Mullins, directed by Mark Wing-Davey, as part of the graduate acting program at the Tisch School of the Arts.

Out of the roughly 100 proposals for new plays that have been submitted, Mr. Dempster said, 25 authors will receive commissions totaling about $60,000 to develop plays, all of which will be presented at the festival. The centerpiece of last year's festival was a production of "Tesla's Letters" by Jeffrey Stanley, directed by Mr. Dempster, about the inventor Nikola Tesla, who developed a system of alternating-current transmission.

The initial collaboration emerged out of the Sloan Foundation's support of the Ensemble Studio Theater's 1997 production of Arthur Giron's play "Flight," about Orville and Wilbur Wright. Doron Weber, the program director at the foundation, said he was impressed by the play because he found it, "a very human approach to the subject."

"Part of my goal is to humanize scientists," he said. "We tend to have this gap, an inability to see scientists as ordinary people."

Mr. Giron is currently developing a play with foundation support entitled "Moving Bodies," about Richard Feynman, which received a reading in October.

Ms. Landau's play "Space" is the result of two years of studying science and astronomy that has, she said, imbued her with a sense of mystery. Yet, "playwrights and directors have traditionally shied away from scientific topics," she noted. "There has been this unnatural split that science and metaphor, science and poetry, don't co-exist. I believe just the opposite."

The author of the book and lyrics for Ricky Ian Gordon's recent musical "Dream True," which she directed, Ms. Landau also directed and wrote the book for the 1996 Adam Guettel musical "Floyd Collins." The idea for "Space," she said, came from many nights of stargazing in the countryside. The piece, performed on a stark stage, is choreographed as if it were a sort of futuristic celestial ballet in which space is defined by modulations of light, sound and time.

The experience of its protagonist, Allan Saunders, a neuropsychiatrist whose patients all claim to have been abducted and sexually violated by extraterrestrials, "completely dictates the form of the play," Ms. Landau said. "The rhythm of the piece corresponds to his experience of time. It crudely goes from a lot of jump cuts, a kind of time that seems familiar to us as creatures of a high-speed culture, and culminates with a two-minute silence and stillness onstage."

MS. LANDAU acknowledged that she created a difficult hurdle for herself when she chose to build her piece around the theme of alien abduction: "I have a very particular understanding of what the alien abduction phenomenon means in this play, and it is metaphorical. What is most important about it is that nothing explains it, which is a conclusion the lead character comes to fairly early on. I personally don't believe it has literally, physically happened. I do believe something is going on that is pretty fascinating."

According to Gordon Davidson, the artistic director of the Mark Taper Forum, where "Space" recently completed a six-week run, some members of his audience went into what he described as "abductee arrest."

"They were too ready to dismiss it," he said. "They called it 'New Age,' " But the play "opened my brain," added Mr. Davidson, who abandoned studies in electrical engineering at Cornell University to work in the theater.

For her part, Ms. Landau said that "Space," which includes appearances by Galileo, Darwin and Freud, is about the limits of scientific knowledge, not the paranormal. The director said she shared with her characters a desire to find a more "holistic" approach to experience, a marriage of faith and reason that transcended the disjunctures and compartmentalization that she believed characterize contemporary life. Although aware of the danger of blurring the distinctions between science and pseudoscience, especially in a country in which so-called creation science has so many ardent proponents, Ms. Landau said she was searching for a stage poetry that "balances the scales."

Mr. Brook also sees one of theater's roles as reinstating the ineffable and magical. "There was a long period in our century in which the rational arguments of science seemed to sweep away all the mumbo-jumbo of mystery and religion," he said. "The theater exists always to restore that balance."

Asked if he believed playwrights and directors were turning to plays about science because they envied the creative power of scientists, Mr. Brook replied: "Oh, God, no. I think it's the other way around. I think the scientist is furiously jealous of what for 2,000 years has been the capacity of the imagination to leap into creating. Look how many lives Shakespeare created, and he didn't have any instruments to help." □