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HILLARY RODHAM CLINTON
REMARKS FOR WHITE HOUSE MILLENNIUM EVENING
LECTURE BY STEPHEN HAWKING
EAST ROOM
MARCH 6, 1998

I am honored to join the President in welcoming you to the East room of the White House for our second Millennium Evening. I'd like to begin by thanking everyone who has made this event possible, especially our honored speaker, Professor Stephen Hawking; Ellen Lovell, director of the White House Millennium Council; the National Endowment for the Humanities and all the state humanities councils; and Sun Microsystems, which is providing the technology to simultaneously bring this lecture to the world -- and preserve it for posterity. A special welcome to Americans across the country who are joining us via cybercast and satellite -- some of whom will be posing questions to Professor Hawking after his remarks.

I also want to mention that among our special guests tonight are students from area colleges and universities who we invited not only because we thought they would be inspired by tonight's lecture, but also to remind all of us of the critical importance of keeping our future leaders on the cutting edge of science, math and technology -- the tools they need to unlock the extraordinary possibilities of the future.

Tonight's lecture by Stephen Hawking continues a series of gatherings with scholars, scientists, and creative individuals here at the White House that will commemorate and celebrate America's millennium. Over the next three years, we hope to inspire all Americans to come together to mark this milestone in our history by "honoring the past and imagining the future." It's an exciting opportunity for conversation and collaboration -- a time to take stock of who we are and who we want to be -- and what we want to carry into the next century, not only as individuals and families, but as local communities and as a nation.

A few weeks ago, we inaugurated this Millennium lecture series with a talk about America's founding ideals of freedom and democracy by one of our nation's leading American historians, Professor Bernard Bailyn from Harvard University. (That was also the first cybercast ever from the White House -- another historic moment).

Tonight, we leap beyond traditional boundaries of historical time and place, and hear from a man who has pushed back the frontiers of science, and revolutionized our understanding of the universe in which we live. Almost 25 years ago, Stephen Hawking was formally inducted into the Royal Academy in London -- one of the most ancient scholarly organizations in the world. As part of that ceremony, he signed his name in a book that bore the signature of Isaac Newton on one of its earliest pages. Stephen Hawking even then, was a legendary figure -- and has since come to be viewed, along with Newton and Einstein, as one of the most brilliant physicists of our time.

Even as a young student, Stephen Hawking was drawn to science and the study of physics. "I always wanted to know how everything worked," he once said. He chose the same undergraduate college as my husband -- University College, Oxford University -- and it was here that his extraordinary mind for math and the sciences was first recognized. (It should hearten some of the students here tonight that Hawking's "casual study habits" put him on the borderline between first and second class honors -- necessitating an oral exam. It didn't take long for the examiners to realize that they were talking to someone far more clever than most of them.)

He entered Cambridge University to study cosmology -- and in particular, the area of physics which describes the evolution of the universe. Since then, he has applied his prodigious talents to expanding our understanding of the laws of the cosmos, and seeking answers to such fundamental questions as "where did the universe come from?" and "can we predict the future?" Professor Hawking -- who has received numerous prizes and honors including the Commander of the British Empire in 1982 and twelve honorary degrees -- is a Fellow of the Royal Society and a Member of the U.S. National Academy of Sciences. He's currently the Lucasian Professor of Mathematics at Cambridge University -- a post held, once again, by fellow explorer Sir Isaac Newton.

Luckily for many of us, in addition to his many scholarly works, Professor Hawking has written a book aimed at a "lay" audience -- in the hopes of educating the general public about his "big bang" theory of the beginning of time; the notion of an expanding universe, and the existence of "black holes." That *A Brief History of Time* has become the best selling science book ever -- 9 million copies around the world, and translated into 300 languages -- testifies to the success of his mission. And I must admit, I've been heartened by some of what I read in that book. "Present evidence suggests," he writes, that "even if the universe is going to recollapse, it won't do so for at least another ten thousand million years." That certainly gives us some time to get things right.

Through his investigations of the laws of science, Stephen Hawking has surely helped millions of people here and around the globe to "imagine" the past and even the possible future of our vast universe. Yet it's his inner courage, in the face of great physical odds -- that is perhaps the even greater inspiration.

As many of you know, Professor Hawking has what we now know as "Lou Gerig's Disease," a degenerative nerve disease that has deprived him of almost all He will speak to us tonight, and later answer questions from the audience, through.....

He exemplifies the enduring spirit of imagination that sees no boundaries -- only possibilities.

Professor Hawking has said: "My goal is simple. It is complete understanding of the Universe." Tonight, we honor his life of study and accomplishment; his extraordinary imagination; his relentless questionings; his sense of humor, and his humanity. With his refusal to allow the study of the universe to remain solely the property of physicists like himself, Professor Hawking is ensuring that all of us can, in some measure, participate in the wonder and

the awe of the cosmos.

It is a true honor and pleasure to introduce to you tonight Professor Stephen Hawking, who will speak to us about “Imagination and Change: Science in the Next Millennium.”

STEPHEN HAWKINGS

A BRIEF HISTORY OF TIME

Greetings/welcome to second White House Millenium Evening. We've organizes these meetings thank you to Ellen, sponsors; honor the past; imagine the future;

Stephen Hawking: \ victim of LAS -- motor neuron disease; or Louuu Gehrig's disease; Wife Jane; children Robert, Lucy, and Timmy; helped me to lead fairly normal life and successfl career; "So my disability has not bee an serious handicap;

in 1985: had a tracheostomy which removed ability to speak; but thanks to communications program called Living Center, donated by Walt Woltosz, Words plus inc. of sunnyvale, California; can write books and papers; speak to people using speech synthesizer;

some of questions: where did the universe come from? how and why did it begin? will it come to an end, and if so, how? origins and fate of the universe;

Carl Sagan says only children don't know enough not to ask the important questions.

in spring of '74 -- two years before Viking spacecraft landed on Mars; was in England; saw ancient rite of investiture of new fellows in the Royal Academy; one of most ancient scholarly organizations on planet; saw someone in wheelchair; signing his name in a book that bore on its earliest pages the signatirue of Isaac Newton; Stephen Hawking "was a legaend even then."

now Lucasian Professor of Math at Cambridge University (?) a post once held by Newton -- and later by PAM Dirac, -- two celebrated explorers of the very large and very small;

this is Hawkins first book for law audience; frontiers of physics; atronomy, cosmoloy and courage;

Hawkings has embarked on a quest;

starts with Aristotle in 340 BC; one of first to argue world was round; 1514: nicholas Copernicus: sun was stationary and wearh and plants moved in orbits around the sun; followed by Kepler and Galileo; observed through telescope; sir Isaac Newton in 1687: how bodies move in space and time; developed complicated math to anaylze motions; also law of universal gravitation; 1929: Edwin Hubble; wherever you look distant galaxies are moving rapidly away from us; universe is expanding; was a time, perhaps about ten or twenty thousand million years ago, when everything in same place and density was infitie; big bang theory; one may say that time had a beginning at the big bank, in the sense that earlier times would not be definee;

ific research that, in his begins at conception. A lterally funded family-nator himself favors pro-to save the mother's life, orts he has preferred to he individual states. His ent to the Constitution, ed the states to outlaw or ns, was rejected by the 1 vote.

ning for a fourth term in under fire when syndi-erson disclosed that Mrs. 1,000 from the Greek ens, the founder and chair-pipeline Corporation, of line project Senator Hat-pporter. Tsakos and the the sum was a payment s; a real estate agent, she or a residence and office given Mrs. Tsakos advice l had counseled the cou-nents in Europe and the the senator had written eline proposal and had ns with Secretary of En-d Senator James A. Mc-e Senate Committee on sources, among others, s given Mrs. Hatfield as t to the senator for using 'sakos' project. That view r employees of Tsakos . Hatfield had rendered the senator's financial-ealed several large, out-ields. Hatfield freely act of the pipeline but just to assume a connec-d that of his wife.

nd his wife told a press ctually received a total of that they were donating While admitting that he at" by not asking his wife n Tsakos once he himself pipeline proposal, he de-aded that as a public of-ven the appearance of Department launched an d Senator Hatfield also n by the Senate Ethics ttee found insufficient er investigation into the ct but reserved the right justice Department were evidence against him. ome six-footer with blue hair, Mark Hatfield has 'goodness as palpable as ouise Sweeney. He is, by unpretentious and amla-

ble, and his wide circle of friends includes a num-ber of legislators and government officials, among them Senator John C. Stennis of Mississippi, a no-torious hawk whose views are diametrically op-posed to his own. In his rare free moments the senator gardens, studies theology and philosophy, or reads political biographies and novels. Married since July 8, 1958, Hatfield and his wife, the former Antoinette Marie Kuzmanich, a real estate broker and the author of several cookbooks, have four children: Elizabeth, Mark Odom Jr., Theresa, and Charles Vincent. Senator Hatfield has lectured ex-tensively, and he has written many articles and several books, among them *Conflict and Conscience* (Word, Inc., 1971) and *Between a Rock and a Hard Place* (Word, Inc., 1976), about his evangelical faith and its relationship to his political life.



Hawking, Stephen W(illiam)

[Jan. 8, 1942- British physicist. Address: h. 5 West Rd., Cambridge, England.]

Stephen W. Hawking, the Lucasian professor of mathematics at Cambridge University, is widely regarded as the most brilliant theoretical physicist since Albert Einstein. Hawking is, in his own words, "primarily interested in gravity—on all scales," from the galactic vistas of Einstein's general theory of relativity, where stars live and die with predictability, to the subatomic world of quantum mechanics, where elementary particles behave unexpectedly. He is best known for his calculations

Once, when on a trip to India, Hatfield was as-sured by Mother Teresa of Calcutta that in strug-gling against the abysmal poverty around her, the Lord had not called her to be successful, only to be faithful. Hatfield has said: "I'm not Mother Teresa, but I take a pragmatic view and can recall that to my own role." On November 6, 1984 he was elected to a fourth term in the Senate, defeating the Demo-cratic challenger, Oregon State Senator Margie Hendricksen.

References: *Christian Sci Mon B* p1+ Je 17 '82 por; *Christianity Today* p18+ O 22 '82 por; *N Y Times B* p10 Ap 1 '82 por, IV p4 S 30 '84; *Newsweek* 78:21 J 19 '71, 88:75 O 25 '76, 104:43 Ag 20 '84 por; *Time* 94:60 S 19 '69; *Contemporary Authors* vols 77-80 (1979); Douth, George. *Leaders in Profile* (1975); Eels, Robert and Nyberg, Bartell. *Lonely Walk* (1979); *Who's Who in America, 1984-85*; *Who's Who in American Politics, 1983-84*

of the physics of the hypothetical apertures in the fabric of space-time known as black holes. Those calculations have advanced the prospect of a unified field theory reconciling the varying laws of general relativity, quantum mechanics, and classical thermodynamics in its description of how our universe began and how it works. Hawking's ability to soar creatively in cosmological thought has been abetted by a severe physical disability: since 1963 he has been afflicted with the slow, wasting neuromuscular disorder popularly known as Lou Gehrig's disease, for which there is no known cure.

The oldest of four children of Frank Hawking, M.D., a prominent research biologist, Stephen William Hawking was born on January 8, 1942 in Oxford, England. He grew up in London, where his father headed the division of parasitology at the National Institute for Medical Research, and in the London suburb of St. Albans, where he was a good but not outstanding student at St. Albans School. "I always wanted to know how everything worked," he told Dennis Overbye in an interview for a profile in *Omni* (February 1979). "I would take things apart to see how they worked, but they didn't often go back together."

Hawking was drawn to science from his earliest years, but he decided not to follow his father into medicine and biology because he felt that "the biological subjects were too inexact, too descriptive," as he explained to Overbye. "It is only with molecular biology that the basic interactions have come to be studied." In 1959-60, his first year at University College, Oxford University, he read mathematics, and he took up physics the following year. "He did very little work, really, because anything that was do-able he could do," Robert Berman, his physics tutor, recalled, as quoted by Michael Harwood in the *New York Times Magazine* (January 23, 1983). "It was only necessary for him to know that something could be done, and he could do it

In the
presence of
such a mind
I find a few
words of
comfort -

HAWKING

without looking to see how other people did it. . . . He didn't have very many [books], and he didn't take notes. Of course, his mind was completely different from all of his contemporaries', and he did, I think, positively make an effort to come down to their level and, you know, be one of the boys. . . . He coxed the college second eight, and he was very popular." Hawking's independent ways and casual study habits resulted in a final examination score that put him on the borderline between first and second class honors, necessitating, as Berman recounted, an oral exam. "And of course the examiners then were intelligent enough to realize they were talking to someone far cleverer than most of themselves."

Before receiving his B.A. degree at Oxford, in 1962, Hawking considered staying on at the university for graduate work in astronomy, but the observatory there was equipped only for the observation of sunspots, "and, anyway," as he explained to Dennis Overbye in the *Omni* interview, he "was always more interested in theory than in observation." He decided he had "better go to Cambridge, where they did have work on theoretical astronomy" and cosmology, which applies creative thinking as well as scientific knowledge to the study of the character of the universe. Hawking found cosmology "exciting, because it really did seem to involve the big question: Where did the universe come from?"

No sooner had Hawking installed himself under the tutelage of the cosmologist Dennis W. Sciama at Cambridge University than he was struck by what he calls "that terrible thing"—amyotrophic lateral sclerosis, an incurable deterioration of the motor neurons of the spinal cord, medulla, and cortex. It disables skeletal muscles, affecting speech, swallowing, limbs, and shoulders and usually ending in fatal atrophy of the chest muscles. On the bright side, if it may be called that, it is, according to its victims, painless, and, fortunately for a thinker such as Hawking, it does not affect the brain or the senses.

Depressed by the prospect of progressive physical atrophy and, perhaps, early death, he made little progress in research during his first two years at Cambridge. Then the disease began to stabilize, and it appeared that he would survive, albeit disabled. With the encouragement of Sciama, he summoned his natural buoyancy and returned to work on his Ph.D. degree. The real "turning point," in his view, was his marriage to Jane Wilde, a student of languages, in 1965. "It made me determined to live," he recalled, as quoted by John Boslough in *Science* '81 (November 1981), "and it was about that time that I began making professional progress."

Hawking made that initial progress in collaboration with his friend and Cambridge colleague Roger Penrose. He and Penrose applied a new, intricate mathematical method of their own devising to the general theory of relativity, developed by Albert Einstein to explain how gravity affects the behavior of the universe and its large systems. Out

of Einstein's predictions came the concept now known as the black hole, a term coined by the Princeton cosmologist John A. Wheeler to denote a cosmological mystery that has fascinated astrophysicists for decades. As explained by Karl Schwarzschild, Robert J. Oppenheimer, and others, one of the ways a black hole might be created is by the gravitational collapse of a star of sufficient mass (ten times that of our sun). When the dying star exhausts its thermonuclear fuel, it succumbs to the pressure of its own gravity and collapses inward, shrinking to a point of such density that not even light can escape to infinity. The star is obliterated from the observable universe, and in its place is left a ghostlike pocket of gravity sucking any object within its "event horizon" toward its vortex, known as a "singularity," a particle of infinite density, zero volume, and infinite gravitational field.

In such a particle, space is "bent" and time as we know it ends. "Because all known laws of physics are formulated on a classical space-time background, they will all break at a singularity," Hawking has pointed out. "This is a great crisis for physics because it means one cannot predict the future. One does not know what will come out of a singularity." Most astrophysicists assumed that singularities would prove to be only mathematical artifacts, because, according to Newtonian principles, such a contraction to infinite density could not happen in the real universe. In a paper he published in 1965, however, Penrose demonstrated that, for a singularity to occur, the gravitational collapse of a star need not proceed in a smooth, symmetrical manner and could thus actually occur if certain conditions were met in the physical universe.

In effect, Penrose proved that, if general relativity is correct, space-time can reach a singularity. The following year, Hawking adapted the same method to show, inversely, that "time has a beginning," that our universe need not be perfectly smooth in its evolution to have come out of a singularity. Taking into account the theory of general relativity and the observable asymmetry of our universe, he demonstrated that one could run the cosmic clock backward to the singularity in which the "Big Bang" occurred, sixteen or seventeen billion years ago. "The big question," he later explained, "was, Was there a beginning or not? Roger Penrose and I discovered that, if general relativity is correct, there did have to be a beginning."

Hawking's theorem was first argued in the last chapter of his "Properties of the Expanding Universe," the thesis for his Ph.D. degree, which he received in 1966. Remaining at Cambridge as a fellow of Gonville and Caius College, as a member of the graduate staff of the Institute of Theoretical Astronomy, and as a member of the department of applied mathematics, he, together with Penrose, refined his mathematical techniques and further developed his predictions about singularities, the space-time continuum, and the fate of matter in the path of that continuum. "This work," he later recounted, "culminated in a general all-purpose sin-

gularity theorem of Hawking. Included in that theorem while singularities cannot violate the manifold black holes in which they their surface boundaries which would be calculable.

"The first hint that there is a connection between black holes and singularities," Hawking recounted in his *Mechanics of Black Holes*, "came in a January 1977 *Scientific American* article on a mathematical discovery of the event horizon of a black hole, has the property that when additional matter is added to a black hole, the resulting horizon area is greater than the original area. This suggested an analogy with the second law of thermodynamics, the second entropy always increases."

The analogy between black holes and the laws of thermodynamics was first made by Hawking, James M. Bardeen, and Stephen W. Hawking when they related a black hole to a change in entropy. The event horizon, a temperature, keeping with the first law, which says that a small system is accompanied by the energy of the system. The standing of the entropy of a black hole, Carter, and others, followed by Jacob D. Bekenstein's "no-hair" theorem, so that a black hole preserves its collapse entity other than angular momentum, and a "fatal flaw" in B. Hawking explained in his article, was "that if a black hole is proportional to the area of the event horizon, it ought to have a finite temperature proportional to its surface area. This would imply that a black hole with thermal radiation other than zero." According to the "no such equilibrium is possible" a black hole would absorb anything on it but by definition emit nothing in return.

Hawking resolved the paradox of large black holes, which was assumed to apply, the study of minuscule black holes is that of subatomic particle mechanics, a theory accepted because of its intrinsic theory supposes that space is full, teeming with particles that are forever interacting each other out. Using

came the concept now known as a singularity, a term coined by the physicist Stephen W. Hawking and Roger Penrose. It has fascinated astrophysicists ever since. As explained by Karl S. Thorne, "The black hole might be created at the center of a star of sufficient mass (like our sun). When the dying star runs out of nuclear fuel, it succumbs to its own gravity and collapses into a point of infinite density. The star is obliterated, and in its place a black hole is born, sucking any matter that comes near toward its vortex, a particle of infinite density in an infinite gravitational field. Time is 'bent' and space is 'curved' as we know from the laws of physics. In the vicinity of a singularity, the laws of physics break down. This is a great crisis for physics, for we cannot predict the future. What will come out of a black hole? Physicists assumed that since the laws of physics are only mathematical approximations to the real universe, in a paper published in 1974, however, Penrose demonstrated that the singularity need not proceed in a predictable way and could thus actually be avoided. In the

case of a singularity, general relativity can reach a singularity. Hawking adapted the same theory, that "time has a beginning and need not be perfectly predictable. It may have come out of a singularity. The theory of general relativity predicts a singularity at the center of a black hole, but the theory of quantum mechanics suggests that one could run the clock backward to the singularity in which the universe began. In 1974, he later explained, "beginning or not? Roger Penrose said that, if general relativity is correct, the universe must have a beginning." Hawking first argued in the last few years of the Expanding Universe, his Ph.D. degree, which he received at Cambridge as a member of the Institute of Theoretical Physics. He was then a member of the department of physics at Cambridge, together with Penrose, and he was working on techniques and further about singularities, the fate of matter in the universe. This work, he later recognized, was a general all-purpose sin-

gularity theorem of Hawking and Penrose in 1970." Included in that theorem was the prediction that while singularities cannot be observed, because they violate the manifold of space and time, the black holes in which they occur can be detected by their surface boundaries, the event horizons, which would be calculable as wave-fronts of light.

"The first hint that there might be a connection between black holes and thermodynamics," Hawking recounted in his paper "The Quantum Mechanics of Black Holes," published in the January 1977 *Scientific American*, "came with the mathematical discovery in 1970 that the surface area of the event horizon, the boundary of a black hole, has the property that it always increases when additional matter or radiation falls into the black hole." Moreover, he went on, if two black holes merge, the resulting black hole has an event horizon area greater than the sum of those of both. This suggested an analogy to the concept of entropy—a measure of the disorder of a system—in thermodynamics, the second law of which is that entropy always increases with time.

The analogy between the properties of black holes and the laws of thermodynamics was extended by Hawking, James M. Bardeen, and Brandon Carter when they related the change in mass of a black hole to a change in the area of the hole's event horizon, a temperature-proportionality in keeping with the first law of thermodynamics, which says that a small change in the entropy of a system is accompanied by a proportional change in the energy of the system. Seeking a clearer understanding of the entropy of a black hole, Hawking, Carter, and others, following a suggestion put forth by Jacob D. Bekenstein in 1972, arrived at the "no-hair" theorem, so called because it predicts that a black hole preserves no details of its pre-collapse entity other than the parameters of mass, angular momentum, and electric charge. The apparent "fatal flaw" in Bekenstein's suggestion, as Hawking explained in his *Scientific American* article, was "that if a black hole has a finite entropy that is proportional to the area of its event horizon, it ought to have a finite temperature, which would be proportional to its surface gravity," and "this would imply that a black hole could be in equilibrium with thermal radiation at some temperature other than zero." According to classical concepts, "no such equilibrium is possible because the black hole would absorb any thermal radiation that fell on it but by definition would not be able to emit anything in return."

Hawking resolved the paradox encountered in large black holes, where only general relativity was assumed to apply, only after turning to the study of minuscule black holes, the scale of which is that of subatomic particles, the domain of quantum mechanics, a theory Einstein did not fully accept because of its intrinsic uncertainty. Quantum theory supposes that space is not empty but, rather, full, teeming with pairs of particles and antiparticles that are forever materializing and canceling each other out. Using quantum theory, Haw-

king reasoned that there could be black holes other than those formed in the death throes of stars and that millions of such holes, the size of subatomic protons, could have been thrust into existence by the force of the primordial Big Bang.

Carrying quantum mechanics over into his investigation of what the behavior of matter in the vicinity of a black hole would be, Hawking found, to his great surprise, and consternation, that "the black hole seemed to emit particles at a steady rate." At first reluctant to believe his own finding, he finally became convinced that "it was a real physical process" because "the outgoing particles have a spectrum that is precisely thermal." While large black holes emit particles slowly, he predicted, mini-holes, emitting at a much higher temperature, eventually explode, becoming "white" holes from which energy and particles gush.

The prediction that "the black hole creates and emits particles just as if it were an ordinary hot body with a temperature that is proportional to the surface gravity and inversely proportional to the mass" made fully consistent Bekenstein's suggestion that a black hole had a finite entropy, because the prediction implied that a black hole could be in thermal equilibrium at some finite temperature other than zero. Hawking's mini-black hole calculations also provided an answer to the puzzle of the "missing mass" necessary to close the universe. According to those calculations, the unpredictability of the particles at the frontier of a black hole was even greater than that which was usually associated with quantum mechanics. Usually, either the position or the velocity of particles was unpredictable. In this instance, neither one was predictable. As Hawking observed in the *Scientific American*, "It therefore seems that Einstein was doubly wrong when he said, 'God does not play dice.' Consideration of particle emission from black holes would seem to suggest that God not only plays dice but also sometimes throws them where they cannot be seen."

Hawking presented his mathematical evidence that a black hole could emit thermally in the paper "Black Hole Explosions?," delivered at an Oxford University symposium in February 1974. Most of his startled colleagues at first rejected the evidence. Even after the evidence was confirmed by others using various different approaches, it continued to represent perhaps the greatest challenge ever presented to theoretical physics. In unreconstructed general relativity theory, black holes could only get larger and could not emit anything. But, from the point of view of quantum mechanics, black holes could literally evaporate and explode, causing entropic disorder. The "Hawking radiation," as emissions from black holes came to be known, demonstrated dramatically that black holes did not exist apart from the rest of the universe but, despite severance from the space-time continuum, affected it in important ways. Additionally, for cosmologists, the possibility that black holes emit matter strengthened their link to the Big Bang theory of the origin of the universe.

HAWKING

Named a research assistant in the department of applied mathematics and theoretical physics at Cambridge in 1973, Hawking was promoted to professor of gravitational physics in 1977. Because of his physical handicaps he was exempted from arduous lecturing and teaching duties and was thus given the freedom to concentrate singlemindedly on his research. The most far-reaching result of Hawking's black hole research has been its contribution to the advancement of the nascent theory of "supergravity," the most likely unifier of the quantum and general relativity theories. In the lecture Hawking gave on the occasion of his inauguration as Lucasian professor of mathematics at Cambridge on April 29, 1980, he pointed out that a unified field theory would have to reconcile four kinds of interaction known to physics: "In order of strength they are the strong nuclear force, which works only at the atomic level; electromagnetism; the weak nuclear force, which controls radioactive decay; and finally, the weakest by far, gravity, which interacts with everything. . . . At the moment the only candidate to unify all four forces is supergravity, which relates particles with vastly different characteristics through a theory called supersymmetry. . . . If the theory survives testing, it will probably be some years before we develop computational methods that will enable us to make predictions and before we can account for the initial conditions of the universe as well as local physical laws."

With G. R. R. Ellis, Hawking wrote *The Large Scale Structure of Space-Time*, published by Cambridge University Press in 1973, and he collaborated in the editing of the Cambridge University Press volumes *General Relativity: An Einstein Centenary Survey* (with Werner W. Israel, 1979) and *Superspace and Supergravity* (with M. Röcek, 1981), the proceedings of the 1980 Nuffield Workshop at Cambridge. He is a member of the prestigious Royal Society of London, and his many honors include the Albert Einstein Award, the Maxwell Medal, and several honorary degrees.

Stephen W. Hawking is slight, weighing no more than 120 pounds, and boyish looking, except for the wrinkles around his eyes. In his waking hours he is confined to a motorized wheelchair, the operation of which is one of the few things he can do physically. He controls the movement of the wheelchair by the pressure of his left hand, the only limb that retains a vestige of power. Unable to hold a book, he reads with the aid of an automatic page-turner. While he can use a computer especially adapted for him, he cannot write, and his indistinct speech is understandable only to those who know him well, who interpret for visitors. His writing is done in his head and dictated to a secretary.

Blessed with a superior memory, Hawking uses his brain as a mental blackboard. "I tend to avoid equations as much as possible," he told Michael Harwood in the *New York Times Magazine* interview. "I simply can't manage very complicated equations, so I have developed geometrical ways of

thinking instead. I choose to concentrate on problems that can be given a geometrical, diagrammatic interpretation. I can manage equations so long as they don't involve too many terms. . . . Often I work in collaboration with someone else, and that is a great help, because they can do all the equations."

Don Page, one of the favored few of Hawking's protégés (he lived with the Hawking family during three years of post-doctoral work at Cambridge), explained to Harwood that the necessity of working in his head forces Hawking to "get really to the heart of the matter and try to eliminate inessential details." This gives his papers "a great deal of elegance and beauty, because they really speak of the essential things, although sometimes it does have the unfortunate aspect that those of us who don't understand all the details may find some connecting arguments missing." Hawking's necessity is theoretical physics' gain, because the *sine qua non* of the expansion of the frontiers of the science is not precise calculation but great organizational ideas from which such calculation can issue. Hawking comes up with the overview principles and leaves the working-out of technical details and the comparison with practical experimentation to his collaborators. He arrives at new ideas by an intuitive leap and then tries to justify it by filling in the intermediate steps. If the intermediate steps do not work, he gives the idea up.

Hawking and his wife, Jane, have two sons, Timothy and Robert, and a daughter, Lucy. The Hawkings live on the ground floor of a Victorian mansion owned by Cambridge University, a ten-minute wheelchair ride from Hawking's office. "I think Stephen has achieved an important ambition—to extend the bounds of human knowledge by just one step," Mrs. Hawking said when Dennis Overbye interviewed her for the *Omni* article. "Not many of us are in a position to do it. . . . He hasn't wasted any of his talents at all. In fact, he's intensified them." Hawking himself told Overbye that he is "happier now" than he was before the onset of his illness: "I was very bored with life. I drank a fair bit, I guess; I didn't do any work. . . . When one's expectations are reduced to zero, one really appreciates everything that one does have." In his *Science* '81 article, John Boslough described his first encounter with Hawking as "shocking." "His condition seems far worse than one expected," Boslough wrote. "But after a short time with this gentle, witty man, one forgets the illness." Hawking told Boslough: "My goal is simple. It is complete understanding of the universe."

References: *N Y Times Mag* p16+ J 23 '83 pors; *Omni* 1:44+ F '79 por; *Science* '81 2:66+ N '81 pors; Boslough, John. *Stephen Hawking's Universe* (1984); McGraw-Hill *Modern Scientists and Engineers* (1980); *Who's Who*, 1984-85



Hersh, Seymour (I)

Apr. 8, 1937- Investigative reporter. Address: b. 1236 National Avenue, Washington, D.C. 20004 NW, Washington, D.C.

During the 1960s and 1970s, Hersh's articles in the press about Vietnam and other issues at home and abroad made him an investigative reporter. Seymour Hersh was a master of the government on the massacre at My Lai, which was reinforced by CIA domestic spying. Kissinger's aides, among others, charged that Hersh used his extensive information in award-winning articles. His four controversial books were a brief excursion into the life of Senator Eugene J. McCarthy in the New Hampshire primary. When asked what drove him to make such journalistic inquiries, he said, "I want to know the truth."

Seymour Myron Hersh was born Apr. 8, 1937 in Chicago, Ill. (Margolis) Hersh, "the boy from the hood," spent his childhood "while growing up in the South Side and older sisters, also on the South Side. His father ran a small business, and Seymour sometimes used his father's car to go to work. He wanted to be a writer. After graduating from Chicago for three-and-a-half years, he earned a B.A. degree in history from the University of Chicago law school. He was the cause of poor grades.

Talking Points for Mrs. Clinton

Millennium Meeting with Women's Magazine Editors

3/17/98

- We stand at the convergence of a new century and the next millennium -- a milestone in human history. As Americans and people all over the globe anticipate the new millennium, we have the great opportunity to reflect on our past, assess our present, and envision our future.
- The millennium gives us a framework to explore our history, culture and discoveries, and affirm the values we want to carry with us into the future.
- There are uniquely American ways to mark this milestone. People want to make meaning of the millennium -- to have more than a big New Year's party. That is why we created the White House Millennium Council last summer, to set some themes, offer ideas, engage the federal agencies and invite all Americans to participate.
- The overall theme of the White House millennium programs is "Honor the past, imagine the future." The President invited Americans to "give gifts to the future," to leave behind something meaningful to enrich future generations. Much of the White House millennium efforts will highlight the creativity and inventiveness of the American people through our art, ideas and scientific discoveries.
- The 20th Century in America has seen an explosion of creativity and technology. Periodicals, radio and television have come of age in the latter half of this century. These media have spread ideas and exported our values and culture to the world. Magazines have a special role to play in bringing people some common experiences of this millennium milestone.
- The year 2000 also coincides with some important American anniversaries: the 200th anniversary of the White House; the 200th anniversary of the first meeting of Congress in the new Capitol, and the bicentennial of the Library of Congress. We believe that this is a time to learn; it is also an opportunity for civic engagement and to celebrate the enduring strength of our democracy.
- To help us honor the past and imagine the future, we are beginning a series of Millennium Evenings at the White House, inviting historians, other scholars, scientists, and creative individuals from many fields to share their insights. These presentations are being broadcast via satellite all over the nation where people can listen and have their own discussions.
- We began our Millennium Evenings on February 11 with a great American historian, Professor Emeritus at Harvard University, Bernard Bailyn. The series continued on March 6, with renowned physicist, Stephen Hawking, Professor at Cambridge University, discussing "Imagination and Change: Science in the Next Millennium."

- Last month's lecture by Bernard Bailyn was the first cybercast ever from the East Room of the White House. The internet audience was invited to participate by sending questions for the lecturer, some of which were responded to during the evening's discussion. Both lectures were also broadcast via satellite and was downlinked to watch sites. Thousands of people saw the Stephen Hawking lecture at 190 sites, and on CSPAN. During the lecture we received two e-mails per second -- from all over the world.
- The White House itself is the oldest, continuous venue of significance for the arts in the United States. On March 9 we presented the first in a series of Cultural Showcases at the White House, to highlight unique American forms of art, to recognize both our masters and our new talent. In this "In Performance at the White House" event to be broadcast by WETA, the PBS station, we showcased four popular American dance forms that sprang from our diversity and influenced the development of American dance.
- We are working with graphic designers to develop a logo to give the millennium a national visual identification. (We hope to have a design by late May.)
- We are working with the federal agencies, which are coming up with imaginative ideas within their own missions. For example, with the National Endowment for the Humanities, we will launch a national program to record the stories of Americans of all kinds at the end of the 20th century. A national oral history project, engaging young people to interview their elders, would build on the NEH family history program to be announced this spring, called "My History is America's History."
- When we announced the White House effort, we also invited elected officials to create programs and celebrations at the state and local levels. Many cities and towns are already forming Year 2000 Committees: they are organizing in New York, Boston, Chicago, Denver, Seattle, Little Rock, Cincinnati and other places. We will recognize the most imaginative local projects with the designation of "Millennium Community."
- The millennium is international. The President announced that the United States will participate in Expo 2000, the World's Fair in Hannover, Germany. We are talking to other countries -- Canada, the U.K., France, Italy, the Czech Republic, even Iceland -- about their programs. We are interested in hosting an international millennium meeting here at the White House.
- We also plan a few national initiatives that we think will engage many Americans in saving our historical and cultural heritage. Our past is literally disintegrating in our libraries, museums, archives, and at our historic sites and monuments. To imagine our future, we must take what we value with us into the new millennium.
- The President is proposing a modest fund -- \$50 million in each of the next three fiscal years -- to stimulate a national preservation effort to "Save America's Treasures."

- The fund would be administered through the Department of Interior. Half would be allocated for the most urgent preservation projects of regional and national significance, identified by the federal agencies and institutions. Half would go to the states, through the Divisions of Historic Preservation. (Each State Historic Preservation Officer is appointed by the Governor, and the Divisions would consult with state museum, library, arts and humanities experts to identify the state's most urgent preservation priorities.)
- Some of the treasures we know need saving include:
 - The highest priority millennium project at the Smithsonian Institution, restoring the Star Spangled Banner, the flag that flew over Fort McHenry and inspired Francis Scott Key's poem;
 - The Declaration of Independence, the Constitution and the Bill of Rights, which must be re-encased within the next three years or be seriously at risk.
 - Thomas Edison's laboratory and house in New Jersey are in "dire" condition, according to the National Park Service; the papers of the father of modern science are in need of cataloguing and proper storage.
 - Even America's prehistoric sites are at risk; treasured places such as Mesa Verde in Colorado and Chaco Canyon in New Mexico need preservation to stabilize ancient structures.
 - Many of the films, photographs and historic recordings that document the 20th century, held by federal agencies and other institutions, are deteriorating and must be transferred to more stable media.
 - Some 80 million brittle books in libraries and other collections, need to be preserved through repair and microfilming, according to the National Endowment for the Humanities, including twelve million that are "unique and endangered."
 - In states and communities, there is a pending loss all over the country -- from outdoor monuments that commemorate important events and people, to the papers and journals that form our intellectual heritage.
- There will also be a parallel private effort, to raise money from corporations, foundations and individuals. The National Trust for Historic Preservation will create a high-level advisory committee that will direct funds to the urgent preservation needs identified at the national level and by the states. Recently, the Pew Charitable Trusts pledged \$5 million towards the restoration of the Star Spangled Banner.
- We believe that this initiative will have broad appeal. It should be a bipartisan effort, to come together on something that will be good for the country -- and will truly give a gift to the future.

- I would appreciate your reactions to any of the ideas I have described and your thoughts on how together we can engage Americans in this meaningful time.

①

an version of the future -

for H6 Wells → Star Trek - have
been stable - achieved a level of
perfection -

②

I want to question the picture -

and population keeps growing -- means
an ability to preserve life + feed
ourselves - also ^{electronic} computers
while ^{technology} grows faster than
the

③

present exponential
growth can continue for next millennium

④

we could wipe ourselves out --
nuclear war → a Terminator -

⑤

He is an optimist -

predict the future -

observation of heavenly bodies by
Galileo - → led Newton mechanics
Theory of Gravity -

20th century - energy comes in discrete
packets - quantum

→ quantum mechanics

things don't have single unique
histories - they have possibilities

history - even at its core probability

Large Scale systems - probability plays a role
a single history

but as one goes to small length scales
of individual particles - uncertainties
get very large -

Einstein's
General Theory of Relativity
Quantum Theory

2 great
Scientific
revolutions
of 1st half
of 20th
century

→ must reconcile
them to achieve a
complete theory of the
basic laws of the universe -

"the holy grail"

of physics -

the "ultimate theory"

of everything -

→ keep getting more + more
complete -

by

— when we do - no limit to
complexity of system we
are producing -

→ next complete system - what we have
is our bodies - DNA - basis of life is easy -

development of humans -

biological evolution - very slow -

then developed written language -

information could be passed down -

8,000 years ago -

complexity increased dramatically -

transmission of data for most
human dominated world -

at 10,000 years - no change in DNA.

perhaps can redesign it in next

10,000 years - genetic engineering -

— huge stride in computer -

speed + complexity doubled

every 18 months - can't continue
at that rate

Students' statements on what attending the Hawking lecture would mean to them

*denotes a student who may be in the East Room

***Darren Smith**, American University

Sophomore, Communications, Law, Economics, and Government; Foreign Language and Communications Media

Attending Professor Hawking's Millennium Series program would undoubtedly be a highlight of my year. Just to be in the presence of a man who has achieved such a broad yet detailed understanding of the universe in which we exist would be a tremendous honor to me. When I read *A Brief History of Time* a few years ago, I was determined to become a physicist and explore the topics Hawking discussed. Although my life has taken a different course into the social sciences, I still sense a void that was left when I chose not to pursue study in the physical sciences. I am still fascinated by scientific developments, and I try to satisfy my curiosity at every opportunity. Whatever my field of study, I dream of making a contribution to my field that is anywhere close in significance to the contributions Hawking has made to his field.

***Joanne Cossitt**, American University

Senior, International Communications and development

I chose to study communications so I might learn how people communicate, how they understand each other. I marvel at the differences and the similarities which run through this human race. But something like the work of Stephen Hawking is even more basic. While putting all our hopes, fears, and ambitions in perspective, Hawking searches above and beneath us to find the modern quintessence of astronomy. As a teaching assistant of astronomy whose main field of study is not in the natural sciences, I have seen and can sympathize with the frustration many intelligent people have with understanding science and math. But astronomy, the most romantic of all sciences, stirs the emotions of even the accountant or business major. Those who never cared about physics walk out of astronomy with a distant look of wonder. Simply put, I want to understand. Who else but Stephen Hawking could best explain?

Nawal Benmouna, American University

Graduate student, Physics

When I see that he, despite his disability, has never given up and has been able to receive worldwide recognition for his achievements, I am inspired. Because of what he has done, I realize that, with a lot of motivation and courage, I too could come closer to my dream of achieving a deeper understanding of our world and possibly making a contribution. I may never achieve worldwide recognition for discovering a wonderful theory that answers all of our questions, but at least I will never give up and will keep trying. Seeing Prof. Stephen Hawking in person at this wonderful event would truly be an inspiring experience for me. I would also take pride in President Clinton making this kind of statement about the importance of science to this nation, the world and the next century.

***Louisa Ikena**, Catholic University of America

Junior, Chemistry and secondary education

I feel it is the opportunity of a lifetime to have a chance to meet the most famous living physicist in the world. I have read parts of A Brief History of Time and Stephen Hawking's Universe, and I am fascinated by his work. The number of obstacles he has had to overcome to accomplish so much is amazing. My mother is handicapped and Stephen Hawking has been an inspiration to my family and me. As a future high school chemistry teacher, I would love to be able not only to tell my students about his work, but also to tell the story of when I actually got to meet him face to face.

Richard Cecil, Catholic University of America

Sophomore, Physics

The sonnets and plays of Shakespeare affect me deeply with their beauty; but the level of excitement in my physics courses, learning how the world works, is more robust than that engendered by poetry. To me, there is power and elegance in physics along with beauty. I certainly cannot write as well as Shakespeare, nor can I think as clearly as Dr. Hawking. But in reading Shakespeare, I experience the beauty of literature; attending Dr. Hawking's lecture will offer me a taste of the elegance, power and beauty of his science.

Janet Muckenthaler, Catholic University of America

Senior, Biology

In five years I hope to be teaching high school chemistry and math. I will be faced with the unspoken challenge by the students: "Why should I want to learn this stuff?" Not only will it be my job to teach the material, I will also need to inspire these students to learn. I believe that hearing Professor Hawking would make an unsurpassable, indelible mark on my memory, so that although the excitement of the moment undoubtedly lessens with time, that inspiration will be carried with me years from now as I try to inspire future scientists.

***Stephanie Bowser**, George Mason University

Senior, Physics

Participating in the Hawking Millennium Program would allow me to gain a greater understanding of how the the present cosmological view has had an effect on the society in which we live. Dr. Stephen Hawking has made great impressions on both the non-scientist and the scientist. He has a special ability to make the size and complexity of our universe something that we can all understand. Having the opportunity to attend this White House lecture is a chance to experience discussions such as these first hand. As a physics major, not only do I find this lecture of particular value and interest in my own field of study. but it will also affect how I perceive physics in the coming millennium.

Jalani Kanem Fox, Howard UniversitySenior, Physics and mathematics*

It is important to me to be able to meet one of the greatest physicists of my time. Professor Hawking's unending drive for the solutions of our universe is an inspiration to all aspiring physicists, whatever their intended field. I have read Professor Hawking's books and am very interested in his theories. I have heard some of his lectures, but only on television, and would very much like to attend a live lecture. Furthermore, this would be a great chance to visit the White House for the first time.

Candra Hodges, HowardFreshman, undeclared*

Opportunity rarely knocks twice. I think that if I do not participate in this program that I will never be presented with the chance to meet Professor Hawking again in my life. I would also be rather upset with myself if I passed up an opportunity to meet one of the greatest scientific minds of our time. He asks the same questions that I have had since I was a child. But not only does he ask, he ponders the question and offers us substantial conjecture that, while we may not agree with what he proposes, we can't ignore it. Although I do not believe that the universe will collapse, as Professor Hawking purports, I find his presentation of that claim insightful and thought provoking. Besides, it would be cool to tell all my "Trekkie" friends, who also happen to be fans of his, that I got to attend one of his lectures.

Daniel Malinow, University of MarylandFreshman, Architecture/physics*

It was after reading Professor Hawking's A Brief History of Time at age thirteen, that I became extremely interested in science and physics. The influence this book had on me shaped many of the academic decisions I made throughout my high school career. Now, as I am at the beginning of my college career, I feel that personal involvement in this program will present me with an opportunity to investigate my goals for my future education. As a result of the influence his work has had on me, I have always considered Professor Hawking a role model and mentor. While I have read his books and seen him on television, experiencing one of his lectures firsthand has always been a desire of mine.

Aubrey Hill, University of Maryland

Senior, Elementary Education

In less than eight months I will be embarking upon the beginning of a career as an elementary school teacher. I am currently concentrating in math, science, and technology in a special teacher education program at the University of Maryland, College Park. I feel that our first and foremost concern in the United States should be to better our educational system and increase student interest in math and science. Scientists like Dr. Hawking are not only inspiring but also stretch our curiosity and motivation. I feel that I can bring this experience back into the classroom and in turn motivate my students to become the next Dr. Hawking. I also feel that being a part of this session will educate me and increase my knowledge of the world of science. This knowledge can do wonders in the classroom. My wish is that all teachers could be inspired by this man.

***Valerie Brown**, Morgan State University

Junior, pre-med

I would like to attend the Professor Stephen Hawking Program because I am intrigued by Dr. Hawking's philosophies about the universe. He continues to not only build upon the basic tenets and laws of physics, but also disproves many of the existing laws of the universe, especially the supposed relationship between the speed of light and the "black hole." I also like the fact that Dr. Hawking uses layman's terms to explain his most intricate ideas and philosophies about the universe so that the average person can easily understand his concepts. In summary, Dr. Hawking is an inspiration to people who do not understand and follow his philosophy as well as an inspiration to people who do understand his complex theories about the universe.

Carmen Greene, Morgan State University

Sophomore, physics

In the new millennium, science will have reached an all time high. Contrary to popular belief, physics will be moving at a faster pace than ever before. Science is, and always has been, an essential feature in the everyday lives of people today and of future generations. Becoming a physicist was never a goal of mine until recently. Actually, I had not thought of majoring in physics until my Senior year of high school. Now that I am a physics major, my concentration lies in determining the specific field of physics that I wish to pursue. Participating in the Hawking Millennium Program will extend an excellent opportunity to gain a better insight into a field of physics that is new to me. I understand the painstaking and demanding, but rewarding process involved in becoming an expert in the field of study one chooses. The more opportunities pursued now, the better prepared I will be in the future to face the obstacles I encounter.

Sonia Gay, Morgan State University

Junior, Electrical engineering

My one wish is to teach high school physics while performing research in atmospheric physics at NASA. I know that Professor Hawking has overcome great obstacles to realize his dream of studying astrophysics. I want to help students overcome their own personal obstacles, whether it be poverty, family life, self-esteem, or a learning disability, to realize their own dreams of becoming great scientists or engineers.

***Katherine Jane Hall**, Swarthmore College

Junior, astrophysics and music

As a student of astrophysics, I am learning about both the history of the science and the current events in astrophysical research and thought. Many of the scientific techniques and principles I study in classes have been known for decades or even centuries, but fascinating developments are taking place in the field now. I believe that it is important not only to study astronomy's past, but also to keep up with present proceedings. One of the foremost interpreters of today's scientific advances is Professor Stephen Hawking. I would like to participate in the Hawking Millennium Program in order to find out what Professor Hawking considers the most important information to share with this audience of scientists and non-scientists alike.

Beth Alison Biller, Swarthmore College

Sophomore, astrophysics

My interest in astrophysics solidified when I was thirteen years old - and developed a profound interest in black holes and all things relativistic. During this period, I received Stephen Hawking's *A Brief History of Time* as a Bat Mitzvah present from my uncle, and it became a pivotal source of knowledge for me. Six years later, I am deeply entrenched in and thrilled by my astrophysics major - hoping to do my first bit of research in galactic formation this summer and dabbling in amateur radio astronomy on the side.

***Sakhile Moyo**, University of the District of Columbia

Senior, Biology and chemistry

I would like to attend the Professor Stephen Hawking Program because I am intrigued by Dr. Hawking's philosophies about the universe. He continues to not only build upon the basic tenets and laws of physics, but also disproves many of the existing laws of the universe, especially the supposed relationship between the speed of light and the "black hole." I also like the fact that Dr. Hawking uses layman's terms to explain his most intricate ideas and philosophies about the universe so that the average person can easily understand his concepts. In summary, Dr. Hawking is an inspiration to people who do not understand and follow his philosophy as well as an inspiration to people who do understand his complex theories about the universe.

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(b)(6)

[001]

Senior, Computer science

Most people remember the first time they kissed, or the first time they met their mates. I remember the first time I saw Dr. Stephen Hawking. He was being featured on the Public Broadcasting Show, titled "Stephen Hawking's Universe." What really caught my attention was seeing this man in a wheelchair, speaking incoherently and interpreted by another person. I remember wondering, "Why is this man on TV?" However, as soon as I focused on the words I heard, I knew the answer immediately. His thoughts about the universe were very insightful, and I was fascinated by them like a baby's fascination with something shiny. Clearly, he was a genius. I have physical challenges myself, and I view Dr. Hawking as one of my role models. He is a shining example of my possibilities as a person who is physically challenged, from being a Lucasian Professor to guest starring on "Star Trek." I would consider it a phenomenal honor to participate in anything associated with Dr. Hawking.

HRC

I am honored to join the President in welcoming you to the East Room of the White House for our second Millennium Evening. I'd like to start by thanking everyone who has made this event possible, especially our speaker, Stephen Hawking; Ellen Lovell, Director of the White House Millennium Council; co-sponsors and who is providing the technology to simultaneously bring this lecture to the world, and to preserve it for posterity.

I also want to mention that among our special guests tonight are students from whom we invited not only because we hope they will learn something this evening but also to remind all of us of the importance of teaching our young people science and math -- the tools that unlock the future. The President has to begin meeting that challenge.

With this series of Millennium evenings at the White House, we are launching a three-year commemoration and celebration of America's millennium, hoping to inspire all Americans to come together to "Honor the Past and Imagine the Future." This is an opportunity for us to take stock of who we are, what we believe in, and what we want to carry into the next century -- not only as individuals and families, but as local communities and as a nation.

The significant of the year 2000 is not only that it marks a new century and millennium. It's also the 200th anniversary of the White House; the 200th anniversary of the first meeting of Congress in the new Capitol building, and the 200th anniversary of the Library of Congress. So these three major institutions of our government and our history are all celebrating their bicentennials at the same time -- giving us a chance to highlight our democratic institutions and ideals as we enter the 21st century.

A few weeks ago, we inaugurated this Millennium lecture series with a brilliant talk from one of our nation's leading American historians, Professor Bernard Bailyn from Harvard. He spoke eloquently about the ideas of democracy and freedom that inspired the birth of this nation over two centuries ago -- and about how we continue to draw on those ideals and beliefs today.

Tonight, we leap over boundaries of historical time and place, and hear from a man who has ~~pushed back~~ the frontiers of science, and become one of the great physicists of our century. Almost 25 years ago, Stephen Hawking was formally inducted into the Royal Academy in London -- one of the most ancient scholarly organizations in the world. As part of that ceremony, he signed his name in a book that bore the signature of Isaac Newton on one of its earliest pages. Stephen Hawking, even then, was a legendary figure. He is now Lucasian Professor of Math at Cambridge University -- a post held, once again, by fellow explorer, Sir Isaac Newton.

Delay in
Speech //
G + A //
Pete
Columbo
Cyber car
G + A

Save
Name
for
press release

reading to
plans

Cybernetic
to enter
streamline
video

computer
area
university
OSTP
Scien
Tech
Bov OEP
Stations
Enlighten
Enlighten
Kuma
Sum
Sum
Paul
Tandata

Luckily for many of us, in addition to his many scholarly works, Mr. Hawking has written a book aimed at a "lay" audience -- in the hopes that his all encompassing knowledge of astronomy, cosmology and physics can be understood by mere mortals like ourselves. That "A Brief History of Time" has become the best selling science book ever proves to what extent has has succeeded in his mission.

Some of us may be able to grasp at least the general notion of black holes, the "big bang" theory of the birth of the universe, and the concept that our universe is expanding. What I find particularly heartening, however, is that according to his book, present evidence suggests that "even if the universe is going to recollapse, it won't do so for at least another ten thousand millions years." So we call all relax for the time being.

Stephen Hawking has surely helped millions of people here and around the globe to "imagine" the past and even the future of our universe. He has enthralled us with his probing questions about the origins and fate of outer space -- yet it's his inner courage, in the face of great physical odds -- that is perhaps the even greater inspiration. It is a true honor and pleasure to intruce to you tonight Stephen Hawking, who will speak to us about "Creativity and Science in the 21st Century."

Bruce
Smeck
Hawking

Ellen / Sarah / Sanjay :
 here it is →

1.

The Computer

Communication system

Here are a few words by Professor Hawking about his computer system.

I communicate with a computer system. I have always used IBM compatible computers, on my wheel chair. They run from batteries under the wheel chair, although an internal battery will keep the computer running for an hour if necessary. The screen is mounted on the arm of the wheel chair where I can see it, more recent systems have the whole computer in a box on this arm. The original systems were put together for me by David Mason, of Cambridge Adaptive Communications. This company manufacture and supply a variety of products to help people with communication problems express themselves. Recently, Intel engineers designed a new computer for me powered by an MMX Pentium processor which I now use.

On the computer, I run a program called Equalizer™, written by a company

can: usually
 explain it -
 wonder how
 he communicates -
 2 people in audience

→ Ellen ??



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FEB. 27, 1998 3:43PM C U B O O S

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THE WHITE HOUSE
WASHINGTON

OFFICE OF SPEECHWRITING

Fax: (202)456-5709
Phone: (202)456-2777

TO: Sanyar

Fax: 57234 Phone: _____

FROM: Oberty

Comments: _____

Date: _____
Number of pages (including cover): _____

Fax to Michael
O'many
66244

3 pages
total

57234

1.

The Computer

Communication system

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HILLARY RODHAM CLINTON
REMARKS FOR WHITE HOUSE MILLENNIUM EVENING
LECTURE BY STEPHEN HAWKING
EAST ROOM
MARCH 6, 1998

evolution of the universe

I am honored to join the President in welcoming you to the East room of the White House for our second Millennium Evening. I'd like to begin by thanking everyone who has made this event possible, especially our honored speaker, Professor Stephen Hawking; Ellen Lovell, director of the White House Millennium Council; the National Endowment for the Humanities and all the state humanities councils; and Sun Microsystems, which is providing the technology to simultaneously bring this lecture to the world -- and preserve it for posterity. A special welcome to Americans across the country who are joining us via cybercast and satellite -- some of whom will be posing questions to Professor Hawking after his remarks.

I also want to mention that among our special guests tonight are students from area colleges and universities who we invited not only because we thought they would be inspired by tonight's lecture, but also to remind all of us of the critical importance of keeping our future leaders on the cutting edge of science, math and technology -- the tools they need to unlock the extraordinary possibilities of the future.

Tonight's lecture by Stephen Hawking continues a series of gatherings with scholars, scientists, and creative individuals here at the White House that will commemorate and celebrate America's millennium. Over the next three years, we hope to inspire all Americans to come together to mark this milestone in our history by "honoring the past and imagining the future." It's an exciting opportunity for conversation and collaboration -- a time to take stock of who we are and who we want to be -- and what we want to carry into the next century, not only as individuals and families, but as local communities and as a nation.

A few weeks ago, we inaugurated this Millennium lecture series with a talk about America's founding ideals of freedom and democracy by one of our nation's leading American historians, Professor Bernard Bailyn from Harvard University. (That was also the first cybercast ever from the White House -- another historic moment).

Tonight, we leap beyond traditional boundaries of historical time and place, and hear from a man who has pushed back the frontiers of science, and revolutionized our understanding of the universe in which we live. Almost 25 years ago, Stephen Hawking was formally inducted into the Royal Academy in London -- one of the most ancient scholarly organizations in the world. As part of that ceremony, he signed his name in a book that bore the signature of Isaac Newton on one of its earliest pages. Stephen Hawking even then, was a legendary figure -- and has since come to be viewed, along with Newton and Einstein, as one of the most brilliant physicists of our time.

Common sense

*and his
science as a
physicist*

*that sparked our desires
200 yrs ago =
the time has enabled us to "imagine" the
past --
and
as well
a lot
further*

*of an
universe --
as well as
its future
evolution*

Even as a young student, Stephen Hawking was drawn to science and the study of physics. "I always wanted to know how everything worked," he once said. He chose the same undergraduate college as my husband -- University College, Oxford University -- and it was here that his extraordinary mind for math and the sciences was first recognized. (It should hearten some of the students here tonight that Hawking's "casual study habits" put him on the borderline between first and second class honors -- necessitating an oral exam. It didn't take long for the examiners to realize that they were talking to someone far more clever than most of them.)

He ^{went} entered Cambridge University to study cosmology -- and in particular, the area of physics which describes the evolution of the universe. Since then, he has applied his prodigious talents to expanding our understanding of the laws of the cosmos, and seeking answers to such fundamental questions as "where did the universe come from?" and "can we predict the future?" Professor Hawking -- who has received numerous prizes and honors including the commander of the British Empire in 1982 and twelve honorary degrees -- is a Fellow of the Royal Society and a Member of the U.S. National Academy of Sciences. He's currently the Lucasian Professor of Mathematics at Cambridge University -- a post held, once again, by fellow explorer Sir Isaac Newton.

Luckily for many of us, in addition to his many scholarly works, Professor Hawking has written a book aimed at a "lay" audience -- in the hopes of educating the general public about his "big bang" theory of the beginning of time; the notion of an expanding universe, and the existence of "black holes." That *A Brief History of Time* has become the best selling science book ever -- 9 million copies around the world, and translated into 300 languages -- testifies to the success of his mission. And I must admit, I've been heartened by some of what I read in that book. "Present evidence suggests," he writes, that "even if the universe is going to recollapse, it won't do so for at least another ten thousand million years." That certainly gives us some time to get things right.

Through his investigations of the laws of science, Stephen Hawking has surely helped millions of people here and around the globe to "imagine" the past and even the possible future of our vast universe. Yet it's his inner courage, in the face of great physical odds -- that is perhaps the even greater inspiration.

As many of you know, Professor Hawking has what we now know as "Lou Gerig's Disease," a degenerative nerve disease that has deprived him of almost all He will speak to us tonight, and later answer questions from the audience, through....

He exemplifies the enduring spirit of imagination that sees no boundaries -- only possibilities.

Professor Hawking has said: "My goal is simple. It is complete understanding of the Universe." Tonight, we honor his life of study and accomplishment; his extraordinary imagination; his relentless questionings; his sense of humor, and his humanity. With his refusal to allow the study of the universe to remain solely the property of physicists like himself, Professor Hawking is ensuring that all of us can, in some measure, participate in the wonder and

the awe of the cosmos. *Umuene*

It is a true honor and pleasure to introduce to you tonight Professor Stephen Hawking, who will speak to us about "Imagination and Change: Science in the Next Millennium."

190

THE WHITE HOUSE
WASHINGTON

OFFICE OF THE MILLENNIUM PROGRAM

Phone: (202) 395-7200

Fax: (202) 395-7234

TO: Christy Macy PHONE: 6-2935
FAX: 6-5709
CC 244

FROM: Ellen McCulloch-Lovell,
Deputy Assistant to the President and
Advisor to the First Lady on the Millennium

☒ Other Sarah

DATE: _____

Number of pages (including cover): _____

MESSAGE: Here is what Cambridge sent re:
Hawking computer + speech. Ellen says
she is going to talk to 1st Lady about it
mon. I'm not sure if Missy Kincaid already
has. So it's not a definite, but if you want
to start playing with it.

THE WHITE HOUSE MILLENNIUM PROGRAM
708 Jackson Place, NW
Washington, DC 20503

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Ellen / Sarah / Sanjay :
here it is —————>

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For Immediate Release

Contact: 202-395-7200

February 26, 1998

**PRESIDENT AND MRS. CLINTON TO WELCOME
STEPHEN HAWKING FOR MILLENNIUM EVENING AT THE WHITE HOUSE**

The President and Mrs. Clinton are announcing that Cambridge University Physicist Stephen Hawking will be the guest lecturer at the second Millennium Evening at the White House, Friday, March 6 at 7:30 pm.

Mrs. Clinton explains that the "Millennium Evenings at the White House" are a series of gatherings with scholars, scientists, and creative individuals from many fields whose ideas will help us honor our past and imagine our future as we approach this milestone in human history."

The Millennium Evening will be held in the East Room of the White House and Professor Hawking will discuss, "Imagination and Change: Science in the Next Millennium." Mr. Hawking is the best-selling author of A Brief History of Time, about the evolution of the universe. The book has been translated into 33 languages and has sold 9 million copies. He is the Lucasian Professor of Mathematics at Cambridge University; a position once held by Sir Isaac Newton. He is the head of the General Relativity and Gravity Group in the Department of Applied Mathematics and Theoretical Physics.

The National Endowment for the Humanities is sponsoring the Millennium Evening with support from Sun Microsystems, Inc.

The Millennium Evening will be broadcast via satellite and cybercast over the internet allowing for live video and audio formats. The President and First Lady encourage Americans to participate in the evening's discussion by sending questions to Professor Hawking via email either before or during the cybercast. Questions may be sent via the White House web site (<http://www.whitehouse.gov>). That web site will also post the satellite coordinates (on C and KU bands) and serve as a link to the cybercast. The cybercast is also available via the web page of Sun Microsystems (<http://www.sun.com>).

THE WHITE HOUSE
WASHINGTON

OFFICE OF THE MILLENNIUM PROGRAM

Phone: (202) 395-7200
Fax: (202) 395-7234

TO:

Christy Macy

PHONE:

FAX:

65709

FROM:

Ellen McCulloch-Lovell
Deputy Assistant to the President and
Advisor to the First Lady on the Millennium

☒ Other Kazia

DATE:

2/26

Number of pages (including cover):

3

MESSAGE:

THE WHITE HOUSE MILLENNIUM PROGRAM
708 Jackson Place, NW
Washington, DC 20503

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DETERMINED TO BE AN ADMINISTRATIVE
MARKING Per E.O. 12958 as amended, Sec. 3.3 (c)

Initials: RCL Date 02/21/13

today scientists describe universe in terms of two basic partial theories: the general theory of relativity and quantum mechanics; the great intellectual achievements of the first half of the century;

these quests: humanity's deepest desire for knowledge;

fundamental questions about time and space;

new understanding of time and space was to revolutionize our view of the universe; old idea of essentially unchanging universe that could have existed and could continue to exist forever was replaced by notion of a dynamic, expanding universe that seems to have begun a finite time ago, and that might end at a finite time in the future;

now know, for example, that our galaxy is only one of some hundred thousand millions that can be seen using modern telescopes; each galaxy containing some hundred thousand millions stars; certainly come a long way since Aristototele and Ptolemy -- when we thought that the earth was the center of the universe;

present evidence suggests that the universe will probably expand forever, but all we can really be sure of is that even if the universe is going to recollapse, it won't do so for at least another ten thousand millions years, since it has already been expanding for at least that long; this should not unduly worry us; by that time, unless we have colonized beyond the Solar System, mankind will long since have died out, extinguished long with our sun.

at the end of his book: "We find ourselves in a bewildering world. We want to make sense of what we see around us and to ask: what is the nature of the universe? what is our place in it, and where did it and we come from? Why is it the way it is?"

at the first lecture
My Book was the
history of the park
to tell the owners
the past ~

Stanner into
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Shore -
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unners -

Draft - Gilman foundation?

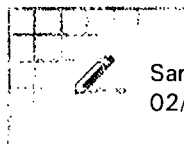
March 6, 1998

Welcome to the Millennium Evening at the White House. This visit with Stephen Hawking continues a series of gatherings with scholars, scientists, and creative individuals from many fields whose ideas will help us honor our past and imagine our future as we approach this milestone in human history.

Tonight we are privileged to have renowned physicist Stephen Hawking speak to us about, "Imagination and Change: Science in the Next Millennium." His experience investigating the laws of science and how they affect human life will help shed light on how scientific and technological advancements will shape and be shaped by human knowledge.

This evening's discussion is generously sponsored by The National Endowment for the Humanities in partnership with Sun Microsystems and I extend to them a very special thanks. Americans all around the country are joining us via cybercast and satellite and we will hear from some of them after Professor Hawking's remarks. I also welcome the students from area colleges and universities who are joining us this evening and applaud their active interest in learning more about the future that they will be responsible for leading.

It is a pleasure to have you join us here in the people's house as we anticipate the 200th anniversary of the White House in the year 2000. It is my hope that this evening's program fills each of us with a sense of awe and discovery and inspires us to look anew at the world around us.



Sarah Howes
02/27/98 09:33:32 AM

Record Type: Record

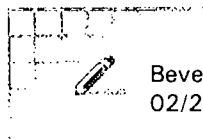
To: Christine N. Macy/WHO/EOP

cc:

Subject: Re: FW: White House Millenium Evening

In case you haven't connected with Bev Hartline yet, she describes below to some degree the process by which students were selected - she's responding to a GWU student who emailed us.

----- Forwarded by Sarah Howes/WHO/EOP on 02/27/98 09:31 AM -----



Beverly K. Hartline
02/26/98 06:25:42 PM

Record Type: Record

To: sblevy @ gwis2.circ.gwu.ed

cc: See the distribution list at the bottom of this message

Subject: Re: FW: White House Millenium Evening 

Dear Scott,

Thank you for your kind offer to identify GWU students to attend the Millenium evening program featuring Professor Hawking. We agree that including the next generation in these evenings is very important to their success. Consequently a selection of students from eight different colleges and universities has been made. Since only GWU students attended the first program, we contacted other campuses for this program.

In order to involve more students than can be accomodated among the live audience in the East Room, the Office of Science and Technology Policy is hosting a reception in the Old Executive Office Building and is arranging for live video/viewing from an auditorium in the White House complex.

I would be happy to invite up to four students from GWU to apply to attend the reception and video/viewing. To be considered, however, each student must submit to me at this email address and to mforman@ostp.eop.gov the following information:

1. Name
2. Academic level (even graduate students are eligible)
3. Major field of study
4. Birthdate
5. Social Security Number
6. Nationality of citizenship

7. A question the student would like to pose for Professor Hawking
8. Phone number
9. Mailing address.
10. Permission for the White House, OSTP, and the Millenium program to use the question submitted.

I must receive this information by Friday February 27th, and invitations will be extended to students on the basis of the quality of their questions. These questions do not have to be scientific. The students who were considered for attendance in the East Room had, in addition, to provide a short statement (fewer than 150 words) describing why it was important to them to participate. Since all student invitations to the East Room have been made, it is not essential for you and your colleagues to provide such a statement, but we would enjoy reading about the reasons for their interest.

I look forward to hearing from you.

--Beverly Hartline

Message Copied To:

Sanjay Gupta/WHO/EOP
mmadsen @ neh.gov @ inet
Sarah Howes/WHO/EOP
Miriam A. Forman/OSTP/EOP
Holly L. Gwin/OSTP/EOP

HILLARY RODHAM CLINTON
REMARKS FOR WHITE HOUSE MILLENNIUM EVENING
LECTURE BY STEPHEN HAWKING
EAST ROOM
MARCH 6, 1998

I am honored to join the President in welcoming you to the East room of the White House for our second Millennium Evening. I'd like to begin by thanking everyone who has made this event possible, especially our honored speaker, Professor Stephen Hawking; Ellen Lovell, director of the White House Millennium Council; our sponsor, the National Endowment for the Humanities, with support from Sun who is providing the technology to simultaneously bring this lecture to the world, and to preserve it for posterity.

I also want to mention that among our special guests tonight are students from area colleges and universities who we invited not only because we hope they will be inspired by tonight's lecture, but also to remind all of us of the critical importance of teaching our young people science and math -- the tools they need to unlock the extraordinary possibilities of the future.

With this series of Millennium evenings at the White House, we are launching a three year commemoration and celebration of America's millennium, hoping to inspire all Americans to come together to "Honor the past and imagine the future." This is an opportunity for all of us to take stock of who we are; what we believe in; and what we want to carry into the next century, not only as individuals and families, but as local communities and as a nation.

The significance of the year 2000 is not only that it marks a new century and millennium. It's also the 200th anniversary of the White House; the 200th anniversary of the first meeting of congress in the New Capitol building; and the 200th anniversary of the Library of Congress. This confluence of historic events gives us a unique opportunity to highlight our democratic institutions and ideals as we enter the 21st Century.

A few weeks ago, we inaugurated this Millennium lecture series with a talk about those founding ideals from one of our nation's leading American historians, Professor Bernard Bailyn from Harvard University. (That was also the first cybercast ever from the White House -- another historic moment). That evening, Professor Bailyn spoke eloquently about the principles of democracy and freedom that inspired the birth of this nation over two centuries ago -- and about how we continue to draw on them today, as our nation faces new challenges.

Tonight, we leap over traditional boundaries of historical time and place, and hear from a man who has pushed back the frontiers of science, and revolutionized our understanding of the universe in which we live. Almost 25 years ago, Stephen Hawking was formally inducted into the Royal Academy in London -- one of the most ancient scholarly organizations in the world. As part of that ceremony, he signed his name in a book that bore the signature of Isaac Newton on one of its earliest pages. Stephen Hawking even then, was a legendary figure -- and is now

recognized as the most brilliant theoretical physicist since Albert Einstein. He's the Lucasian Professor of Mathematics at Cambridge University -- a post held, once again, by fellow explorer, Sir Isaac Newton. (He chose the same undergraduate college as my husband -- University College at Oxford -- but their careers have taken decidedly different paths since then.)

Luckily for many of us, in addition to his many scholarly works, Professor Hawking has written a book aimed at a "lay" audience -- in the hopes that he can educate mere mortals like ourselves about his "big bang theory of the universe; the notion of an expanding universe, and the existence of "black holes." That *A Brief History of Time* has become the best selling science book ever -- 9 million copies around the world, and translated into 300 languages -- testifies to the success of his mission. He has noted, modestly, that he has sold "more books about Physics than Madonna has about sex."

Professor Hawking has said: "My goal is simple. It is complete understanding of the Universe." We honor his life of study; his extraordinary imagination; his relentless questions; his humanity and sense of humor. And we honor his refusal to allow the study of the universe to be solely the property of physicists like himself. He's committed to ensuring that all of us can, in some measure, participate in the wonder of the cosmos.

I must admit that standing in the presence of such a mind is a bit intimidating. So I take heart, for example, in learning that Professor Hawking was known for his somewhat "independent ways and casual study habits" as a college student. I'm particularly heartened to learn that according to *A Brief History of Time*, present evidence suggests that "even if the universe is going to recollapse, it won't do so for at least another ten thousand million years."

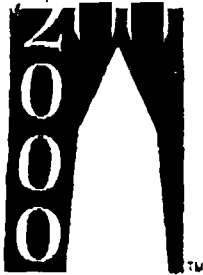
Stephen Hawking has surely helped millions of people here and around the globe to "imagine" the past and even the possible future of our universe. He has enthralled us with his probing questions about the origins and fate of outer space. Yet it's his inner courage, in the face of great physical odds -- that is perhaps the ~~even~~ greater inspiration. As many of you know, Professor Hawking has what we know as "Lou Gerig's Disease," a degenerative nerve disease that has deprived him of almost all He will speak to us tonight, and later answer questions from the audience, through....

It is a true honor and pleasure to introduce to you tonight Professor Stephen Hawking, who will speak to us about "Science in the 21st Century."

~~enable~~
~~himself to~~

like
~~the~~
~~the~~
~~the~~
Mr. Hawking

Professor Hawking is
exemplifying the
enduring spirit
that sees no
barriers --
only possibilities
and that has



Nation's
Capital
Bicentennial
Celebration

NATION'S CAPITAL BICENTENNIAL CELEBRATION

A Commemorative Vision

A celebration of spirit and a renewal of civic pride is to be expressed in the year 2000 marking the 200th anniversary of the nation's capital. In commemorating the 200th in 2000, we will focus on the growth of the United States of America's founding as a world leader, give thanks for the freedom enjoyed by its people and renew its promise to protect its children's future. This encourages a celebration of life, a commitment to responsibility, and a dedication to revitalization that charts a course of pride and honor for the next century.

Mission and Purpose

The mission of the Nation's Capital Bicentennial Celebration is to mobilize, lead and coordinate the efforts of organizations and volunteers nationwide in celebration of the 200th anniversary of Washington, DC as the nation's capital and to recognize its importance as the symbol of freedom throughout the world. In recognition of the role the city has played in the history of the nation and to recognize the importance of its future, a concerted effort will be mounted to celebrate its triumphs while encouraging and assisting in its renewal and revitalization. To further these efforts and in the cause of national unity, it is proposed to shape programs and events that speak to America's history and to its future—to the needs and aspirations of our Nation, our government, our land and our people. We plan to:

- * Celebrate 200 years of accomplishments by staging and recognizing 2,000 events;
- * Encourage all Americans to embrace this nation's hometown with a nationwide celebration coordinated with city, regional, state and national volunteer committees;
- * Revitalize America's civic awareness and concern for this capital city as a national treasure by recognizing our past, addressing our present and creating dreams for the future;
- * Provide insights into current challenges and support initiatives and solutions for a reconciled and revitalized city;
- * Create an international celebration of the ties that bind this city to the world community through programs that relive its history, share information, invite tourists, demonstrate culture, affordable and convenient transportation, encourage commerce, and share mutual interests.

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A Celebration of the Man, His City and Our Nation

The capital city was named after George Washington to commemorate and celebrate his triumph laying a solid foundation for the nation. Out of farmland and along the riverbank, the structure of a city was cast in place as a permanent symbol of our democratic government and institutions, framing our long view of a young nation expanding westward, up the Potomac River, to the golden coast of the western frontier. The city was, and is, a monument to the man—his achievements and his vision for a strong, free, and unified nation stretching westward.

The support of the goals of the Nation's Capital Bicentennial Celebration runs deep. In a recent survey of Americans it was proven that individuals across our great country feel an emotional tie and deep respect for the city of Washington, DC. An overwhelming 94% believe it *is important that our nation's capital be viewed positively* and 88% of the respondents thought it *important to revitalize the capital*. In fact, 61% said *this should be a priority of the US Congress*. It is important to note that Americans, in a tradition of volunteering, *are willing to take matters into their own hands*. Of those surveyed, 42% said they are individually willing to volunteer and/or contribute to the effort.

Projects undertaken by the Nation's Capital Bicentennial Celebration will complement President Clinton's proposed District of Columbia Economic Corporation (EDC) and the National Capital Infrastructure Commission (NCIC). The EDC will guide the District's growth and promote investment in the city, while the NCIC will make certain that infrastructure and economic development build on each other.

The Nation's Capital Bicentennial Celebration is an outgrowth of the leadership of other bicentennial and heritage tourism initiatives conducted by Heritage US and Georgetown Heritage Trust. Both organizations are dedicated to "telling the nation's stories to the world" by creating educational linkages between the Nation's cultural and historic resources and its people. Innovative techniques have been applied to bring people closer to history itself through re-enactments, forums, videos, interpretive exhibits, travel guides, heritage trails and students curriculums. Leading roles were played in the Bicentennial Celebrations for the United States Constitution, Washington, DC, the Presidency, the US Capitol and others

The Year 2000 Bicentennial Celebration

Project Goals and Objectives

The celebration of the establishment of Washington, DC as the capital of the United States will be led and coordinated by the Nation's Capital Bicentennial Celebration, a 501 (c)(3) corporation, by:

- * presenting a Bicentennial Celebration event on Presidents Day 2000 to commemorate the establishment of Washington, D.C as the capital of the nation;
- * planning and coordinating the efforts, activities, programs and projects of private organizations, and federal, state and local governments in a national celebration of the bicentennial of our nation's capital;
- * expanding the knowledge and enjoyment of the general public of our nation's capital and its natural, cultural and historic heritage through the creation of a lasting--and living--recognition of the historic moment when our founding fathers moved to the nation's capital;
- * promoting meaningful educational programming for adults, children and youth through the medium of radio, television, film and theatre;
- * educating the public through the dissemination of information by print media and computer linkages;
- * presenting public discussion groups, forums, panels, lectures, reports, publications and programs on the heritage of the United States.

A Commemoration of the Founder and a Call for National Unity

Major Programs

A Celebration of the City

In celebration of the 200th anniversary, NCBC plans to inaugurate the year 2000 with a *New Years Eve Millennium Gala* involving hundreds of volunteers and thousands of participants. A coordinated set of "First Night" celebrations throughout Washington, using the museums, libraries, churches, parks and other sites for a cultural extravaganza geared to families in an alcohol and drug free environment is planned.

A National Celebration

A three-day extravaganza of athletic and cultural events surrounding Presidents Day 2000.

Sail Washington 2000

Planned for June 2000, a parade of international "tall ships" with attendant educational TV productions, fund raising events for a maritime museum, opportunities for young people to interact with crew members who are often teenagers, and special exhibitions and events will be held.

Other events planned include:

- Philadelphia to Washington 1800
- Train Across America
- Independence Day Celebration
- Mini World's Fair Around the City
- Volunteer 2000 Day
- National Antique Exhibition/Exposition
- Historic Reenactment Ceremony
- A National Bike Ride & Race
- A Cherry Blossom Ball
- Salute to the Military Freedom Festival
- Time Capsule
- National Parks and Historic Trails Tour
- A State Pride Tour
- Homecoming Washington

And more . . .

Community Participation

Theatre Performances will be coordinated for maximum impact and will include:

Kennedy Center for the Performing Arts
 Ford's Theatre
 National Theatre
 Wolf Trap Center for the Performing Arts
 Warner Theatre
 Constitution Hall
 Shakespeare Theatre

Folk Life Festivals

Capitalizing on the diversity of a free people, respecting their heritage and celebrating their multiculturalism, a mini World's Fair is planned for the ethnic neighborhoods of Washington.

The City as Symbol

Sound and light events to highlight the history of Washington will be produced.

Commissions of Music Compositions and Plays

To celebrate the historical importance of the anniversary, a series of works will be commissioned.

The Heritage Trails

Canoeing the Potomac Heritage Trail from Cumberland, Maryland to Point Lookout with heritage and scientific maps prepared for people to learn their history on this important heritage corridor. This water trail would be part of a series of heritage trails under development in the region. Among them are:

The George Washington Memorial Trail	Lafayette Trail
Native American Trail	deTocqueville Democracy of America Trail
Early Roadways Trail	The French King's Trail in America
Maritime and Canal Trail	Lincoln Trail
Underground Railroad Trail	Civil War Trail
Hispanic Trail	War of 1812 Trail
Jewish Heritage Trail	Naval History Trail
Women's Heritage Trail	Air Flight Trail
L'Enfant Trail	City of Washington 1800

The National Visitor's Center of Washington

By popular calling, construction of the Washington Monument was taken up in 1848 with the laying of the cornerstone. Delayed for lack of funding and the Civil War, the Monument was opened to the public in 1888.

With over 20,000,000 visitors to the Mall every year, the 555-foot stone obelisk has no interior space to offer visitors, who often stand in line for hours, a respite from the weather, an educational or interpretive experience to enhance their visit or their knowledge of the significance of the memorial to the Founder of the nation.

The Challenge

The George Washington Center, constructed below grade and directly adjacent to the Monument, will be a state-of-the-art, interactive visitor's center to celebrate George Washington's vision for the Nation, its people, its government, and its vast territory. It will be designed to:

- * Provide a comfortable and convenient place for tourists to gather before taking tours up the Washington Monument;
- * Provide greater access and a broader educational experience for the millions of tourists who come to see the monument each year, to better understand George Washington's life, his achievements, his work as president, and the legacy of his vision and provide a focus on George Washington and a celebration of the nation that was his dream;
- * Provide a highly visible center that focuses on participation and establishes educational links to a broad base of national cultural resources;

To commemorate and mark the historic moment when the capital of the United States moved to the city of Washington, DC, the NCBC, through the Heritage US foundation, has proposed and plans to create a state of-the-art underground visitor's center at the Washington Monument.

Through the use of the latest innovative technologies, millions of visitors annually will be able to follow the trails taken by George Washington and his comrades as they rode through the fledging America, enhance their understanding of the United States Government, debate the constitution with Alexander Hamilton and James Madison, test military strategy during the Revolution, and much more.

Involvement of National Organizations

The Progress Through Partnership Program

Through the leadership of the Nation's Capital Bicentennial Celebration, other prominent organizations have expressed interest in participating. They share NCBC's goal of protecting and understanding our national history, and connecting that seminal period to an understanding of the global experience. To date, they include, but are not limited to:

National Trust for Historic Preservation
National Geographic Foundation
National Gallery of Art
Corcoran Gallery of Art
American Association of Museums
DC Federation of Citizens Associations
Parks and History Association
US National Park Service
Colonial Williamsburg
Smithsonian Institution
Heritage US
Association for State and Local History
Library of Congress
The World Bank
Historical Society of Washington, DC
US Capitol Historical Society
US ICOMOS

Potomac Heritage Partnership
Georgetown Heritage Trust
The American Society of Le Souvenir Français
Washington Regional Network
American Architectural Foundation
Anacostia Historical Society
Alexandria Seaport Foundation
Accokeek Foundation
LeDroit Park Preservation Society
DC Historic Preservation Office
DC Preservation League
US Navy Memorial Foundation
Georgetown University
George Washington University
Society of the Cincinnati
Potomac Electric Power Company
Washington Gas Light Company
U.S. Corps of Engineers

Building on the Past to Secure the Future

A Bicentennial celebration provides opportunities to remember the past in order to better understand the present and plan for the future; mobilize the volunteer forces that made this nation great; renew a commitment to revitalize a city; and demonstrate to the world that America was founded on the four freedoms and cherishes them. It offers an opportunity for:

Leadership: consensus building and coordination with public agencies and private institutions;

Inventory development: The creation of heritage tourism technology and historic resource databases;

Interpretation: heritage trails, standardized and accurate brochures, programming of historical significance.

The Development and Management of Heritage Tourism in Washington, DC's Urban Core for the Benefit of Heritage Tourism Throughout the Country

Economic development and revitalization

Focus on education and teaching with historic places

Infrastructure development and transportation enhancement

Information network of historic districts, institutions, neighborhoods, sites and landmarks

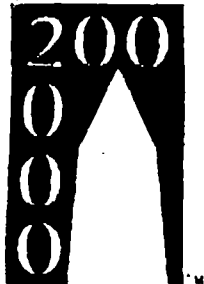
Further development of the urban core as a center and orientation point for entertainment, education, heritage tourism and history

Coordination with business improvement districts throughout the region

Coordination with current planning initiatives

"The future is not a result of choices among alternative paths offered by the present, but a place that is created – created first in mind and will, created next in activity. The future is not some place we are going to, but some place we are creating. The paths are not found but made, and the activity of making them changes both the maker and the destination."

- John Schaar



Nation's
Capital
Bicentennial
Celebration

America Cares About the Image of Its Capital

A National Survey

**Conducted by
Wirthlin Worldwide
February 1997**

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Summary of Findings

The following results are based on a telephone survey of 1,008 randomly selected adults age 18 years and older living in the continental United States. The margin of error is ± 3.1 percentage points at the 95% confidence level.

Five questions were placed on the National Quorum™ focusing on overall opinions regarding favorability, perception, revitalization, priorities, and joining efforts. The following sections outline these points:

Favorability and Perception

Over 9 in 10 (94%) respondents think it is important for our Nation's Capital to be viewed positively. When asked how they think the rest of the world perceives our Nation's Capital, 59% of the respondents feel Washington, DC presents a favorable image (15% very favorable and 44% somewhat favorable), while one third (34%) of the respondents feel Washington, DC presents an unfavorable image to the rest of the world (23% not very favorable and 11% not at all favorable).

Revitalization and Priorities

Almost 9 in 10 (88%) Americans feel it is important to revitalize our Nation's Capital, (57% very important and 31% somewhat important), while seven percent (7%) of the respondents feel that it is not important. Six in 10 (61%) Americans feel the revitalization of our nation's capital should be a priority of Congress, while 3 in 10 (31%) do not.

Joining Efforts

While respondents say it is important for our nation's capital to be viewed positively and to be revitalized as well as believing the United States Congress should make it a priority, respondents are slightly less inclined to join efforts through volunteering and contributing their own personal time and resources. Overall, 4 in 10 (42%) Americans are willing to volunteer, contribute, or a combination of both. Nineteen percent (19%) say they will volunteer and 11% say they will contribute to an effort of revitalization, while 13% say they will volunteer as well as contribute. Americans aged 18-54 are more likely to volunteer their time or contribute than respondents age 55-64 years.

Questions & Answers

1. What is the Nation's Capital Bicentennial Celebration?

The Nation's Capital Bicentennial Celebration (NCBC), a non-profit organization, is an association of volunteers whose mission is to promote the renewal of our nation's capital through private sector support of events to revitalize our nation's capitol and celebrate that revitalization on February 21, 2000 (President's Day). We will mobilize, lead and coordinate the efforts of organizations and volunteers nationally to celebrate the 200th anniversary of the designation of Washington, DC as the nation's capital and recognize its importance as the symbol of freedom throughout the world.

2. How do you plan to do this?

With the assistance of Merv Griffin Productions we will launch a national campaign extolling the nation, its history and its future through activities, projects, events and programs sponsored or coordinated by NCBC. Some of the activities currently planned are

- An Inaugural-style gala produced by Merv Griffin Productions. This President's Day weekend will include; a youth parade, a gala, balls, and other activities similar to a gala.
- Celebrating 200 years of accomplishments by staging 2,000 nation-wide events. These events will involve a cross section of organizations throughout the entire country. Events such as; historic reenactment ceremonies, a tall ships visit to Washington, a children's parade, and a world's fair around the city are just a few examples.
- Launch a "Progress through Partnership" campaign to forge relationships with prominent corporations, organizations and individuals.
- Creation of the George Washington Visitor's Center at the base of the Washington Monument to commemorate the man, the nation, and its people. This will be an interactive center providing a comfortable and convenient place for visitors to gather before touring the monument.

3. Are any other groups participating in these activities with NCBC?

Yes. To date, they include:

National Trust for Historic Preservation

National Geographic Foundation

National Gallery of Art

Corcoran Gallery of Art

American Association of Museums

Federation of DC Associations

Parks and History Association

*US National Park Service
Colonial Williamsburg
Smithsonian Institution
Heritage US
Association for State and Local History
Library of Congress
The World Bank
Historical Society of Washington, DC
US Capitol Historical Society
US 'COMOS
Potomac Heritage Partnership
Georgetown Heritage Trust
The American Society of Le Souvenir Francais
Washington Regional Network
Anacostia Historical Society
Alexandria Seaport Foundation
DC Preservation League
American Architectural Foundation
Accokech Foundation
LeDroit Park Preservation Society
DC Historic Preservation Office
US Navy Memorial Foundation
Georgetown University
George Washington University
Society of the Cincinnati
Washington Gas
Corps of Engineers*

4. *How is a celebration going to fix the District's enormous problems?*

This organization is not just about a celebration—that is just one component. It is about educating the public on America's heritage through program initiatives, and discussion groups, panels and forums. It is about encouraging private businesses to sponsor individual neighborhoods in their revitalization efforts. It is about restoring the pride in our nation's capital so that its reputation as a city is restored to a point that matches its reputation as a symbol of power, freedom and democracy.

A celebration will not fix the District's difficulties. It will, however, bring attention to the progress being made, encourage participation by the private sector, and promote DC's travel and tourism industry—a key job supplier.

5. *Are you proposing another monument for Washington, D.C.?*

This is not a memorial or monument, George Washington already has one, rather it is a functioning facility with a distinct purpose. It will not be obtrusive in any way. The plans call for the Center to be constructed below grade—under ground—and near the

Monument. Heritage US has invested a great deal of time and effort researching and developing the plans for this interactive center.

6. What is the source of your funding?

Heritage US, the founding organization of NCBC, has over the years received funding from a number of foundations, local and federal agencies, and corporations (i.e. The Morris and Gwendolyn Cafritz Foundation has been a major supporter along with the Dorothea DeSchweinitz Fund). Burson-Marsteller has provided an in-kind contribution of their public relations services. NCBC is in the process of recruiting corporate sponsors along with a National Chairman. Currently, NCBC is an organization of volunteers.

7. How will this benefit the city?

The District of Columbia endures a lot of criticism. This organization's agenda is to bring attention to and support for all revitalization efforts including those proposed by President Clinton. The celebration in the year 2000 will be a culmination of these efforts and mark a new beginning of a revitalized nation's capital. Also, with the "Progress through Partnership" program, private businesses will sponsor neighborhood improvement programs, and educational/cultural initiatives. The improvements made in these areas will be of lasting benefit to the city.

8. Is the DC City Council involved? Eleanor Holmes Norton?

The City Council and Eleanor Holmes Norton are aware of NCBC. NCBC will draw attention to and promote the revitalization efforts currently underway. The agendas of the two groups complement each other.

9. What will it cost?

We are currently working on budgets for all activities.

11. How can people join?

By calling (202) 338-6222 or writing to:
Nation's Capitol Bicentennial Celebration
P.O. Box 3567
Washington, DC 20007

NATION'S CAPITAL BICENTENNIAL CELEBRATION

Outreach and Coordination with America's Promise

technology, interactive exhibits, and educational media. This 21st century facility will serve the 20 million visitors who come to the Washington Mall every year, and many more by the information links that are being created.

Involvement of National Organizations

The Progress through Partnership Campaign – A number of prominent national groups have already expressed a desire to become active participants in the Nation's Capital Bicentennial Celebration or have already participated with NCBC's founding organizations. These organizations share NCBC's goal of protecting and preserving our national history. They include:

*National Trust for Historic
Preservation*

National Geographic Foundation

National Gallery of Art

Corcoran Gallery of Art

American Association of Museums

DC Federation of Citizens Associations

Parks and History Association

US National Park Service

Colonial Williamsburg

Smithsonian Institution

Heritage US

Association for State and Local History

Library of Congress

The World Bank

*The California Sesquicentennial
Commission*

Historical Society of Washington, DC

US Capitol Historical Society

US ICOMOS

Potomac Heritage Partnership

First Night, International

Georgetown Heritage Trust

*The American Society of Le Souvenir
Français*

Washington Regional Network

American Architectural Foundation

Anacostia Historical Society

Alexandria Seaport Foundation

Accokeek Foundation

LeDroit Park Preservation Society

DC Historic Preservation Office

DC Preservation League

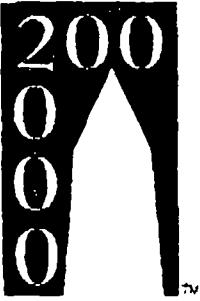
US Navy Memorial Foundation

Georgetown University

George Washington University

Society of the Cincinnati

U.S. Corps of Engineers



**Nation's
Capital
Bicentennial
Celebration**

NATION'S CAPITAL BICENTENNIAL CELEBRATION

Outreach and Coordination with America's Promise

The Nation's Capital Bicentennial Celebration

In the year 2000, Washington, DC will celebrate the bicentennial of its inauguration as the capital of the United States. In that year, America will reflect on its role as the world's greatest democracy, celebrate the city as a shining symbol of freedom for millions around the globe, and renew the Capital's sense of pride and purpose for America as the world prepares for a new century.

The Nation's Capital Bicentennial Celebration (NCBC) will act as a not-for-profit, private sector umbrella organization and catalyst for the revitalization efforts that are underway; will focus on education, history, and economic development; and will highlight the themes of government, tourism, information, culture, health, the environment, transportation, commerce, and other shared interests. The 200th anniversary celebration will emphasize this mission by providing private sector leadership, motivating and organizing individual and community participation, and recognizing and praising accomplishments.

NCBC is preparing to launch a national campaign extolling the nation, its people, its traditions, and its history through a year-long schedule of activities, projects, and programs. This project is being designed for adults and children -- families, school groups, clubs, community organizations, citizens, and visitors -- and is conceived in Olympic styled proportion.

NCBC's work will complement revitalization efforts already being planned including President Clinton's proposed Millennium Projects, the DC Economic Development Corporation, the National Capital Infrastructure Commission, and a variety of community based projects. As a grass roots organization, NCBC is launching a "Progress through Partnership Campaign" to forge relationships with prominent corporations, broaden ties with civic and community organizations, and establish the participation and commitment of key leaders.

Project Scope and Commitment

The support of the goals of the Nation's Capital Bicentennial Celebration (NCBC) runs deep. Individuals across our great country have expressed an emotional tie and deep respect for Washington, DC. A recent survey conducted by The Wirthlin Group, indicated that an overwhelming 94% believe it is important that our nation's capital be viewed positively and 88% of the respondents thought it important to revitalize the capital. In fact, 61% said capital revitalization should be a priority of the U.S. Congress. Americans are also willing to take matters into their own hands -- 42% said they are *individually willing to volunteer and/or contribute to the effort.*

This individual, community, and nationwide support is a key component for success. Significant corporate sponsorship will also be required to implement the NCBC mission. This critical financial support will provide NCBC with the tools to expand its network and to participate with national and local organizations who share the NCBC vision and pursuit of common goals.

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NATION'S CAPITAL BICENTENNIAL CELEBRATION

Outreach and Coordination with America's Promise

America's Promise and NCBC

Because of their common commitment to revitalization, team building, corporate and community participation, and a long standing focus on children and education, many of NCBC's initiatives for the nation's capital complement and reflect the five fundamental resources and goals of America's Promise.

NCBC's programs are organized into four categories:

1. **participatory and celebratory events** – largely self-funding corporate sponsor and volunteer events,
2. **commitment and partnership projects** – projects that require corporate, institutional, and individual donations and partnerships or are jointly organized with partnership groups, e.g. the Smithsonian,
3. **revitalization seed money** – community project seed money or in-kind technical support for revitalization projects,
4. **endowment projects** – projects created and endowed as a legacy to carry the NCBC mission forward.

While many of these NCBC's programs are in an early planning stage, below are a number of initiatives that are compatible with the central goals of America's Promise.

A marketable skill through effective education:

- *Bicentennial Project School Partnerships:* NCBC will create partnerships between specific schools and specific bicentennial events and will work with each school and its student leaders to promote volunteer organization, communication, problem solving, initiative.
- *Bicentennial Celebration Youth Participation:* NCBC will require a fixed percentage of youth participation in the implementation of all corporate sponsored celebratory events.
- *Computers-in-Classrooms:* NCBC will create information technology ties between school children throughout the City and a state-of-the-art visitors center at the Washington Monument.
- *Teaching With Historic Places:* NCBC will create innovative educational forums for teaching -- historical reenactments, historic trails, teachers guides.
- *Bicentennial Intern and Apprentice Programs:* NCBC will establish intern student programs through its partner organizations and historic rehabilitation vocational programs through its celebratory events.
- *Bicentennial Teamwork Scholarships:* NCBC will establish a scholarship programs - such as its historic trail passport project -- to promote learning, education, and team participation.

NATION'S CAPITAL BICENTENNIAL CELEBRATION

Outreach and Coordination with America's Promise

An opportunity to give back through their own service to the community

- NCBC Sponsor's Commitments: NCBC will sponsor numerous projects during the bicentennial year celebration that will engage volunteers of all ages and many communities – 100,000 volunteers, 500,000 contributors, and 30 million visitor/participants in the year 2000.

A caring adult – mentor, teacher, coach

- NCBC Bicentennial Volunteer Network: NCBC will act as a clearing house for adult and youth volunteers for all bicentennial events during the celebration year.
- Bicentennial Celebration Projects: NCBC will create events that will engage caring adult and children's groups such as Boys and Girls Clubs, DC Cares, Boy and Girl Scouts in afterschool learning activities, sporting activities, interactive programs, and heritage tourism and celebration projects.

Safe places and structured activities

- Neighborhood Historic Centers: NCBC proposes to be a catalyst for the creation of neighborhood historic district visitor centers that will double as "safe places" for structured after-school activities. This is envisioned to be in partnership with the city-wide Recreation Department and an on-going program to involve children in their neighborhood.
- Nation's Capital Invitational Golf Tournament: NCBC is in partnership with Langston Golf Course to create a legacy project that will provide expanded clubhouse facilities for mentoring children in sports programs.
- Nation's Capital Bicentennial Celebration/First Night, Washington, D.C. Host a family-based alcohol- and drug-free New Year's Eve celebration of the arts.

A healthy start and a healthy future

- Historic Trails: NCBC will create a number of historic walking, hiking, and biking trails; teacher guides; and packaged outing programs.
- Bicentennial Sporting: NCBC will organize a number of world class and co-sponsored celebratory sporting events

NCBC Activities, Events, and Historic Resource Programs

The 200th anniversary celebration will consist of special events, coordinated activities, sponsored programs, and specialized projects. A sampling of proposed activities and historic resources are outlined below:

New Years Eve Millennium Gala
Train Across America
Independence Day Celebration
City-wide International Fair

Theater Performances:
- Kennedy Center
- Ford's Theater
- National Theater

NATION'S CAPITAL BICENTENNIAL CELEBRATION

Outreach and Coordination with America's Promise

Volunteer 2000 Day	- Wolf Trap
President's Day Ceremony	- Warner Theater
Antique Show & Sale	- Constitution Hall
Historic Reenactment Ceremony	- Shakespeare Theater
Bike Ride & Race	Time Capsule
Tall Ships Parade	Cherry Blossom Ball
First Night International - Washington Partner	State Pride Tour
Salute to the Military - A Freedom Festival	Homecoming 2000
Internet Festival	Heritage Rivers Day
Nation's Capital Invitation Golf Tournament	National Park Service Week
American Discovery Trail	Naval History Trail
The George Washington Memorial Trail	Native American Trail
Early Roadways Trail	Maritime and Canal Trail
Underground Railroad Trail	Hispanic Heritage Trail
Jewish Heritage Trail	Women's Heritage Trail
L'Enfant Trail	Lafayette Trail
The French King's Trail in America	deTocqueville Democracy Trail
Manifest Destiny Trail	Asian American Heritage Trail
Lincoln Trail	Frederick Douglass Trail
Civil War Trail	War of 1812 Trail
City of Washington 1800 Trail	Heritage Tourism Highways
Heritage Computer Games	State Celebration Committees

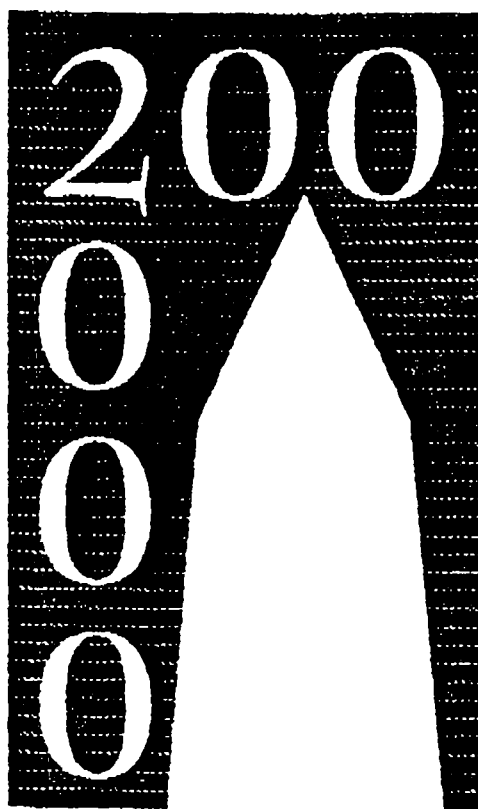
Community Projects and Programs

Programs and projects will celebrate the bicentennial with activities and events designed to promote ongoing revitalization and continued economic development. NCBC involvement, promotion, and support will extend into the following:

Educational Grants and Scholarships	The George Washington Center
Literacy Programs	December Holiday Programs
Museum and Art Education Programs	Children's Programs
Historic Neighborhood Refurbishing	Wellness Programs
Athletic Programs	Traveling DC Exhibit
Commissioned "Placemaker" Art	Vestpocket Parks
Urban Heritage Tourism	Regional Heritage Tourism

The George Washington Center

As a lasting -- and living -- recognition of the historic moment when our Founding Fathers established the nation's capital, NCBC wishes to create and endow a state-of-the-art visitor's center at the Washington Monument. This educational facility will link the Monument to classrooms and centers of inquiry around the city, the nation, and the globe, sharing with them the multiplicity of events that make up the American experience. Designated The George Washington Center, this facility will be oriented toward citizens and visitors alike, with a particular focus on providing educational value to our children. It will be an information technology showcase, incorporating the latest



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Nation's
Capital
Bicentennial
Celebration