PART I

OMB Approval No. 0348-0043

APPLICATION FOR FEDERAL ASSISTANCE

2. DATE SUBMITTED: March 29, 1993

Applicant Identifier:

1. TYPE OF SUBMISSION:
Application: ☐ Construction ☐ Non-Construction
Preapplication: ☐ Construction ☐ Non-Construction
☒ Non-Construction

3. DATE RECEIVED BY STATE:

State Application Identifier:

4. DATE RECEIVED BY FEDERAL AGENCY:

Federal Identifier:

5. APPLICANT INFORMATION

Legal Name: The Dalton School

Organizational Unit: New Laboratory for Teaching and Learning

Address (give city, county, state, and zip code):
108 East 89 Street
New York, NY 10128-1599

Name and telephone number of the person to be contacted on matters involving this application (give area code):
Dr. Frank A. Moretti
(212)722-5160 Ext. 188

6. EMPLOYER IDENTIFICATION NUMBER (EIN): 13 - 2751872

7. TYPE OF APPLICANT: (enter appropriate letter in box) ☐
A. State
B. County
C. Municipal
D. Township
E. Interstate
F. Intermunicipal
G. Special District
H. Independent School Dist.
I. State Controlled Institution of Higher Learning
J. Private University
K. Indian Tribe
L. Individual
M. Profit Organization
N. Other (Specify): Private School

8. TYPE OF APPLICATION:
☒ New ☐ Continuation ☐ Revision
If Revision, enter appropriate letter(s) in box(es): ☐ ☐
A. Increase Award B. Decrease Award C. Increase Duration
D. Decrease Duration Other (specify):

9. NAME OF FEDERAL AGENCY:
U.S. Department of Education

10. CATALOG OF FEDERAL DOMESTIC ASSISTANCE NUMBER: 84.215D
CD: 3/29/93
TITLE: Secretary's Fund for Innovation in Education: Computer-Based Instruction Program

11. DESCRIPTIVE TITLE OF APPLICANT'S PROJECT:
Archaeotype 3.0: Helping Students Master Core Subjects Through An Advanced Computer Simulation.

12. AREAS AFFECTED BY PROJECT (cities, counties, states, etc.):
New York City, NY
Chula Vista, CA

13. PROPOSED PROJECT:
Start Date: 9/13/93
Ending Date: 9/12/94

14. CONGRESSIONAL DISTRICTS OF:
a. Applicant: #14
b. Project: 1,5,6,7,8,9,10,11,12,13,14,15,16,17,18,51

15. ESTIMATED FUNDING:

a. Federal	$ 198,121 .00
b. Applicant	$ 148,774 .00
c. State	$ -0- .00
d. Local	$ -0- .00
e. Other	$ -0- .00
f. Program Income	$ -0- .00
g. TOTAL	$ 346,895 .00

16. IS APPLICATION SUBJECT TO REVIEW BY STATE EXECUTIVE ORDER 12372 PROCESS?
a. YES. THIS PREAPPLICATION/APPLICATION WAS MADE AVAILABLE TO THE STATE EXECUTIVE ORDER 12372 PROCESS FOR REVIEW ON:
DATE _____
b. NO. ☒ PROGRAM IS NOT COVERED BY E.O. 12372
☐ OR PROGRAM HAS NOT BEEN SELECTED BY STATE FOR REVIEW

17. IS THE APPLICANT DELINQUENT ON ANY FEDERAL DEBT?
☐ Yes If "Yes," attach an explanation. ☒ No

18. TO THE BEST OF MY KNOWLEDGE AND BELIEF, ALL DATA IN THIS APPLICATION/PREAPPLICATION ARE TRUE AND CORRECT. THE DOCUMENT HAS BEEN DULY AUTHORIZED BY THE GOVERNING BODY OF THE APPLICANT AND THE APPLICANT WILL COMPLY WITH THE ATTACHED ASSURANCES IF THE ASSISTANCE IS AWARDED

a. Typed Name of Authorized Representative	b. Title	c. Telephone number
	Associate Headmaster & Executive Director NLTL	(212)722-5160

d. Signature of Authorized Representative

e. Date Signed: March 29, 1993

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Archaeotype 3.0: Helping Students Master Core Subjects

Through an Advanced Computer Simulation

Abstract

The New Laboratory for Teaching and Learning at the Dalton School, in collaboration with the Institute for Learning Technologies at Teachers College, Columbia University, and the Education and Curatorial Department of The Brooklyn Museum, proposes to develop *Archaeotype 3.0*. The project will create an advanced computer simulation for introducing students, ranging from grades six through ten, to the study of history, geography, math, ecology and art. In addition to creating the software, it will train public and private school teachers in its use in culturally and economically diverse school settings.

Need: The project addresses a core curricular need to communicate to children the sense that they can take possession of their knowledge and their future by constructing an active interpretation of it. Children need to build the skills required for reasoning with complex information and difficult social and historical questions. *Archaeotype* presents an interdisciplinary approach to learning about ancient civilizations and encourages cooperation rather than competition as the main motivational device in the classroom.

Plan/Outcomes: The project involves (1) the design and development of *Archaeotype 3.0*, a networked, multimedia computer simulation of an Egyptian archaeological site; (2) selection of five New York City public schools to serve as implementation sites; (3) training teachers to use *Archaeotype 3.0* and interactive technologies as renewal agents in the classroom; (4) design of assessment strategies for evaluating student achievement; and (5) supervision and evaluation of a pilot test in nine schools. The project will lead to a generic version of *Archaeotype* that can be customized for use in schools throughout the nation.

Archaeotype 3.0: Helping Students Master Core Subjects Through an Advanced Computer Simulation

Project Narrative

One: Objective:

To develop *Archaeotype 3.0*, a new version of an advanced computer simulation introducing students to the study of history and geography, along with other interdisciplinary possibilities such as math and ecology; and to institute a program apprenticing public and private school teachers in New York City in its use in culturally and economically diverse school settings.

Through *Archaeotype 1.0*, on Ancient Greece, and *Archaeotype 2.0*, on Assyria, sixth-grade students collaboratively excavate simulated archaeological sites and construct historical interpretations of the cultures evidenced by the art and artifacts they uncover. These existing versions of the program have been successful prototypes. The project we propose will create *Archaeotype 3.0*, a new site on ancient Egypt and a production version of the program that will be suitable for testing in diverse settings and will lead to its general distribution. As an effort to develop and advance a significant educational innovation, the project will include the following features:

(a) It will further develop an innovative software program created through a collaboration of key teachers at the Dalton School, working through its New Laboratory for Teaching and Learning; scholars and educators at Columbia University, working through the Institute for Learning Technologies at Teachers College; specialists in the Educational and Curatorial Departments of The Brooklyn Museum; and programmers, graphic artists, and network developers from these institutions.

(b) It will enable the New Laboratory for Teaching and Learning at the Dalton School to introduce *Archaeotype* in public schools throughout the boroughs of New York City in

order to test the program in a variety of school settings.

(c) It will enable the Institute for Learning Technologies at Teachers College to expand its program for developing the capacity of teachers to use programs such as *Archaeotype* as renewal agents in their schools.

(d) It will extend on-going efforts to develop and apply novel assessment strategies in classrooms using *Archaeotype*, in which learning emerges through cooperative activities in which students interpret primary artifacts of our culture.

(e) It will make important artistic and archaeological artifacts from The Brooklyn Museum available to a wide audience that would not otherwise have access to them.

(f) It will lead to a version of *Archaeotype* that can be adopted generally in schools throughout the nation, engaging a generation of children in a deeper, more vital study of the ancient world.

Two: Need:

Archaeotype is a collaborative interactive simulation created to meet evident needs of the classroom. A class of students, divided into four teams, each working at one of four networked multimedia computers, excavate a complex archaeological site and cooperate over a period of ten to fourteen weeks to interpret the culture evidenced by the artifacts they uncover. The students must work together to construct a defensible explanation of real historical evidence, using a wide range of resources -- people, on-line collections, books and reproductions, and consultations with experts. The experience proves engaging, empowering, and enlightening. It addresses fundamental educational needs.

(a) Overall, he *Archaeotype* project addresses three primary needs:

Archaeotype, as a strategy for introducing middle school children to ancient history, emerged from explicit educational needs.

(1) *Subject-matter*. In school studies, the overwhelming need is to communicate to children the sense that they can take possession of their knowledge and their future by

constructing an active interpretation of it. To do that, children need to build the skills required to make such constructions and to internalize the criteria of good reasoning when confronted with complexity of information and difficult intellectual, social, and historical questions.

(2) *Motivation*. Within the classroom, the need is to cultivate cooperation, rather than competition, as the main motivational device.

(3) *Technology*. In the implementation of computer software for educational purposes, the need is to avoid reliance on the novelty of technology in the educational design, using the tools, not as sufficient ends, but as means to engage children in exploring substantively rich resources in the world about them.

(b) The applicants identified these needs through reflective practice.

Archaeotype is the work of the New Laboratory for Teaching and Learning, a development lab that is an integral component of the Dalton School, one of the country's pre-eminent K-12 private schools. The leadership of the school and the lab have identified the needs addressed through *Archaeotype* in the course of conducting the school's educational work and in collaboration with leading scholars in the field of education. The identification of needs thus arises from the travails of reflective practice, the elements of which are as follows.

(1) *Subject-matter*. Reflecting on historical studies, we find that children unfortunately learn history as a story to be memorized. Clearly children must learn about the peoples and problems of the past. Yet, mastering the universally valuable skills of the historian, contending with diverse information and constructing plausible explanations of its character and content, is of equal value to knowing about the past. Historical and social studies in schools have been dominated by curricula informed with a grand narrative, a learnable sequence of causes and effects, often marshaling novel-like heroes and villains, who commit great and heinous acts. In this context, the teacher learns the script in her early years of teaching. With familiarity she overcomes the initial

anxieties of a new teacher stemming from the unpredictability of student responses and from her own incomplete mastery of the script. Given *Archaeotype*'s interactive hypermedia capacities, regardless of the simplicity of the artifactual database chosen, teachers find it almost impossible to predict the direction of a student's inquiries. The teacher must wait and see what direction students choose before she can begin to be useful as an experienced interpreter of similar realms. Indeed, it is this unpredictability which prevents the educational environment from degenerating into an over-simplified drama in which authentic dialogue is impossible because the teacher anticipates from her experience all the possible lines of the conversants. Consider the difference between an experienced guide returning to the same sites year after year and the experienced explorer who has considerable skill in traversing unknown places but rarely retraces her exact steps. This demonstrates the difference between a teacher in the old scripted tradition, locked into a predetermined tour, and the new teacher able to respond each day to the unexpected choices and problems emerging from the study and research of her students. The student becomes the centering force rather than the worn grooves of the curriculum.

(2) *Motivation.* Owing to their demographics and to the gate-keeping functions they have traditionally served within modern societies, schools have classically relied on the force of competition to inspire students to serious effort. Given the new emphasis on the practical importance of cooperation and collaborative problem-solving in the public conversation about work and productivity, the normal view of encouraging competitive attitudes in schools has been significantly challenged. Although the demographics pertaining to student-teacher ratios have not changed, computers have put in our hands a new means of deploying scarce professional resources. A teacher no longer need position herself in front of a class to instruct a large group. Rather, *Archaeotype* allows student attention to focus on the object of study. Further, results cannot be effectively achieved either within the small group or in the context of the larger project without substantial and constant communication and cooperation. When we describe

Archaeotype as an example of integrated curriculum, we mean to include both its capacity to be genuinely interdisciplinary (one needs the different disciplines to solve the problems one faces) and its capacity to encourage learning habits that do not require the spur of competition to gain the qualities of dedication, energy and commitment.

(3) *Technology.* Computer-based curricula are often pallid and canned. At their best, computer-based materials can be vivid and full, but often the screen presents abbreviated explanations, simplified representations, and few pointers for the curious to resources outside the system. When this happens, computer-based programs reinforce one of the great problems of the classroom -- its tendency to become a bounded intellectual environment where the cultural stimuli are generally sparse. Educational environments need to be rich with quality information and powerful ideas. *Archaeotype* meets this need in many ways. The artifacts that students uncover lead them to reach out to a wide range of interpretative contexts -- to on-line resources, to books and reproductions, to people who might have expert knowledge. For instance, in *Archaeotype 1.0* the development team provided students with a list of accessible experts in the different areas of Greek studies to whom they could go when they wish to discuss problems they encountered. They have also encouraged them to make full use of the Metropolitan Museum of Art, the best local collection of Greek antiquities, and to use on-line collections such as the *Perseus Project* and the video discs on the Louvre collections. Helping student excavators develop a mental model of learning, which focuses the questions they have presented to themselves as the significant challenge, rather than winning the "game" in which these questions may first be encountered, stands as a primary goal of this project, and perhaps somewhat ironically, one of the true potentialities of the new technology in education. *Archaeotype 3.0* should be particularly effective in leading students to quality materials, for The Brooklyn Museum has, not only an excellent collection which students can engage through their excavations and unfolding interpretations, but it also has a very strong curatorial and educational staff that

can serve as sources of human expertise, helping students make their interpretations ever fuller and deeper.

(c) ***Archaeotype* meets these needs by using a networked, multimedia simulation to introduce students to the study of ancient civilizations.**

Prototype versions of *Archaeotype* have given a proof of concept that an archaeological simulation using networked multimedia can lead students to develop well-considered narratives of the past, that they can do it through complex classroom collaborations, and that they will avoid the technological solipsism of relying solely on computers in the process. Our project will carry this concept toward general implementation.

> Recently, at a place in Greece just north of the isthmus of Corinth, and a little more than halfway between Eleusis and Plataea, a farmer was plowing his field when he hit upon a particularly large boulder. When he tried to pull the huge piece out of the soil he could not budge it. So, the farmer enlisted the help of his sons who lived with their young families on nearby farms where they cultivated olive groves and grape vines for the export trade. Together the men succeeded in excavating a çhunk of limestone with peculiar striations on one side. The farmer who remembered that his very own father had fished artifacts out of his field many years before knew that the piece of stone was in fact an artifact created in classical antiquity. He also knew that the law required that he inform the Department of Antiquities, an arm of the Greek government, of his discovery and request that an emergency excavation team of archaeologists be sent to the farm immediately. When the team arrived at the farm and had conducted a preliminary observation of the site, the archaeologists recommended that a full-scale excavation be undertaken as soon as the weather permitted. Because of the special relationship that your school has with the Department of Antiquities, you have been given the rare opportunity to join the excavation. You will be a guest in the land of the Ancient Greeks.

Thus begins the sixth grade curriculum module entitled "Lessons From the Soil: The Ancient Greeks," which is a specific deployment of a prototype software package, *Archaeotype*. Technically, *Archaeotype* is a networked, archaeological simulation written for Macintosh computers in the language *SuperCard*. Presently, in addition to the Hellenic iteration of *Archaeotype*, there is an Assyrian excavation entitled "Tell Ahmar: An Assyrian Fortress in North Syria." The Assyrian site was built on the success of the Hellenic and is presently being beta-tested in the Dalton sixth grade. The Hellenic, which has run for three successive years at

Dalton, is presently being tested at the Juarez-Lincoln School of the Chula Vista Elementary School District.

Archaeotype allows students to work in small groups to excavate a section of a simulated archeological site. As they dig and discover things, they send them to the simulated lab where they measure, weigh, and begin their research into the nature of their specific discovery. They are encouraged to use both the resources within the library of the program as well as other resources available outside the orbit of the program such as museums, experts and library materials. The challenges built into the project are intentionally multi-disciplinary requiring the use of math, science, history and philology. As the students continue to excavate, they compile a database on the basis of which they are called upon to make inferences about the society and culture of the site. As they try to construct a picture of some coherence, they are encouraged by the team-oriented nature of the archaeological enterprise itself to cooperate with each other to achieve this goal.

Through the *Archaeotype* prototypes, we have strong indications that the software addresses the three primary needs of the project effectively. Evaluators have found that students effectively engage in constructing their own narrative context for interpreting the specific artifacts they uncover and the site as a whole. To do this, they engage in spirited cooperative work as small groups of students work together to understand their quadrant and join periodically as a whole class to make sense of the site as a whole. With such experiences, students effectively avoid technological solipsism, even if they rely primarily on the computer for information and ideas, for the experiences lead students to focus on the historical, interpretative questions, using any and every resource they can -- the computers, books, pictures, maps, videos, recordings, people and collections, throughout the school, at home, and in surrounding cultural institutions -- to construct a context for interpreting their site and the artifacts they uncover within it.

Over the long run, we intend to develop successive versions of *Archaeotype* in such a way that a school faculty can choose what culture and society should be represented in an

excavation. Teachers will be able to construct an excavation around Chinese, African, or Native American materials. They will be able to control the level of complexity of the site through the selection of artifacts in the dig and through the complexity of research resources both within and without the program environment. We propose to move decisively towards these features of the program with *Archaeotype 3.0*, an Egyptian site, which the New Laboratory for Teaching and Learning will develop in collaboration with the Institute for Learning Technologies at Teachers College, Columbia University, and the Education and Curatorial Department of The Brooklyn Museum. *Archaeotype 3.0* will move the concept beyond the prototype stage toward a genuine production version that can distributed widely. We seek support for developing the software and training strategies for preparing teachers in its use. In this way, the project will turn the potential of a prototype into an emerging general implementation.

Through good schools, the young need to learn how to learn, to solve significant problems through the pursuit of their own inquiry. The design of *Archaeotype* helps students to learn how to learn. It presents real unknowns to students and provides a context of tools and resources enabling them to work creatively, over a sustained time, developing hypotheses and assessing their merits -- criticizing, searching further, and revising. In this process, they draw on a range of intellectual tools and techniques that people usually associate with different subjects -- maps, chronologies, graphs and coordinates, measuring standards, geometric and algebraic calculations, ecological analyses, geological distributions, artistic motifs, technological and scientific histories, religious and mythological studies, medical epidemiologies, economic calculations, and so on. Usually, children experience them at all, they experience the powerful tools of inquiry in all these areas as the ends, the objects of their labor. Yet for real inquiry and action, these resources are tools, means for possibly developing real solutions to real problems. *Archaeotype* enables students to use such resources as means to learning, and will thus help them learn to learn, to form a sense of how to address real difficulties. The more our educational institutions can convey this sense to our children, the more powerfully it will enhance the long-run development of our culture.

(d) The following benefits will result as the project meets its primary needs.

Archaeotype 3.0 will generate specific benefits as a result of the first year of work on it and through its subsequent development. The first-year activities will result in the following:

(1) A curriculum unit on ancient Egypt will have been developed. It will be suitable for use in the sixth through tenth grades and schools will be able to install it in classrooms either from a CD-ROM at the location or from a high-speed wide-area-network link to the development sites at Dalton, Teachers College, and The Brooklyn Museum.

(2) A generic excavation interface and retrieval resources for *Archaeotype* will have been developed, a major step in making it possible to distribute the program generally to schools and colleges.

(3) The Brooklyn Museum will have created digital representations of many objects in its renowned Egyptian collection and made these representations, and curatorial support resources pertaining to them, accessible via wide-area-networks.

(4) An initial cadre of teachers will have learned to use powerful constructivist pedagogical tools with their students, and they will have begun to introduce new curricula and laboratory-based strategies in their schools.

(5) Assessment tools and strategies for documenting how and what students learn as a consequence of working with the new curricula will have been prepared.

(6) Feasibility of an important curriculum delivery model -- one which will use high-speed wide-area-networks to provide access to quality collections of visual, audio, and video materials -- will have been tested.

With the subsequent development of these specifics, benefits of considerable general import to the nation can accrue:

(7) Culturally, *Archaeotype* will contribute to educating citizens who have *learned how to learn*, a quality essential in an ever-changing information society.

(8) Socially, it will accustom students to learning in creative collaboration with

others, an indispensable capacity for coping with the divisive stresses that beset our communities and economies.

(9) Technically, *Archaeotype 3.0* will show how schools, universities, and cultural institutions can modularize and link their educational resources and efforts in ways that will avoid inhibiting entanglements oven intellectual property rights while engendering transformative improvements in education.

Three: Plan of Operation:

Our plan of operation involves the following steps:

(a) Design and development of *Archaeotype 3.0*.

(b) Selection of schools as implementation sites.

(c) Training of teachers for introducing *Archaeotype 3.0* in the selected schools.

(d) Design of assessment strategies for evaluating student achievement in the selected schools.

(e) Supervision of the first pilot test in the selected schools and the formative evaluation of the test to ready *Archaeotype 3.0* for more general use.

The first four steps will take place concurrently during the first year of the project. The last step will follow in subsequent years, along with extensions of the first four.

(a) Design and development of *Archaeotype 3.0*.

To create *Archaeotype 3.0* we will design and develop three distinct, yet related, components:

(1) An educational scenario and interface which will present the problematic of the excavation to a class of cooperating students. This is the component that students will see on the screen of their computers as they proceed through the excavation. A group within the New Laboratory for Teaching and Learning will have primary responsibility for this component, which we will call the Pedagogical Group, directed by Dr. Frank Moretti.

(2) A representation of the artifacts to be found in the site and of the contextual materials -- explanatory texts, pictures, drawings, maps, and videos that students can call-up on-line help make sense of the artifacts they excavate. A group centered at The Brooklyn Museum will have primary responsibility for this component, which we will call the Reference Group, directed by Deborah Schwartz.

(3) A set of on-line tools such as database management programs, hypermedia notebook tools, image-analysis tools, and the like that students and teachers can employ in setting up and carrying out their excavations and reporting on their results. A group drawing from the New Laboratory for Teaching and Learning and the Institute for Learning Technologies will have primary responsibility for this component, which we will call the Tools Group, directed by Robert McClintock.

In addition, a fourth groups, the Assessment Group, directed by Dr. John Black, will work concurrently to develop some special student assessment tools (see below, Section 3d, page 18.

The Pedagogical Group. The staff of the New Laboratory, along with key teachers associated with earlier versions of *Archaeotype*, have extensive experience with the pedagogical strategies employed in the program. Each version includes a carefully contrived assignment, designed to take six or more weeks to complete. This assignment informs the choice of materials in the site and the resources available for interpreting them. It is the most important and difficult part of the program to develop from an educational point-of-view. The main features of it should be created by the Dalton staffs as early as possible in the life of the project. They will start 1993-94 engaging in a general survey of Egyptian archaeology, in particular, becoming fully familiar with the Egyptian collections of The Brooklyn Museum. The Museum is currently reinstalling its Egyptian collection, which will reopen early in November 1993. At that time, the program development staff to start discussing with the curatorial staff there various options for the design of the excavation. By January 1, 1994, they should have a general specification sheet for the excavation, setting its location, the chronological span of artifacts within it, the cultural typology of its main components, and an inventory of the intellectual

constructions that students are likely to embark upon in the course of the excavation. A preliminary version of the assignment statement should be complete by that date as well. The Pedagogical Group should then turn to laying out the excavation interface which needs to be carefully designed to engender the appropriate division of labor within a class, to be clear and engaging to students using it, and to be coherent and efficient throughout the full life of the excavation. In developing the excavation interface, the Pedagogical Group will need to work closely with both the Reference Group and the Tool Group.

The Reference Group. The Brooklyn Museum has one of the premier collections of Egyptian antiquities and an excellent curatorial and education staff. They have already started to develop digital representations of key holdings. The Reference Group will work with the Pedagogical Group to determine how the objects placed in the site should be represented and to select, digitize, and organize the supplementary materials that will be available on-line as resources to help excavators to make sense of what they find and to interpret objects and the site as a whole. The Reference Group will need, at first, to concentrate on developing the representation of objects in the site. They will need to work closely with the Pedagogical Group to make sure the representation of objects they prepare reflects the educational rationale of the site and the objects in it. In addition to developing the digital representations of the objects in the site, the Reference Group needs to select and create the on-line interpretative resources that will be available to the excavators as they work, uncovering objects and developing their interpretations of them. These materials should be authoritative from the scholarly point-of-view, and even more importantly, effectively usable in helping student archaeologists formulate sound, insightful hypotheses about what they are discovering. In developing the representation of objects in the site and of interpretative resources, the Reference Group will need to work closely with the Tools Group to make sure that the digitized representations they develop conform to the data standards required by the tool set designed for the program.

The Tools Group. Both the other groups concentrate on the *what* of the educational experience. The Tools Group needs to concentrate on the *how*, creating tools that will work,

insofar as possible, generically, with any site layout and representation of its contents and interpretative resources. From prior versions of *Archaeotype*, we have a good working understanding of the design requirements for many tools to be build into *Archaeotype 3.0*. By November 1, 1993, the Tools Group should have a full requirements statement prepared for discussion with the other two groups. This should be finalized by January 1, 1994, and two distinct implementations need then to be developed. The first will allow for interim testing in settings where powerful wide-area-network linkages are not in place, a constraint we expect to pertain in most of our school locations. In this version, both the excavation interface and the representations of objects in the site and the interpretative resources will reside on one local-area-network. The second will allow for the testing of the typology that we expect for a full production version. In it, the excavation interface and the main tool set will reside on classroom computers, linked together by a local-area-network, while the representation of the objects in the site and the interpretative resources will reside on a database server at The Brooklyn Museum accessed by high-speed wide-area-network links. This second version will not pose significant difficulties in the design of the tool-set. In the near future we expect there to be a significant market for both formats, and as sophisticated wide-area-network links become common in schools by the end of this decade, the networked version will become standard.

Thus all three development groups will be working in parallel during the 1993-94 academic year. *Archaeotype 3.0* should be up and running in a preliminary version at the Dalton School, at Teachers College, and at The Brooklyn Museum by June 1, 1994, in time to prepare for the Summer Training Workshops in July (see below, Section 3c, page 16).

(b) Selection of schools as implementation sites.

Selecting implementation site schools will take place during the 1993-94 academic year. With the I-CM Project, for teaching science with the Interactive-Colloquium Method that was funded by the Secretary of Education, the DeWitt Wallace-Readers Digest Fund, and the Helena Rubinstein Foundation (see appendix), the New Laboratory for Teaching and Learning has

worked collaboratively with diverse schools the New York City Public School System and it has maintained these relationships. The New Laboratory for Teaching and Learning has also been the center for the Mayor's Partnership for Public and Private Schools for New York City. In addition, the Institute for Learning Technologies at Teachers College has had several funded projects with public schools the New York City system and through the New York Youth Network, a computer-based bulletin-board for at risk youths, it cooperates with a variety of community-based groups. The Brooklyn Museum itself has a very active public education program, running funded summer institutes for public and private school teachers on ancient Egyptian art and archaeology, as well as other topics.

An Advisory Board will, among other things, help the Project Directors select schools as implementation sites. The board will include the following, who have agreed to serve:

Anthony Alvarado	Superintendent of District Two in the New York City Public School System.
George Bond	Professor of Anthropology and Education and Director of the Institute of African Studies, Columbia University.
Ann El-Omami	Curator of Education at the Cincinnati Museum of Art.
Ogden Goelet	Assistant Professor of Egyptian Language and Literature, New York University.
Toni Schmiegelow	Executive Director of the City Volunteer Corps.

In past collaborations, we have learned that schools should be selected close to the actual start of implementation at the site and that broad interest in the project within the school, in addition to support from the top authorities, is essential to achieve success. Hence, we will use a range of criteria for selecting potential partners, among them:

(1) The cultural diversity of the school itself will be a very significant criterion. Our expectation is that the school must in some way represent the range of students in the

New York Public School System and therefore to some extent the range of students in most urban settings.

(2) Whether or not a school has sufficient technical base without requiring extensive upgrade to sustain the project through classroom use.

(3) The level of faculty enthusiasm for projects of this type and their willingness to work for approximately five weeks in the summer before the actual implementation of the project in the school.

(4) The full support of the principal of the school and a clear indication that the principal understands that the new technologies can enhance learning in the direction of constructivist pedagogical principles.

(5) The central support of the superintendent of whichever district each school was in.

The final deadline for the selection of the five public schools, one from each of the five boroughs of New York, will be May 1st. In addition to these five school sites, we will implement *Archaeotype 3.0* at four additional locations: the Dalton School, where the New Laboratory for Teaching and Learning has developed prior versions of *Archaeotype;* Boys Harbor in upper Manhattan, with which the New Laboratory has a preexisting collaboration; the New York City Museum School, in the creation of which The Brooklyn Museum has been a moving force; and the Juarez Lincoln School from the Chula Vista Elementary School District in California, which has already become a test site for earlier iterations of *Archaeotype*.

The calendar for the process of selection is as follows:

10/15/93: Using the Advisory Board and our own educational network including Teacher's College, public school collaborators we will collect a series of recommendations of at least 15 schools that might meet the above mentioned criteria.

10/15/93 to 11/15/93: The director will make school visits which will include a demonstration to the administration and faculty of the interested school of earlier iterations of Archaeotype and an explanation of the educational principles involved as well as

a clear indication of where Archaeotype can supplant in an effective way the traditional curriculum from their specific curriculum outline. The school visits will also involve a review of school facilities and interview the teachers and administration in order to determine level s of interests. Those schools that are still interested after the visit will express that interest by formally applying for participation in the project by December 1st. We will seek to get by December 15th support from the superintendent of the school district of each of the applicants.

10/15/93 to 11/15/93: The director will make school visits which will include a demonstration to the administration and faculty of the interested school of earlier iterations of Archaeotype and an explanation of the educational principles involved as well as a clear indication of where Archaeotype can supplant in an effective way the traditional curriculum from their specific curriculum outline. The school visits will also involve a review of school facilities and interview the teachers and administration in order to determine level s of interests. Those schools that are still interested after the visit will express that interest by formally applying for participation in the project by December 1st. We will seek to get by December 15th support from the superintendent of the school district of each of the applicants.

1/10/94: The project will make a commitment to five schools and three schools on the waiting list, with the goal that five schools be one from each borough.

(c) Training of teachers for introducing *Archaeotype 3.0* in the selected schools.

From the schools finally selected, four teachers will be chosen with the principal with the goal being that at least two be social studies teachers preferably from the 5th and 6th grades and two others from other disciplines but having an interest in the project. It would also be desirable that one of the two non-social studies teachers be a librarian since the project is significantly

concerned with information resources on the direction that the shaping of intellectual information resources in a specific school goes. The criteria for selecting the four teachers will be:

(1) diversity;

(2) motivation and interest;

(3) intellectual preparation for working in a constructivist educational environment, which may come from a variety of experiences, ranging from teacher-preparation courses to work on other projects that have similar essential principles but not the technological base of *Archaeotype*.

The calendar for selection process will be as follows:

1/15/94:	Principals make recommendations.
1/15/94 to 2/15/94:	Teachers will be interviewed by the project director in conjunction with a team from the development group and a representative of the advisory group.
2/28/94:	The four teachers from each of the five schools will be selected by the above group.
4/1/94:	Description and demonstration of the prototype will take place and a workshop discussion of its use, power and curricular placement.
7/1/94 to 7/31/94:	Summer Training Workshop will take place. Credit will be available for taking this workshop through Teachers College or in place of credit teachers taking this workshop will receive a $1,000 stipend.

The five weeks of the workshop will be allocated as follows:

Week 1:	Basic training in the use of Archaeotype and an introduction to the philosophical premises and the future of interactive networked multimedia.
Weeks 2 & 3:	The twenty teachers, under the supervision of the summer training institute personnel, will do the simulated excavation with daily debriefings exploring the educational possibilities and problems implicit in the prototype.

Weeks 4 & 5: Teachers with their supervisors will work out the specific curriculum adaptations necessary for each school which take into account the material constraints of the school, its information resources, and specific characteristics of its student population.

(The Summer Institute will be run collaterally and cooperatively with The Brooklyn Museum's Egyptian Summer Institute for Teachers.)

(d) Design of assessment strategies for evaluating student achievement in the selected schools.

In Section 6 below, we describe what we intend to do to evaluate the effectiveness of *Archaeotype 3.0* as an educational resource. The subject of evaluation there is the program we propose to develop. A significant element of the program to be developed consists of assessment strategies for documenting what students learn through *Archaeotype* and providing them helpful feedback that can help make their studies bear optimal fruit. Here the subject of assessment is the student.

Traditional assessments -- quizzes and essays keyed to the text and the teachers glosses to it -- are not particularly relevant to understanding student performance with *Archaeotype*. Indeed, traditional assessments will be out of harmony with *Archaeotype* and would probably deflect students' effort into unproductive paths. We instead seek to develop three types of assessment strategies that are consistent with the goals and procedures of the program -- embedded assessment, portfolio assessment, and transfer assessment.

Embedded assessment characterizes much real scholarly inquiry and problem-solving activity, especially as it is conducted by working groups. Embedded assessment opportunities will be integral components of the work-flow in the *Archaeotype 3.0* pedagogy. Once a week each class, working together on the full site, should meet as a whole to present key findings, to explain preliminary hypotheses, and to discuss how to proceed. Each sub-group assigned to a quadrant should continually discuss how each can best contribute to moving the excavation

forward and brainstorm about the artifacts they have found. The whole process of inquiry moves forward as students share and criticize preliminary findings, searching out further information, developing and overturning possible hypotheses. All this is the embedded assessment integral to active inquiry and study.

Portfolio assessment results because students work together to produce on-line site reports presenting their selection of key artifacts and their interpretations of the site based upon them. These reports will reflect both individual effort and collaborative accomplishment and a significant component of the pedagogical design will be to provide a framework helping students to develop these reports. Two cycles of formative evaluation are already available. *Archaeotype 1.0* has students learn the rudiments of *Hypercard* and then use it to create their reports. In some instances this worked very well and in others students found the added dimension of having to do some programming to present their analyses too daunting. In *Archaeotype 2.0* a preprogrammed framework for exploring interpretative hypotheses has been included. Observations of the first group of students using this tool are currently underway, and these findings will help further develop the site reporting resources built into *Archaeotype 3.0.* the basic goal with these resources should be to permit students to pose the problematic of the site and specific artifacts, to link to visual and textual resources for dealing with these problems, to incorporate new information into the system that they find useful, and to present, weigh, and explain hypotheses about their site and artifacts that seem to them compelling. The portfolio assessment tools will allow students to preserve their accomplishments and will provide work that teachers can formally assess. The educational design of *Archaeotype 3.0* will include a set of guidelines for the formal assessment of site reports.

Transfer assessment will involve the creation of special problem-solving challenges to be administered to groups that have completed *Archaeotype 3.0.* The theory here is that learning to learn is the most important achievement that can result from *Archaeotype.* A good way to assess whether this is happening would be to devise group problem-solving challenges that would show the degree to which students had internalized key strategies and capacities through their

experience with *Archaeotype* and could transfer the use of them to the new setting. The evaluation component to be developed by Professor John Black will center on creating such resources.

(e) **Supervision of the first pilot test in the selected schools and the formative evaluation of the test to ready *Archaeotype 3.0* for more general use.**

The full pilot test of the Egypt project will take place simultaneously at nine locations during the 1994-95 school year:

1) The Dalton School, where the New Laboratory for Teaching and Learning has developed *Archaeotype*.

2) The Juarez Lincoln School, in the Chula Vista Elementary School District, where a team from San Diego State University, led by George Mehafy and Bernard Dodge, are presently evaluating use of the Greek *Archaeotype* as a unit in sixth-grade social studies.

3) The Museum School -- one of the New Visions Schools supported by the Fund for Public Education and directed by the Board of Education and the New York City Museum Consortium.

4) Boys Harbor, a privately funded school for at risk youths in Harlem.

5-9) The five public schools selected in accordance with the aforementioned process.

The supervision of the actual pilot tests will involve visits by summer institute faculty, on-line communications through electronic mail and monthly colloquia at the Institute for Learning Technologies and the New Laboratory for Teaching and Learning focused on problems emerging in the process of implementation. The personnel conducting the supervision and training during the process of actual implementation will include graduate students participating in the Full-time Internship Cohort Masters Option, co-sponsored by the New Laboratory for Teaching and Learning and the Institute for Learning Technologies in the Department of Communication, Computing, and Technology at Teachers College. Teachers and designers

from the New Laboratory for Teaching and Learning, who have had experience in working with simulated archaeological excavations, such as Dr. Neil Goldberg, will also supervise the implementations, as will professors from the Institute for Learning Technologies and museum personnel who will have been effectively involved in the actual development of the intellectual characteristics of the site.

Through the process of supervision, formative evaluation information on the design and implementation of *Archaeotype 3.0* will be gathered and communicated to the three groups -- the Pedagogical, Reference, and Tools Groups -- that developed the program the previous year. The information will allow them to improve the excavation interface, revise and expand materials on-line that serve as interpretative resources, and to debug and perfect the operation of the connections between the interface and the representations of objects in the site. In addition, a Documentation Group will work with teachers at the nine implementation sites to develop manuals and teachers guides that help new users get the program to operate will through general distribution.

During the process of formative evaluation, the design of the student assessment tools will also be tested.

Four: Personnel

The key people in the project have extensive experience and excellent qualifications. Here are short biographies of the most important. Full resumes are in an appendix.

Principal Investigator

Director, Pedagogical Group

Frank A. Moretti, Ph.D. is presently Associate Headmaster of the Dalton School and Executive Director of the New Laboratory for Teaching and Learning. He originated the educational use of simulated excavations at Dalton and managed development of the Greek *Archaeotype*, which became the core of the Dalton Technology Project, an effort to integrate networked multimedia throughout the Dalton curriculum, K -12, financed at about $1 million per year. Moretti has been involved in innovative curriculum design for twenty years and was

responsible, before coming to Dalton in the early 1980s, for the design of Bloomfield College's Teacher Training Program, New York University's Bachelor of Education Program for Adults, as well as for a range of projects related to the K-12 curriculum in public and private education. His most recent publication is "A Classicist Conversing with the Conservatives," due for publication in the *Teachers College Record* in summer 1993.

Director, Tools Group

Robert McClintock, Ph.D., directs the Institute for Learning Technologies at Teachers College, Columbia University, where he is Professor of History and Education. McClintock helped to develop the Dalton Technology Project and serves as one of the Co-Directors of it. From 1985-89 he chaired the Department of Communication, Computing, and Technology at Teachers College. He has published and lectured widely, here and abroad, on issues of technology and education and on the history of educational theory. His most recent book, ***Power and Pedagogy: Transforming Education Through Information Technology*** will be published late in 1993 by the Educational Technology Press.

Director, Reference Group

Deborah Schwartz, B.A., Vice Director for Education at The Brooklyn Museum, has been with the Museum since 1982. She previously held positions at the Landmark's Preservation Commission; the Institute of Fine Arts, New York University; and the Museum of Contemporary Art, Chicago. Ms. Schwartz received her B.A. in art history from Northwestern University and is finishing her M.A. from Queens College. She is currently Co-Chair of the Museum Education Consortium, and Vice President of the Gallery Association of New York State. She also teaches in the Master's degree program at the Bank Street College of Education. At The Brooklyn Museum, Ms. Schwartz is responsible for overseeing the planning and implementation of all educational and interpretative programs for adults and children.

Director, Assessment Group

John B. Black, Ph.D., is Professor of Computing and Education at Teachers College, Columbia University. Before coming to Teachers College in the mid 1980s, he taught cognitive science at Yale University. Dr. Black directs the Center for Literacy Studies at Teachers College and has wide experience in the design and implementation of educational software and alternative assessment measures. He is currently managing the effort to develop new assessment measures in the Dalton Technology Project. Dr. Black has published numerous research studies on the study of cognition and its bearing on the design of instructional efforts.

Five: Budget Discussion

The *Archaeotype 3.0* Project will be embedded in on-going efforts by the key participating groups, with the result that it will benefit from substantial cost-sharing. The New Laboratory for Teaching and Learning has already developed two versions of *Archaeotype*, with great success in the classroom. The new version will benefit from this experience and make it more ready for dissemination to schools throughout the nation. The Dalton Technology Project is one of the most advanced efforts to integrate technology, K-12, in an excellent school and the experience and infrastructure of this effort will make the *Archaeotype 3.0* project far more cost effective. Likewise, The Brooklyn Museum has a premier collection of Egyptian antiquities. The availability of such pre-existing resources will enable the project to create and test software of great power and quality for a modest additional investment.

Explanations of specifics in the budget will be found with the budget forms.

Six: Evaluation Plan

During the first year of the *Archaeotype 3.0* project, we plan to gather extensive data to serve as a base-line for evaluating the performance of the program in its pilot tests. We will document the achievements and cognitive skills of two groups thoroughly -- those of the

students who in the following year will work with *Archaeotype 3.0*, and those of the students who complete this year the courses into which *Archaeotype 3.0* will be introduced next year. Information on the first group will provide a base-line for understanding the developmental effects of working with *Archaeotype 3.0*. Information on the second group will provide a base-line for comparing the achievements of those working with *Archaeotype 3.0* to those who have not.

In gathering data on the first group, we will lay a foundation for evaluating key expectations about the effects of a constructivist program such as *Archaeotype*. We would assess the full range of cognitive skills as measured against Bloom's taxonomy of cognitive skills. Here are some specific sorts of claims we would like to test, as these are the distinctive claims that indicate the unique and powerful value of the program.

- Students who have worked with *Archaeotype 3.0* will integrate factual information into explanatory arguments more often than students who have not.
- *Archaeotype* students will be more likely to extract and express principles from what they learn than other students.
- *Archaeotype* students will more frequently solve problems applying mathematical or other formal strategies.
- *Archaeotype* students will seek to use information resources available in their immediate environment to solve novel problems more frequently than other students.
- Given a problem, *Archaeotype* students will focus on it in conversation together more fully than other students will.
- *Archaeotype* students will more often mobilize teachers and texts, less as authoritative answers, and more as resources to help them construct or determine answers, than will other students.
- In writing or speaking about causal explanations, *Archaeotype* students will more often weigh multiple hypotheses, recognizing pros and cons for each, than will other students.

During the first year of the project, the evaluation team will refine the list of claims we seek to test and will gather base data for use evaluating these claims the following year.

Seven: Institutional Resources

The *Archaeotype 3.0* Project will combine the resources of significant institutions -- the New Laboratory for Teaching and Learning at the Dalton School, the Institute for Learning Technologies at Teachers College, Columbia University, and the Educational and Curatorial Department of The Brooklyn Museum. Fuller information on these institutions is included in the appendices. For a complete description of the Dalton Technology Project, see *Risk and Renewal: First Annual Report of the Phyllis and Robert Tishman Family Project in Technology and Education -- 1991-1992* (New York: New Laboratory for Teaching and Learning, 1992). For a full description of The Brooklyn Museum resources see Richard A. Fazzini, *et al. Ancient Egyptian Art in the Brooklyn Museum* (New York: The Brooklyn Museum, 1989,)

In addition, the resources of two substantial school districts -- the New York City Public School System and the Chula Vista Elementary School District in San Diego, California -- will participate as implementation sites.

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BUDGET INFORMATION — Non-Construction Programs

SECTION A - BUDGET SUMMARY

Grant Program Function or Activity (a)	Catalog of Federal Domestic Assistance Number (b)	Estimated Unobligated Funds		New or Revised Budget		
		Federal (c)	Non Federal (d)	Federal (e)	Non-Federal (f)	Total (g)
1 Computer-Based Inst. Program	84:215D	$	$	$ 198,121	$ 148,774	$ 346,895
2						
3						
4						
5 TOTALS		$	$	$ 198,121	$ 148,774	$ 346,895

SECTION B - BUDGET CATEGORIES

6 Object Class Categories	GRANT PROGRAM, FUNCTION OR ACTIVITY (1) 84:215D	(2)	(3)	(4)	Total (5)
a Personnel	$ 101,970	$	$	$	$ 101,970
b Fringe Benefits	22,433				22,433
c Travel	5,000				5,000
d Equipment	50,000				50,000
e Supplies	10,000				10,000
f. Contractual	110,265				110,265
g. Construction	-0-				-0-
h. Other	-0-				-0-
i. Total Direct Charges (sum of 6a - 6h)	299,668				299,668
j Indirect Charges	47,227				47,227
k TOTALS (sum of 6i and 6j)	$ 346,895	$	$	$	$ 346,895
7 Program Income	$ -0-	$	$	$	$ -0-

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SECTION C - NON-FEDERAL RESOURCES

	(a) Grant Program	(b) Applicant	(c) State	(d) Other Sources	(e) TOTALS
8	84:215D Computer Based Instruction Program	$ 148,774	$	$	$ 148,774
9					
10					
11					
12	TOTALS (sum of lines 8 and 11)	$ 148,774	$	$	$ 148,774

SECTION D - FORECASTED CASH NEEDS

		Total for 1st Year	1st Quarter	2nd Quarter	3rd Quarter	4th Quarter
13	Federal	$ 198,121	$ 39,780	$ 39,780	$ 34,780	$ 83,781
14	NonFederal	148,774	10,943	10,943	32,444	94,444
15	TOTAL (sum of lines 13 and 14)	$ 346,895	$ 50,723	$ 50,723	$ 67,224	$ 178,225

SECTION E - BUDGET ESTIMATES OF FEDERAL FUNDS NEEDED FOR BALANCE OF THE PROJECT

	(a) Grant Program	FUTURE FUNDING PERIODS (Years) (b) First	(c) Second	(d) Third	(e) Fourth
16	84:215D Computer Based Instruction Program	$ 175,000	$ 175,000	$	$
17					
18					
19					
20	TOTALS (sum of lines 16 -19)	$ 175,000	$ 175,000	$	$

SECTION F - OTHER BUDGET INFORMATION

(Attach additional Sheets if Necessary)

21 Direct Charges:

22. Indirect Charges: $47,227 calculated as 22% of personnel, fringe and contractual stipends which total $214,668

23 Remarks

See budget explanation that follows.

Budget Explanation

a. Personnel **($101,970 total; $77,404 Federal; $24,566 Non-Federal)**

- **Frank Moretti**, Principal Investigator, has 20% of his base salary allocated to the project, 2/3rds charged to application and 1/3rd to be cost-shared. Dr. Moretti will direct the over-all project and be the lead member of the Pedagogical Design Group.
- **Robert McClintock**. Director of the Tools Development Group, has 20% of his base salary allocated to the project, all of it charged to the application. Dr. McClintock will manage the effort at the New Laboratory for Teaching and Learning and at the Institute for Learning Technologies to create the database management tools to link the pedagogical interface with the representations of objects in the site and the interpretative materials.
- **Deborah Schwartz**, Director of the Reference Group, has 10% of her base salary allocated to the project, all of it charged to the application. Ms. Schwartz will manage the digitization of representations of objects in the site and of interpretative resources that will be available on-line.
- **John B. Black**, Director of the Assessment Group, has 10% of his base salary allocated to the project, all of it charged to the application. Dr. Black will design and administer the assessment resources for documenting student learning through work with *Archaeotype 3.0*.
- **Technical Support**, has been calculated as 30% of the Dalton Network Manager's base salary, with 40% charged to the application and 60% to be cost-shared. He is our expert on local- and wide-area-networks. Providing system support and participating in the development of the Tool resources for *Archaeotype 3.0* will be a major component of his responsibilities during the 1993-94 project budget period.

- **Software Development**, has been calculated as 50% of the base salary for our main programmer, with 75% charged to the application and 25% to be cost-shared. He has coded previous versions of *Archaeotype* and will oversee the new development. Graduate student interns will help in coding some modules.
- **Materials Development**, has been calculated as 10% of the base salary of a curator on the staff of The Brooklyn Museum, all of it charged to the application. The curator will oversee selection of artifacts for digital representation in the site and the interpretative materials on-line.
- **Manual Development**, has been calculated as 50% of the salary of a New Laboratory staff member, with 75% charged to the application and 25% to be cost-shared. She will devote a substantial portion of her time developing guides for the classroom use of *Archaeotype 3.0* for teachers and generally performing liaison within the different components of the over-all project.

b. Fringe Benefits **($22,433 Total; $17,028 Federal; $5,405 Non-Federal)**

- **Fringe Benefits** have been calculated at 22% of the salaries for Personnel, the standard rate at the Dalton School.

c. Travel **($5,000 Total; $0 Federal; $5,000 Non-Federal)**

- **Travel** is an estimated figure allowing for 3 round-trips between New York and San Diego at $1,500 each and a sum of $500 for staff travel in the New York metropolitan area.

d. Equipment **($50,000 Total; $0 Federal; $50,000 Non-Federal)**

- **Hardware and Software** is a lump sum, all to be cost-shared. $35,000 of it will be for an installation of 8 networked Macintosh machines and a server at Boys Harbor by the Dalton Technology Project. $15,000 will cover a variety of telecommunications hardware and software needed to make the wide-area-network version of *Archaeotype 3.0* function.

e. **Supplies** **($10,000 Total; $10,000 Federal; $0 Non-Federal)**

- **Supplies** are a lump sum to be expended mainly through The Brooklyn Museum to cover costs of digitizing materials for inclusion in *Archaeotype 3.0.*

f. **Contractual** **($110,265 Total; $59,765 Federal; $50,500 Non-Federal)**

- **Workshop Stipends**, estimating 40 participant teachers, four to five from each school, at a stipend of $1,000 each, with half charged to the application and with half cost-shared.
- **Workshop Instruction**, estimating three workshop instructors at a stipend of $3,000 each, with all of it charged to the application.
- **Field Supervision**, estimated at 10 interns each receiving a $1,000 stipend, one professional from San Diego State at a stipend of $2,500, and three professionals from the New York City area at $6,000 each. The cost of 2 interns, the California professional, and one New York professional will be cost-shared; the remainder is charged to the application.
- **Evaluation**, is a lump sum of $20,000, all cost-shared, to cover the expense of acquiring, administering, and scoring tests to be administered in setting the base-lines for student performance in 1993-94, prior to working with *Archaeotype 3.0* in the following year.
- **Materials Development**, represents an advanced, full-time intern at The Brooklyn Museum who will do much of the work of digitizing materials for inclusion in *Archaeotype 3.0.* The cost is estimated at $10,000 for a ten-month internship, with benefits at 7.65%, the Museum's standard rates for such internships.

g. **Construction** **($0 Total)**

- **Construction** costs are not anticipated in the project.

h. **Other** **($0 Total)**

- **Other** costs are not anticipated in the project.

i. **Total Direct Charges** **($299,668 Total; $164,197 Federal; $135,471 Non-Federal)**

j. **Indirect Charges** **($47,227 Total; $33,924 Federal; $13,303 Non-Federal)**

- **Indirect Charges** have been calculated at 22% of salaries and stipends included in Direct Charges.

k. **Total** **($346,895 Total; $198,121 Federal; $148,774 Non-Federal)**

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ASSURANCES — NON-CONSTRUCTION PROGRAMS

Note: Certain of these assurances may not be applicable to your project or program. If you have questions, please contact the awarding agency. Further, certain Federal awarding agencies may require applicants to certify to additional assurances. If such is the case, you will be notified.

As the duly authorized representative of the applicant I certify that the applicant:

1. Has the legal authority to apply for Federal assistance, and the institutional, managerial and financial capability (including funds sufficient to pay the non-Federal share of project costs) to ensure proper planning, management and completion of the project described in this application.

2. Will give the awarding agency, the Comptroller General of the United States, and if appropriate, the State, through any authorized representative, access to and the right to examine all records, books, papers, or documents related to the award; and will establish a proper accounting system in accordance with generally accepted accounting standards or agency directives.

3. Will establish safeguards to prohibit employees from using their positions for a purpose that constitutes or presents the appearance of personal or organizational conflict of interest, or personal gain.

4. Will initiate and complete the work within the applicable time frame after receipt of approval of the awarding agency.

5. Will comply with the Intergovernmental Personnel Act of 1970 (42 U.S.C. §§ 4728-4763) relating to prescribed standards for merit systems for programs funded under one of the nineteen statutes or regulations specified in Appendix A of OPM's Standards for a Merit System of Personnel Administration (5 C.F.R. 900, Subpart F).

6. Will comply with all Federal statutes relating to nondiscrimination. These include but are not limited to: (a) Title VI of the Civil Rights Act of 1964 (P.L. 88-352) which prohibits discrimination on the basis of race, color or national origin; (b) Title IX of the Education Amendments of 1972, as amended (20 U.S.C. §§ 1681-1683, and 1685-1686), which prohibits discrimination on the basis of sex; (c) Section 504 of the Rehabilitation Act of 1973, as amended (29 U.S.C. § 794), which prohibits discrimination on the basis of handicaps; (d) the Age Discrimination Act of 1975, as amended (42 U.S.C.§§ 6101-6107), which prohibits discrimination on the basis of age; (e) the Drug Abuse Office and Treatment Act of 1972 (P.L. 92-255), as amended, relating to nondiscrimination on the basis of drug abuse; (f) the Comprehensive Alcohol Abuse and Alcoholism Prevention, Treatment and Rehabilitation Act of 1970 (P.L. 91-616), as amended, relating to nondiscrimination on the basis of alcohol abuse or alcoholism; (g) §§ 523 and 527 of the Public Health Service Act of 1912 (42 U.S.C. 290 dd-3 and 290 ee-3), as amended, relating to confidentiality of alcohol and drug abuse patient records; (h) Title VIII of the Civil Rights Act of 1968 (42 U.S.C. § 3601 et seq.), as amended, relating to nondiscrimination in the sale, rental or financing of housing; (i) any other nondiscrimination provisions in the specific statute(s) under which application for Federal assistance is being made; and (j) the requirements of any other nondiscrimination statute(s) which may apply to the application.

7. Will comply, or has already complied, with the requirements of Titles II and III of the Uniform Relocation Assistance and Real Property Acquisition Policies Act of 1970 (P.L. 91-646) which provide for fair and equitable treatment of persons displaced or whose property is acquired as a result of Federal or federally assisted programs. These requirements apply to all interests in real property acquired for project purposes regardless of Federal participation in purchases.

8. Will comply with the provisions of the Hatch Act (5 U.S.C. §§ 1501-1508 and 7324-7328) which limit the political activities of employees whose principal employment activities are funded in whole or in part with Federal funds.

9. Will comply, as applicable, with the provisions of the Davis-Bacon Act (40 U.S.C. §§ 276a to 276a-7), the Copeland Act (40 U.S.C. § 276c and 18 U.S.C. §§ 874), and the Contract Work Hours and Safety Standards Act (40 U.S.C. §§ 327-333), regarding labor standards for federally assisted construction subagreements.

10. Will comply, if applicable, with flood insurance purchase requirements of Section 102(a) of the Flood Disaster Protection Act of 1973 (P.L. 93-234) which requires recipients in a special flood hazard area to participate in the program and to purchase flood insurance if the total cost of insurable construction and acquisition is $10,000 or more.

11. Will comply with environmental standards which may be prescribed pursuant to the following: (a) institution of environmental quality control measures under the National Environmental Policy Act of 1969 (P.L. 91-190) and Executive Order (EO) 11514; (b) notification of violating facilities pursuant to EO 11738; (c) protection of wetlands pursuant to EO 11990; (d) evaluation of flood hazards in floodplains in accordance with EO 11988; (e) assurance of project consistency with the approved State management program developed under the Coastal Zone Management Act of 1972 (16 U.S.C. §§ 1451 et seq.); (f) conformity of Federal actions to State (Clear Air) Implementation Plans under Section 176(c) of the Clear Air Act of 1955, as amended (42 U.S.C. § 7401 et seq.); (g) protection of underground sources of drinking water under the Safe Drinking Water Act of 1974, as amended, (P.L. 93-523); and (h) protection of endangered species under the Endangered Species Act of 1973, as amended, (P.L. 93-205).

12. Will comply with the Wild and Scenic Rivers Act of 1968 (16 U.S.C. §§ 1271 et seq.) related to protecting components or potential components of the national wild and scenic rivers system.

13. Will assist the awarding agency in assuring compliance with Section 106 of the National Historic Preservation Act of 1966, as amended (16 U.S.C. 470), EO 11593 (identification and protection of historic properties), and the Archaeological and Historic Preservation Act of 1974 (16 U.S.C. 469a-1 et seq.).

14. Will comply with P.L. 93-348 regarding the protection of human subjects involved in research, development, and related activities supported by this award of assistance.

15. Will comply with the Laboratory Animal Welfare Act of 1966 (P.L. 89-544, as amended, 7 U.S.C. 2131 et seq.) pertaining to the care, handling, and treatment of warm blooded animals held for research, teaching, or other activities supported by this award of assistance.

16. Will comply with the Lead-Based Paint Poisoning Prevention Act (42 U.S.C. §§ 4801 et seq.) which prohibits the use of lead based paint in construction or rehabilitation of residence structures.

17. Will cause to be performed the required financial and compliance audits in accordance with the Single Audit Act of 1984.

18. Will comply with all applicable requirements of all other Federal laws, executive orders, regulations and policies governing this program.

SIGNATURE OF AUTHORIZED CERTIFYING OFFICIAL	TITLE Associate Headmaster & Executive Director New Laboratory for Teaching and Learning
APPLICANT ORGANIZATION New Laboratory for Teaching and Learning The Dalton School	DATE SUBMITTED March 29, 1993

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CERTIFICATIONS REGARDING LOBBYING; DEBARMENT, SUSPENSION AND OTHER RESPONSIBILITY MATTERS; AND DRUG-FREE WORKPLACE REQUIREMENTS

Applicants should refer to the regulations cited below to determine the certification to which they are required to attest. Applicants should also review the instructions for certification included in the regulations before completing this form. Signature of this form provides for compliance with certification requirements under 34 CFR Part 82, "New Restrictions on Lobbying," and 34 CFR Part 85, "Government-wide Debarment and Suspension (Nonprocurement) and Government-wide Requirements for Drug-Free Workplace (Grants)." The certifications shall be treated as a material representation of fact upon which reliance will be placed when the Department of Education determines to award the covered transaction, grant, or cooperative agreement.

1. LOBBYING

As required by Section 1352, Title 31 of the U.S. Code, and implemented at 34 CFR Part 82, for persons entering into a grant or cooperative agreement over $100,000, as defined at 34 CFR Part 82, Sections 82.105 and 82.110, the applicant certifies that:

(a) No Federal appropriated funds have been paid or will be paid, by or on behalf of the undersigned, to any person for influencing or attempting to influence an officer or employee of any agency, a Member of Congress, an officer or employee of Congress, or an employee of a Member of Congress in connection with the making of any Federal grant, the entering into of any cooperative agreement, and the extension, continuation, renewal, amendment, or modification of any Federal grant or cooperative agreement;

(b) If any funds other than Federal appropriated funds have been paid or will be paid to any person for influencing or attempting to influence an officer or employee of any agency, a Member of Congress, an officer or employee of Congress, or an employee of a Member of Congress in connection with this Federal grant or cooperative agreement, the undersigned shall complete and submit Standard Form - LLL, "Disclosure Form to Report Lobbying," in accordance with its instructions;

(c) The undersigned shall require that the language of this certification be included in the award documents for all subawards at all tiers (including subgrants, contracts under grants and cooperative agreements, and subcontracts) and that all subrecipients shall certify and disclose accordingly.

---

2. DEBARMENT, SUSPENSION, AND OTHER RESPONSIBILITY MATTERS

As required by Executive Order 12549, Debarment and Suspension, and implemented at 34 CFR Part 85, for prospective participants in primary covered transactions, as defined at 34 CFR Part 85, Sections 85.105 and 85.110 --

A. The applicant certifies that it and its principals:

(a) Are not presently debarred, suspended, proposed for debarment, declared ineligible, or voluntarily excluded from covered transactions by any Federal department or agency;

(b) Have not within a three-year period preceding this application been convicted of or had a civil judgment rendered against them for commission of fraud or a criminal offense in connection with obtaining, attempting to obtain, or performing a public (Federal, State, or local) transaction or contract under a public transaction; violation of Federal or State antitrust statutes or commission of embezzlement, theft, forgery, bribery, falsification or destruction of records, making false statements, or receiving stolen property;

(c) Are not presently indicted for or otherwise criminally or civilly charged by a governmental entity (Federal, State, or local) with commission of any of the offenses enumerated in paragraph (1)(b) of this certification; and

(d) Have not within a three-year period preceding this application had one or more public transactions (Federal, State, or local) terminated for cause or default; and

B. Where the applicant is unable to certify to any of the statements in this certification, he or she shall attach an explanation to this application.

---

3. DRUG-FREE WORKPLACE (GRANTEES OTHER THAN INDIVIDUALS)

As required by the Drug-Free Workplace Act of 1988, and implemented at 34 CFR Part 85, Subpart F, for grantees, as defined at 34 CFR Part 85, Sections 85.605 and 85.610 --

A. The applicant certifies that it will or will continue to provide a drug-free workplace by:

(a) Publishing a statement notifying employees that the unlawful manufacture, distribution, dispensing, possession, or use of a controlled substance is prohibited in the grantee's workplace and specifying the actions that will be taken against employees for violation of such prohibition;

(b) Establishing an on-going drug-free awareness program to inform employees about--

(1) The dangers of drug abuse in the workplace;

(2) The grantee's policy of maintaining a drug-free workplace;

(3) Any available drug counseling, rehabilitation, and employee assistance programs; and

(4) The penalties that may be imposed upon employees for drug abuse violations occurring in the workplace;

(c) Making it a requirement that each employee to be engaged in the performance of the grant be given a copy of the statement required by paragraph (a);

(d) Notifying the employee in the statement required by paragraph (a) that, as a condition of employment under the grant, the employee will--

(1) Abide by the terms of the statement; and

(2) Notify the employer in writing of his or her conviction for a violation of a criminal drug statute occurring in the workplace no later than five calendar days after such conviction;

(e) Notifying the agency, in writing, within 10 calendar days after receiving notice under subparagraph (dX2) from an employee or otherwise receiving actual notice of such conviction. Employers of convicted employees must provide notice, including position title, to: Director, Grants and Contracts Service, U.S. Department of Education, 400 Maryland Avenue, S.W. (Room 3124, GSA Regional Office

Building No. 3), Washington, DC 20202-4571. Notice shall include the identification number(s) of each affected grant;

(f) Taking one of the following actions, within 30 calendar days of receiving notice under subparagraph (d)(2), with respect to any employee who is so convicted—

(1) Taking appropriate personnel action against such an employee, up to and including termination, consistent with the requirements of the Rehabilitation Act of 1973, as amended; or

(2) Requiring such employee to participate satisfactorily in a drug abuse assistance or rehabilitation program approved for such purposes by a Federal, State, or local health, law enforcement, or other appropriate agency;

(g) Making a good faith effort to continue to maintain a drug-free workplace through implementation of paragraphs (a), (b), (c), (d), (e), and (f).

B. The grantee may insert in the space provided below the site(s) for the performance of work done in connection with the specific grant:

Place of Performance (Street address, city, county, state, zip code)

108 East 89 Street
New York, NY 10128-1599

Check ☐ if there are workplaces on file that are not identified here.

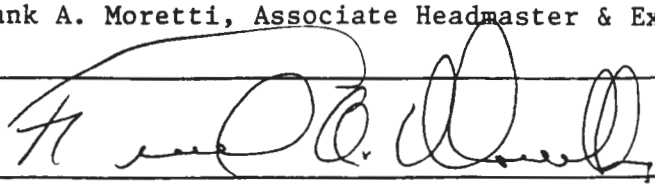
DRUG-FREE WORKPLACE (GRANTEES WHO ARE INDIVIDUALS)

As required by the Drug-Free Workplace Act of 1988, and implemented at 34 CFR Part 85, Subpart F, for grantees, as defined at 34 CFR Part 85, Sections 85.605 and 85.610 –

A. As a condition of the grant, I certify that I will not engage in the unlawful manufacture, distribution, dispensing, possession, or use of a controlled substance in conducting any activity with the grant; and

B. If convicted of a criminal drug offense resulting from a violation occurring during the conduct of any grant activity, I will report the conviction, in writing, within 10 calendar days of the conviction, to: Director, Grants and Contracts Service, U.S. Department of Education, 400 Maryland Avenue, S.W. (Room 3124, GSA Regional Office Building No. 3), Washington, DC 20202-4571. Notice shall include the identification number(s) of each affected grant.

As the duly authorized representative of the applicant, I hereby certify that the applicant will comply with the above certifications.

NAME OF APPLICANT	PR/AWARD NUMBER AND/OR PROJECT NAME	
New Laboratory for Teaching and Learning The Dalton School	84:215D	Archaeotype 3.0
PRINTED NAME AND TITLE OF AUTHORIZED REPRESENTATIVE		
Dr. Frank A. Moretti, Associate Headmaster & Executive Director		
SIGNATURE	**DATE**	
	March 29, 1993	

Certification Regarding Debarment, Suspension, Ineligibility and Voluntary Exclusion -- Lower Tier Covered Transactions

This certification is required by the Department of Education regulations implementing Executive Order 12549, Debarment and Suspension, 34 CFR Part 85, for all lower tier transactions meeting the threshold and tier requirements stated at Section 85.110.

Instructions for Certification

1. By signing and submitting this proposal, the prospective lower tier participant is providing the certification set out below.

2. The certification in this clause is a material representation of fact upon which reliance was placed when this transaction was entered into. If it is later determined that the prospective lower tier participant knowingly rendered an erroneous certification, in addition to other remedies available to the Federal Government, the department or agency with which this transaction originated may pursue available remedies, including suspension and/or debarment.

3. The prospective lower tier participant shall provide immediate written notice to the person to which this proposal is submitted if at any time the prospective lowwr tier participant learns that its certification was erroneous when submitted or has become erroneous by reason of changed circumstances.

4. The terms "covered transaction," "debarred," "suspended," "ineligible," "lower tier covered transaction," "participant," "person," "primary covered transaction," "principal," "proposal," and "voluntarily excluded," as used in this clause, have the meanings set out in the Definitions and Coverage sections of rules implementing Executive Order 12549. You may contact the person to which this proposal is submitted for assistance in obtaining a copy of those regulations.

5. The prospective lower tier participant agrees by submitting this proposal that, should the proposed covered transaction be entered into, it shall not knowingly enter into any lower tier covered transaction with a person who is debarred, suspended, declared ineligible, or voluntarily excluded from participation in this covered transaction, unless authorized by the department or agency with which this transaction originated.

6. The prospective lower tier participant further agrees by submitting this proposal that it will include the clause titled "Certification Regarding Debarment, Suspension, Ineligibility, and Voluntary Exclusion--Lower Tier Covered Transactions," without modification, in all lower tier covered transactions and in all solicitations for lower tier covered transactions.

7. A participant in a covered transaction may rely upon a certification of a prospective participant in a lower tier covered transaction that it is not debarred, suspended, ineligible, or voluntarily excluded from the covered transaction, unless it knows that the certification is erroneous. A participant may decide the method and frequency by which it determines the eligibility of its principals. Each participant may, but is not required to, check the Nonprocurement List.

8. Nothing contained in the foregoing shall be construed to require establishment of a system of records in order to render in good faith the certification required by this clause. The knowledge and information of a participant is not required to exceed that which is normally possessed by a prudent person in the ordinary course of business dealings.

9. Except for transactions authorized under paragraph 5 of these instructions, if a participant in a covered transaction knowingly enters into a lower tier covered transaction with a person who is suspended, debarred, ineligible, or voluntarily excluded from participation in this transaction, in addition to other remedies available to the Federal Government, the department or agency with which this transaction originated may pursue available remedies, including suspension and/or debarment.

Certification

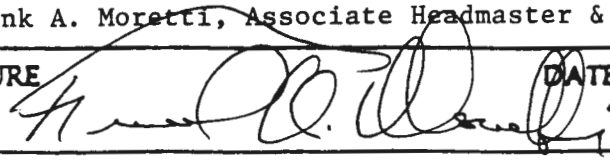
(1) The prospective lower tier participant certifies, by submission of this proposal, that neither it nor its principals are presently debarred, suspended, proposed for debarment, declared ineligible, or voluntarily excluded from participation in this transaction by any Federal department or agency.

(2) Where the prospective lower tier participant is unable to certify to any of the statements in this certification, such prospective participant shall attach an explanation to this proposal.

NAME OF APPLICANT	PR/AWARD NUMBER AND/OR PROJECT NAME	
New Laboratory for Teaching and Learning	84:215D	Archaeotype 3.0

PRINTED NAME AND TITLE OF AUTHORIZED REPRESENTATIVE

Dr. Frank A. Moretti, Associate Headmaster & Executive Director

SIGNATURE  DATE March 29, 1993

ED 80-0014, 9/90 (Replaces GCS-009 (REV. 12/88), which is obsolete)

DISCLOSURE OF LOBBYING ACTIVITIES

Approved by OMB
3146-0046

Complete this form to disclose lobbying activities pursuant to 31 U.S.C. 1352
See reverse for public burden disclosure.)

1. Type of Federal Action:
[b] a. contract
b. grant
c. cooperative agreement
d. loan
e. loan guarantee
f. loan insurance

2. Status of Federal Action:
[a] a. bid/offer/application
b. initial award
c. post-award

3. Report Type:
[a] a. initial filing
b. material change
For Material Change Only:
year _____ quarter ____
date of last report _____

4. Name and Address of Reporting Entity:
[X] Prime [ ] Subawardee
Tier ____, *if known:*
New Laboratory for Teaching and Learning
The Dalton School
108 East 89 Street
New York, NY 10128-1599
Congressional District, *if known:*

5. If Reporting Entity in No. 4 is Subawardee, Enter Name and Address of Prime:
Congressional District, *if known:*

6. Federal Department/Agency:
U.S. Department of Education

7. Federal Program Name/Description:
Secretary's Fund for Innovation in Education: Computer-Based Instruction Program
CFDA Number, *if applicable:* 84.215D

8. Federal Action Number, *if known:*

9. Award Amount, *if known:*
$

10. a. Name and Address of Lobbying Entity
(if individual, last name, first name, MI):
None

b. Individuals Performing Services *(including address if different from No. 10a)*
(last name, first name, MI):

(attach Continuation Sheet(s) SF-LLL-A, if necessary)

11. Amount of Payment *(check all that apply):*
$ _____ [ ] actual [ ] planned

12. Form of Payment *(check all that apply):*
[ ] a. cash
[ ] b. in-kind; specify: nature _____
value _____

13. Type of Payment *(check all that apply):*
[ ] a. retainer
[ ] b. one-time fee
[ ] c. commission
[ ] d. contingent fee
[ ] e. deferred
[ ] f. other; specify: _____

14. Brief Description of Services Performed or to be Performed and Date(s) of Service, including officer(s), employee(s), or Member(s) contacted, for Payment Indicated in Item 11:
None

(attach Continuation Sheet(s) SF-LLL-A, if necessary)

15. Continuation Sheet(s) SF-LLL-A attached: [ ] Yes [X] No

16. Information requested through this form is authorized by title 31 U.S.C. section 1352. This disclosure of lobbying activities is a material representation of fact upon which reliance was placed by the tier above when this transaction was made or entered into. This disclosure is required pursuant to 31 U.S.C. 1352. This information will be reported to the Congress semi-annually and will be available for public inspection. Any person who fails to file the required disclosure shall be subject to a civil penalty of not less than $10,000 and not more than $100,000 for each such failure.

Signature: [signature]
Print Name: Dr. Frank A. Moretti
Title: Assoc. Headmaster & Executive Dir.
Telephone No.: (212) 722-5160 **Date:** 3/29/93

Federal Use Only:

Authorized for Local Reproduction
Standard Form - LLL

Archaeotype 3.0

Appendices and Supplemental Materials

1. Letters of Support
    a. Anthony J. Alvarado
    b. Jill N. Claster
    c. Toni Schmiegelow
    d. George C. Bond
    e. Ogden Goelet
    f. Constance L. Smith

2. Overview of the New Laboratory for Teaching and Learning. ***The Cumulative Curriculum Project: Transforming Education with Networked Multimedia.***

3. Overview of the Dalton School.

4. Overview of Institute for Learning Technologies, Teachers College, Columbia University and Contributions of Teachers College, Columbia University to the New York City Public Schools.

5. Resumes
    a. Robert McClintock
    b. Frank A. Moretti
    c. Deborah F. Schwartz
    d. John B. Black

6. ***Risk and Renewal.*** Excerpts from the First Annual Report on the Tishman Family Project in Technology and Education at the New Laboratory for Teaching and Learning, The Dalton School.

7. Evaluation of Greek version of *Archaeotype.*

8. Excerpts from ***Masterpieces in The Brookyn Museum.***

ANTHONY J. ALVARADO
Superintendent

COMMUNITY SCHOOL DISTRICT TWO
330 WEST 18th STREET
NEW YORK, N.Y. 10011
TELEPHONE (212) 337-8700
WRITER'S DIRECT # (212) 337- _____

March 25, 1993

Dr. Frank Moretti
Executive Director
The Dalton School
New Laboratory for Teaching and Learning
108 East 89th Street
New York, NY 10128

Dear Frank,

I am writing to lend my complete support to your effort to seek funds for the third rendition of Archaeotype, a simulated ancient Egyptian archaeological site. I am particularly enthusiastic about the plan you have to train teachers and disseminate the curriculum broadly in New York City public schools and elsewhere. The success you have had with both the Hellenic and Assyrian simulations is known nationally and your third site will be awaited with enthusiasm by educators. It is of course of specific interest to me because of the focus on the use of the Brooklyn Museum which as you know will be central in our effort to begin our innovative alternative 7th-12th grade school called the New York City Museum School. I am certain that this curriculum module will be key to our integrating the new technologies into our efforts and will help us deal with the challenge of access to cultural artifacts that our model presents.

Based on my experience with you over the years with the I-CM Project and the great success you had in disseminating and training teachers in that context, I would consider it an honor to serve on the Advisory Board and support the program in any way I can since I am certain it will be of great benefit to many children from my district and others.

Sincerely yours,

Anthony J. Alvarado

Anthony J. Alvarado
Community Superintendent

AJA:mc

NEW YORK UNIVERSITY
A private university in the public service

Faculty of Arts and Science
Hagop Kevorkian Center for Near Eastern Studies
50 WASHINGTON SQUARE SOUTH
NEW YORK, N.Y. 10003
TELEPHONE: (212) 998-8875
TELEX: 235128 NYU UR

Office of the Director

March 25, 1993

U.S. Department of Education
Fund for the Improvement and Reform
of Schools and Teaching
Washington, D.C. 20208-5524

Re: Grant # 84:215D

To Whom It May Concern:

It gives me great pleasure to write this letter of support for the Archaeotype project proposal developed by the New Laboratory for Teaching and Learning at the Dalton School.

As the Director of the Hagop Kevorkian Center for Near Eastern Studies at New York University and a member of the Advisory Board for Archaeotpye, I look forward to the development of a simulated archeological dig to introduce students to the study of Egypt and Ancient Civilizations. Through its innovative work in interactive technologies over the past four years, the Dalton School is uniquely positioned to manage a project that will bring together the pedagogical framework developed in the Greek and Assyrian versions of Archaeotype and the recently digitized Egyptian collection of the Brooklyn Museum.

The project will make an important contribution to Middle Eastern Studies and will provide an effective way to ensure that Middle School students are exposed to an academically rigorous curriculum that teaches them what the study of history and culture is all about.

I ask that you fund this project.

Sincerely,

Jill N. Claster

Jill N. Claster
Director

JNC\cc

CITY VOLUNTEER CORPS
838 BROADWAY
NEW YORK, NY 10003
(212) 475-6444
Fax (212) 475-9457

March 23, 1993

To Whom It May Concern:

I am happy to write on behalf of the New Laboratory for Teaching and Learning and, specifically, the Archaeotype Project which has enjoyed such great success thus far. Dr. Frank Moretti, the Executive Director of the New Laboratory for Teaching and Learning, is a member of the Board of Directors of the City Volunteer Corps. He has, in all of his tenure with us, worked hard as the Chairman of the Education Committee and has, in fact, been the most instrumental figure in securing grant funding for a special project for training the City Volunteer Corps recruits in the uses of the new technology while, at the same time, instructing them in basic skills. The kind of work that Dr. Moretti has been doing with interactive instructional technologies is key to the success of the children of the future. Too many of our students are being educated in ways that are no longer suitable for the configurations of the work world as we now know them. It is also encouraging to see the great cultural institutions of the City beginning to be used for educational purposes rather than just showcases of objects. The Brooklyn Museum has always been aggressive in its educational interest and the New Museum School is a school that all of us, who are dedicated to the improvement of life in the City, anticipate as a significant step in the direction of enhancing New York City public education.

It gives me great pleasure to serve on the Advisory Board of the Archaeotype Project and I look forward to opportunities to use the Archaeotype approach in work with the City Volunteer Corps.

Sincerely,

Toni Schmiegelow

Toni Schmiegelow

TS:tg

Enclosure

TEACHERS COLLEGE COLUMBIA UNIVERSITY

NEW YORK, NEW YORK 10027

525 West 120th Street

March 29, 1993

To Whom It May Concern:

I am pleased to join the Advisory Board for the *Archaeotype 3.0* Project.

The software will present children with learning experiences that are simultaneously accessible and challenging. The unit on ancient Egypt should bring particularly meaningful resources to children of the inner city. The collaboration of Dalton, Columbia, and The Brooklyn Museum with public schools here and in San Diego should help bring the resources of privileged institutions to bear upon the needs of the least advantaged. I look forward to helping in the project.

Sincerely yours,

George C. Bond

George C. Bond
Director
Institute for African Studies

New York University
a private university in the public service

Faculty of Arts and Science
Department of Near Eastern Languages and Literatures

Hagop Kevorkian Center for Near Eastern Studies
50 Washington Square South
New York, New York 10003
Telephone: (212) 998-8880
Fax No.: (212) 995-4144
E-Mail Address: NELL@acf1.nyu.edu

March 26, 1993

To Whom it May Concern,

I am writing in support of the Archaeotype 3.0 Project, a pioneering computer-aided instruction program being developed to teach students the processes involved in archaeology. The project has created a novel and powerful means of introducing students to the manner in which an archaeological site yields its data over the course of an excavation. The archaeological discipline is a uniquely interpretive one, which requires the student as well as the professional to bring to bear all one's problem-solving skills, to find cohesion in a disordered and ambiguous array of facts. The software developed for the computer simulation of this process goes a long way towards allowing students to confront the problems posed by ancient sites. The Project is presently beginning to develop a simulation of an ancient Egyptian site. Ancient Egypt, with its combination of great antiquity and appealing writing system of hieroglyphs, usually holds a particular fascination for students, particularly Afro-Americans. Since I have some personal experience in writing Egyptological software, I would be most pleased to serve on the Board of Advisors for this project.

As a teacher at a university and an Egyptologist, the Archaeotype Project additionally offers me an opportunity to correct popular notions of my field, so often conceived as a form of treasure hunting. I am particularly gratified to see that the project will be associated with The Brooklyn Museum, where I am a Research Associate. The Department of Egypt, Classical and Middle Eastern Art at the Museum can provide particularly strong support to such an effort. Not only does the Department conduct an excavation at the Mut Precinct at Karnak, it also has one of the finest Egyptological libraries in the entire world.

Sincerely,

Ogden Goelet

Ogden Goelet
Assistant Professor of Egyptian Language and Literature
Department of Near Eastern Languages and Literatures
New York University

Juarez-Lincoln Elementary School
849 Twining Avenue, San Diego, CA 92154 (619) 690-6222
Constance L. Smith, Principal

March 23, 1993

To Whom It May Concern:

I am the Principal of the Juarez-Lincoln School of the Chula Vista Elementary School District. Presently, we are a beta-test site for *Archaeotype* 1.0, which is a computer-based simulation of an archaeological investigation. The project was described by Dr. Beth Robinson at the Association of Supervision and Curriculum Development Conference three years ago. Since then, Dr. Frank Moretti and Mr. Luyen Chou have worked to help us develop the capacity, both in respect to teacher training and technology, to use *Archaeotype* as a part of our curriculum. The New Laboratory for Teaching and Learning has also hired Dr. Bernard Dodge of San Diego State University, an expert in instructional design, to be the evaluator of the Project. The New Lab's personnel, including Dr. Neil Goldberg, who has done three workshops with our faculty, have been supportive in the implementation of this project. We are anticipating a trip to New York City within the next month where we will spend an entire week sharing our experiences in regard to technology-based multimedia network curriculum.

We are very excited by the academic growth that our children have experienced as a result of their involvement with the Archaeotype Project. At first we were concerned that a curriculum project, used exclusively at a school like Dalton with extensive resources, would suffer in translation. In fact, we discovered that the project has provided a great forum for inspiration and motivation for our students, unlike other curriculum materials.

Students with a variety of learning styles and who are, in general, economically disadvantaged have begun to take an increased interest in academic study. Additionally, those who have not yet mastered English are assisted, in their native languages, by their English-speaking peers. This interaction has helped them master the use of the data bases, which are a necessary part of the project.

It is my opinion that this project could be a significant alternative for the traditional textbook approach to the teaching of the social sciences at the elementary level.

If I can be of any further assistance, please do not hesitate to call.

Sincerely,

Constance Smith

Constance L. Smith
Principal

New Laboratory for Teaching and Learning

The Dalton School
108 East 89th Street
New York, NY 10128-1599

The Cumulative Curriculum Project: Transforming Education with Networked Multimedia

Aim: To explore how computers and advanced information technologies can help us build the schools of tomorrow. Teachers and technologists working together will design and implement a technology-intensive educational system based on a new concept, the Cumulative Curriculum. This consists of a series of interactive simulations across the grades and subjects, creating a pedagogy for using powerful networked tools in the classroom, all in the context of a large multimedia library accessible to all at all times.

Sponsors: A joint effort by the New Laboratory for Teaching and Learning, The Dalton School, and the Institute for Learning Technologies, Teachers College, Columbia University.

Funding: $2,000,000 gift from the Phyllis and Robert Tishman Family Fund to the New Laboratory for Teaching and Learning, September 1991 through August 1993, to extend the perennial values of Western education by grasping the new pedagogical opportunities created by computers and multi-media information technologies.

$160,000 equipment gift from IBM to Teachers College's Institute for Learning Technologies to facilitate integrating technology into schools, K-12. We are discussing further corporate funding and joint-study projects with NYNEX, Apple Computer, and IBM Research, and several venture capital groups through both ILT and NLTL.

We seek further development funding for specific components of the Cumulative Curriculum project and an extension of its general funding beyond August 1993.

Technical Staff: Currently we employ two full-time programmers, a network manager, two hardware and software maintenance persons, three school technology coordinators, three graduate-student design associates, and two technically-oriented project managers. In addition, we sponsor internships for six graduate students from Teachers College, Columbia University, and from New York University.

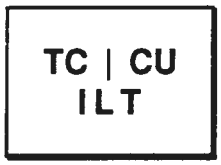
Academic Staff: Dalton has numerous faculty members engaged in its technology-based projects, most with doctorates or other advanced degrees. They bring a wealth of classroom experience and intellectual substance to our projects. Dalton's administration strongly backs the project with the Associate Headmaster serving as its lead manager. Faculty members and graduate students from Teachers College participate extensively in the project.

Network: Currently we use a 16 megabit token-ring, running Novell NetWare 3.11 and Novell Macintosh on an Everex MegaCube server (486 @33 mz with 5 GB storage and DAT backup). The network links about 100 machines. We will provide dial-in services and link with a subsidiary network in the Dalton Lower School and with a high-speed network for curriculum development at ILT.

During 1993, the Cumulative Curriculum Project will start work as a test site for Project ACORN, a gigabit-per-second network that Columbia University's Center for Telecommunications Research is developing with NSF and industrial funding.

Installed Base: 10 Mac SE's; 40 Mac CI's; 30 Mac SI's. 18 Tangent 486/33mz ISA minitowers; 4 Tangent 483/33mz EISA towers; 2 PS/2 Mod 90's; 6 386sx notebooks and 3 386sx minitowers, and 2 PS/2 Mod 57SLC Ultimedia Machines. We have 15 videodisc players, 8 flatbed scanners, 10 laser printers, and numerous CD-ROM drives spread through these installations. We have brought a dozen classrooms in the middle and high school on the network, with 4 or more machines in each. We are starting development work with DV-I with 3 PS/2 Mod 95s and 6 PS/2 Mod 57's at the ILT Multimedia Design Studio in Thorndike Hall.

Curricular Projects: We are integrating programs that we are developing in-house with a wide selection of office tools, university developed academic programs, and educational software on the market. We design our programs to help students construct their understanding of a



INSTITUTE FOR LEARNING TECHNOLOGIES
TEACHERS COLLEGE • COLUMBIA UNIVERSITY

Spring 1993

INSTITUTE FOR LEARNING TECHNOLOGIES
TEACHERS COLLEGE • COLUMBIA UNIVERSITY

The Institute for Learning Technologies, founded in 1986 at Teachers College, Columbia University, works to advance the role of computers and other information technologies in education and society.

Introduction.

The Institute for Learning Technologies was founded on the belief that as we enter the 21st Century we are embarking on an era of historic change that will be as profound and sweeping as that engendered by the development of moveable type; and that the development and application of the new communication, computing and information technologies have the potential to fundamentally transform education and society for the betterment of humankind.

The Institute is committed to remaining at the forefront of these changes, to helping guide and direct these changes, and to becoming one of the premier developers and implementers of advanced information technology applications in the nation.

Program of Research and Development.

The Institute's program of research and development is twofold: (1) to advance the theoretical and pedagogical understanding and framework within which the new information technologies are to be applied, and (2) to apply such theoretical underpinnings by developing and employing advanced applications utilizing the very latest technology available.

To these ends, the Institute works both as an internal funding agency, soliciting proposals and making awards, and as a project development office, organizing and supporting efforts to win grants and contracts from external sources. In addition, the Institute provides researchers and developers with well equipped facilities for working with the most advanced learning technologies.

The Institute's programs seek to produce change which will facilitate:

- expanding the scope of educational attainment by making extensive cultural resources of high quality readily available through electronic means in ways that enable students and teachers in ordinary educational settings to manage them effectively and work with them beneficially;

- making educative resources more productive by amplifying with artificial intelligence what the student can achieve unguided by teachers, so that teaching

resources may be reserved for those crucial points where fully humane interventions can make a substantial difference; and

- expanding the visual and auditory forms of knowledge so that they cease to be merely illustrative of knowledge stored and retrieved in written form and become instead full-fledged knowledge-bases with coherent, intelligent storage and retrieval systems, subject to direct access in response to the inquisitive play of curiosity.

Funded by endowment, gift, grants, and contract work, the Institute brings together faculty, students, research fellows and outside researchers and consultants from a broad range of academic, industry and other backgrounds for work exploring the potentials of information technologies, striving always to build and advance structures which will further excellence and equity.

Institute Activities.

In furtherance of its objectives, the Institute conducts a variety of activities in addition to acting as an internal funding agency and project development office. These additional activities include initiating and conducting advanced research projects; commissioning and publishing findings and papers; organizing and conducting seminars, workshops and conferences; archiving and making available by network and in multimedia format databases of academic and other materials relating to educational technology; developing and promoting public policy initiatives; and otherwise seeking to influence the development and integration of advanced information technologies into education and society.

Foremost among the Institute's undertakings is developing applications and theoretical structures that will transform the schools, empower students, and set the ground work for a more informed and productive citizenry. To this end, the Institute believes that its mission is not technologically driven, but rather, technologically enabled. School change, and with that social change, are the goals.

Among the Institute's current projects are:

The Cumulative Curriculum Project. Since 1990, the Institute and the New Laboratory for Teaching and Learning at the Dalton School have been collaborating on "The Cumulative Curriculum Project", a major effort to integrate networked multimedia technologies into the curriculum and life of the Dalton School, kindergarten through high school. This project has three broad objectives:

- to develop the infrastructure of equipment, software, and human skills needed to fully employ networked multimedia throughout the real life of a working school;

- to create with the new technologies collaborative, constructivist educational programs, helping students develop their cultural and human capacities more effectively than they would in traditional educational settings; and

- to integrate into the system selected hardware and software tools which can help teachers and students achieve a higher level of educational excellence.

The Cumulative Curriculum Project is among the most advanced comprehensive real-world educational applications in the nation, and is independently funded at $1 million per year through 1995 by the Tishman Family Fund.

The MENTOR Project. The Multimedia Educational Network Testbed Organization (MENTOR) is a joint consortium of the Institute for Learning Technologies, the Center for Telecommunications Research (the Columbia University center for advanced networking projects funded by the National Science Foundation and industry) and Project GATEWAY (a Columbia University led coalition of engineering schools funded by the National Science Foundation). MENTOR seeks, through development, deployment, and real-world usage, to investigate the appropriate networking infrastructure to support the emerging non-print based educational and research requirements of the 21st Century.

MENTOR is an applications driven project to link the consortium members' existing high speed LANs through a fiber optic gigabit network using novel lightwave devices and advanced protocol and object-oriented programming techniques, and to provide interconnectivity to a host of digital information data banks located in various major cultural and scientific institutions. As such, the MENTOR project will serve as a national model for high speed multimedia educational and research networks of the future.

The New York Youth Network. The New York Youth Network is an electronic bulletin board service for at risk teenagers in New York City operated by the Institute and funded by NYNEX, the New York Community Trust, and the Robert Browne Foundation.

Teenagers use computers at a variety of community-based organizations in the metropolitan area to access the Network to obtain information on jobs, health, nutrition, and services; to converse with counselors and adult role models; and to participate in peer discussions on topics from politics to poetry.

Institute Centers.

In addition to the projects outlined above, the Institute has four component Centers which engage in supportive or complimentary endeavors to the Institute's primary functions. Each Center is directed by a senior staff member of the Institute.

Center for Literacy Studies. The Literacy Center is involved in advanced research and development of applications relating to literacy, electronic text and text design, and advanced computer simulations and modeling. With funding from The Morgan Stanley Group, the Literacy Center has developed a computer simulation program for public high school students to interest them in careers in business.

In addition, the Center is at the forefront of developing the Institute's approach to the question of how to assess the development and achievement of students and other users of advanced information technology systems. The Institute believes that the adoption of new information technologies will require a fundamental redesign of student and user assessment methods and through the Center is conducting research and developing applications to accomplish these goals.

Center for Intelligent Tools in Education. The Center for Intelligent Tools in Education is a leader in designing advanced educational software and hardware applications. Among its projects are the development of discovery learning programs for high school science classes and a novel computer-based musical voice training resource. The Center is also involved in the development of a global curriculum, dedicated to world understanding and respect for the world habitat. To this end, the Center has developed and maintains collaborative relationships with educators in Prague, Athens, Istanbul, Managua, Singapore and in other cities around the world.

Center for Intellectual Property and the New Technologies. The Center for Intellectual Property and the New Technologies addresses significant issues relating to ownership of and access to information in the changing information and creative environments. The Center acts as a clearinghouse for copyright information, conducts research and commissions papers, develops and runs workshops and conferences for both producers and users of information, and acts as a resource for, and where appropriate advises, cultural institutions, government entities and other institutions on public policy issues relating to intellectual property rights.

Center for Advanced Learning Systems. The Center for Advanced Learning Systems is involved in developing, designing and implementing advanced information technology applications for business and industry, including high-level decision and performance support systems, expert systems, other advanced learning and training systems, database management

and visualization systems, user interfaces, networks, and other applications. The Center works with industrial partners or on contract to employ advanced theoretical and practical approaches to solving business and industrial information management, communication, performance support and training problems.

Other Activities.

Among the Institute's many areas of research activities, two are of particular interest and are central to many of the Institute's projects: high speed networking and visualization. Complementing the activities outlined above, the Institute is engaged in several projects designed specifically to advance the knowledge base in these areas.

These include the Institute's efforts to study and produce a position paper on the public policy and other implications of the development of the national information infrastructure, in particular the National Research and Educational Network authorized by the High Speed Computing Act of 1991 and a key component of the new administration's initiative for strategic competitiveness and productivity.

In the area of visualization, the Institute is working with senior Teachers College faculty to develop a visualization curriculum to teach visual literacy. And, with the Department of Computer Science at Columbia University, the Institute is involved in the design of advanced interfaces for virtual and artificial reality environments.

Facilities.

In addition to the facilities of Teachers College and Columbia University, the Institute maintains and continues to develop a number of advanced technology facilities. Through funding and equipment grants from IBM Corporation and Apple Computer, the Institute is able to offer an advanced Multimedia Development Laboratory and Studio, including a Software Development Lab, a Video Production Facility, and a CD-ROM Development Facility. Also, through its Center for Literacy Studies, the Institute maintains a Usability Lab, an Intelligent Learning Environment Lab, and a Human Information Processing Lab.

All of the Institute's facilities have direct connections to the INTERNET and BITNET, as well as, to both the Teachers College and the Columbia University network backbones. Through Teachers College, the Institute has access to a multi-processor Sequent 2000 running Unix, a VAX 8810 mainframe running VMS, and a number of other academic computing resources. Through Columbia University, the Institute has access to an additional five mainframe computers, as well as, significant other computing and advanced technology resources.

Teachers College.

Founded in 1887, Teachers College is the oldest, largest and preeminent graduate school of education, psychology and health in the nation. Since 1898, the College has been an independent affiliate of Columbia University.

The College's faculty includes some of the world's foremost scholars and practitioners in such university disciplines and professional specialties as: educational administration; curriculum and teaching; educational technology; cognitive, organizational, developmental and clinical psychology; sociology, anthropology and history of education; mathematics and science education; health education; measurement, evaluation and statistics; higher and adult education.

Teachers College has a long history of working with the greater education and cultural community, of finding the practical implications of scholarship and theory, and of bringing the findings of educational research through the development stage to practice and dissemination.

Columbia University.

Columbia University, founded by royal charter in 1754 as King's College, is widely recognized as one of the preeminent institutions of research and scholarship in the world.

Institute Directors

Robert O. McClintock, Executive Director, ILT.
K.A. Taipale, Associate Director, ILT. Director, Center for Advanced Learning Systems.
Robert Matsuoka, Technical Director, ILT.

Frank A. Moretti, Co-Director, Cumulative Curriculum Project.
John B. Black, Director, Center for Literacy Studies.
Robert P. Taylor, Director, Center for Intelligent Tools in Education.

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Contributions of Teachers College, Columbia University to the New York City Public Schools

Founded in 1887 to provide a new kind of schooling for the teachers and poor children of New York City, Teachers College has over the past decade recommitted itself to addressing the pressing challenges of urban education. From innovative teacher preparation programs and programs of research and dissemination, from school restructuring to direct services to children and their families, the College is bringing its impressive resources to bear on the most urgent problems facing our City schools.

I. TEACHER RECRUITMENT AND PREPARATION

One of the most essential functions of Teachers College is the preparation of the best possible teachers and administrators for careers in our City school systems. The educational administration and teacher education curricula, among others, have begun to formalize their concentration on urban education. Approximately 200 of our teacher preparation students each year are performing internships or student teaching assignments in the City's public schools.

In addition, the College has created a number of special programs designed to increase the numbers of minority educators and administrators (desperately needed as role models for a student body that is already 80 percent minority), and to recruit teachers for areas in which there are critical shortages, such as mathematics, science, bilingual education, special education, and English as a second language. Some of these special programs are described below.

Peace Corps Fellows Program

One of the College's most important and successful initiatives for rebuilding the teaching profession, the Peace Corps Fellows program trains returning Peace Corps volunteers for teaching careers and places them in the New York City public schools where they are most needed. The program, a joint effort of Teachers College, the U.S. Peace Corps, and the New York City Board of Education, places returning volunteers in teaching positions in inner city schools while they attend evening classes at the College leading to a master's degree and full teaching certification. The Fellows possess a rare blend of dedication and experience that, combined with the training they receive at the College, makes them extraordinarily well-prepared to teach in culturally mixed and educationally diverse urban classrooms.

During the two-year program, the Fellows serve as science, mathematics, English as a second language, bilingual and special education teachers--areas where there are critical shortages. Contact with these creative and concerned teachers has given many thousands of New York City school children the most positive educational experiences of their young lives. The Fellows have also had a beneficial effect on the schools in which they serve, initiating special programs and experimenting with teaching methods. Almost all of the program's graduates are still teaching, and most stay in the New York City schools beyond their two-year commitment--a promising sign in a system where the retention of teachers is almost as serious a problem as that of students.

The Peace Corps Fellows Program is sponsored by a combination of foundation, corporate and individual supporters.

Teacher Opportunity Corps

The Teacher Opportunity Corps, supported by a grant from New York State, is aimed at attracting minority educators to teach in some of New York City's most challenging public school settings. Many students brought to the College through TOC are already partially-certified, "per diem" teachers, who are provided with the opportunity to obtain their master's degrees and become fully-certified, full-time teachers. They receive both a top-notch education and the chance to obtain the kinds of teaching positions that will help keep them in the City schools where they are so greatly needed. The Teacher Opportunity Corps reaches directly into the classroom to benefit at-risk students who desperately need qualified teachers and minority role models, and simultaneously strengthens the teaching forces in New York's inner city schools.

Fellows in Teaching Program

Minority teachers are needed as role models to spark the imaginations and draw out the abilities and talents of the large minority populations of our City schools. To that end, the Andrew W. Mellon Foundation has recently granted Teachers College renewed support of $500,000 to continue its Fellows in Teaching program with a focus on minority students. Additional support is provided by the Bristol-Myers Squibb, Surdna and

William Randolph Hearst Foundations, and Time Warner, Inc. Established to encourage a greater number of talented liberal arts graduates to prepare for careers in secondary school teaching, especially in urban settings, the program emphasizes urban education issues and supervised field experience, and an approach to learning to teach that is subject-intensive and features the teacher as scholar and leader.

Minority Leadership Fellows

At present there exists a particular shortage of minority group members in leadership positions in our City schools. The College has two new programs to promote minority leadership in school administration. The Minority Leadership Fellows, supported by a grant from the Henry Luce Foundation, is a five-year program to prepare African-American and Latino men and women for careers in secondary school administration. In addition, the Aaron Diamond Foundation is funding a new project that will generate competent minority candidates for high school principalships and encourage established New York City principals to volunteer to administer "schools in need."

Minority Teacher Leadership Fellows

Supported by a grant from the William Penn Foundation, this program prepares minority doctoral candidates for leadership positions in the teaching field. The intensive research and mentoring components of the program ensure that the Fellows get the level of training and professional development they need to take their places at the forefront of educational decision-making and reform. The program is designed to produce well-qualified and well-connected minority professionals who can take active part in the ongoing debate about the form and content of our schools.

II. PUBLIC SCHOOLS PARTNERSHIPS

Currently underway are a wide range of collaborative efforts between Teachers College and the New York City public schools. The benefits of these public school partnerships are manifold, as the programs not only benefit the College's inservice and preservice programs, but contribute to the ongoing professional development of school-site staff, and enhance the level of instruction of participating students. Whether initiated by the College or by the schools themselves, each of the programs is characterized by close collaboration, commitment and mutual respect.

Professional Development School

Recent studies indicate that as many as 40 percent of beginning teachers in urban schools leave the profession after the first year--twice the rate of suburban schools. Many who do survive their first years in the classroom do so by developing defenses that impair their ability to reach their students and work effectively with their colleagues.

The Professional Development School, a collaborative effort involving Teachers College, New York City School District #3 and the United Federation of Teachers, is a pilot project designed to overcome the traumatic impact of the first year of teaching and to integrate the functions of the university and the public schools in

the education of teachers. Now in its second year of implementation at two Manhattan schools, the Professional Development School has established itself as a model for school-based teacher education. Supported by grants from the Ford and Lawrence A. Wien Foundations, the program provides for a comprehensive student teacher experience, a distinctive intern year in a team teaching format, and opportunities for professional development and interaction between teachers at participating schools and faculty at Teachers College.

Teachers College Writing Project

The Teachers College Writing Project seeks to improve the teaching of reading and writing in nearly 500 public schools throughout New York City. Through the Writing Project, more than 800 New York City teachers have turned their classrooms into writing workshops, and thousands of children have become insiders in the world of written language. The project's 45 staff members go into New York City public schools to counsel teachers and work with students on the process of writing. Funded by the school districts themselves, a number of private corporations, and the Board of Education in collaboration with Teachers College, the project helps to create classrooom environments conducive both to students' learning and to teachers' professional development.

Created eight years ago, the Writing Project has grown to encompass a number of other programs, among them: the Reading Project, which helps teachers to improve their own reading and discussion skills through involvement in adult reading groups; the Teacher Research Project, which helps to enhance the classroom skills of 25 teachers each year; and the Summer Institute on the Teaching of Writing, an intensive seminar that attracts approximately 500 teachers each summer. Writing Project professionals also work with school principals and other educational leaders, and sponsor frequent workshops that are free and open to teachers throughout the New York City school system.

Wadleigh Educational Community

Teachers College is collaborating with the teachers and administrators of Wadleigh to create a model educational community, and to use it as a laboratory for producing replicable models of school reform. The Wadleigh school--a physically decrepit, educationally deficient junior high school in Central Harlem--will be closed down, thoroughly remodeled and rehabilitated, and reopened in 1992 as home to an innovative educational community consisting of three alternative middle schools and an academic high school that will incorporate all that has been learned thus far about what children need for a nurturing learning environment. The College will provide professional and scholarly expertise, create a written record of the restructuring process that can be used by other schools, and assist with research, evaluation and dissemination. Partial funding for Teachers College's participation in this project is provided by the Metropolitan Life Foundation.

Classroom, Inc.

Classroom, Inc. is a collaborative effort of Teachers College, Morgan Stanley & Co., the Mariposa and Andrew W. Mellon Foundations and the New York City Board of Education, designed to help prepare inner city high school students for

productive employment. A central component of the program is an innovative, interactive computer simulation created by Teachers College to help students learn about the business world as they develop a wide range of analytical, linguistic, mathematical and social skills. In addition, special mentoring and classroom activities, monthly meetings with business sponsors, and summer internships will help students prepare for the transition from the classroom to the workplace. Participating teachers will receive special training for the assignment, and will provide support teams for the students.

Two Brooklyn high schools have been selected for the first phase of the project. Once fully tested, the program will be integrated into the ongoing curriculum of these schools, and introduced to other high schools in New York City and elsewhere.

Center for Cooperation and Conflict Resolution

Conflict in schools can lead to violence, vandalism, religious and racial quarrels, strikes, disciplinary breakdowns, chronic absenteeism, high drop-out rates and teacher "burn-out." To avoid these destructive outcomes of conflict and to aid in the shift to school-based management, the Center for Cooperation and Conflict Resolution conducts research in inner city high schools, and provides training, information, and consulting services to school systems seeking assistance in cooperative learning, conflict management, effective collaboration techniques, and dispute mediation. The Center is supported in part by grants from the William T. Grant and Joseph and Claire Flom Foundations.

Multimedia Teaching Laboratory

Through the support of Apple Computer, Teachers College has established a multimedia teaching laboratory with the intention of training educators to use multimedia technology in New York City public school classrooms. Utilizing MacIntosh IICX computers, the programs integrate audio and visual components and graphic simulations to create dynamic, interactive presentations that can supplement and amplify the presentation of a wide variety of topics. Students benefit not only through a more comprehensive introduction to new subjects but also through increased familiarity with the multimedia technology that dominates the workplace they will soon enter.

District Two teachers currently attend workshops in the laboratory demonstrating how to incorporate the technology into the curriculum. With new funding from the Echoing Green Foundation and private individuals, Teachers College graduate students will be able to work directly with District Two teachers in the schools, providing follow-up training and support.

III. PROFESSIONAL DEVELOPMENT FOR CITY TEACHERS

Teachers College strongly endorses the idea that the education of teachers should not end once they begin their careers in the classroom. Through the Professional Development School and leadership programs described above, as well as through a variety of informal networks, the College encourages teachers and administrators to continue to develop their

skills, expertise and knowledge. Advanced degree programs and courses help New York City public school teachers advance their careers and improve their performances. In addition, special workshops (such as an upcoming session on "Meeting the Crack and Cocaine Challenge") and short courses provide intensive training and background in particular subject areas.

Continuing Education

Teachers College maintains a College-wide Office of Continuing Education concerned with providing opportunities for continuing professional development in the education, psychologic and health professions. Coordinated and conducted by Teachers College faculty, many of these programs address issues of particular concern to urban educators and school administrators. Offerings in 1991 will include seminars on "Intergenerational Literacy: Developing Literacy Skills of Children and Adults"; "Building Learner-Centered Schools" (co-sponsored by the National Urban Alliance for Effective Education, the Center for Collaborative Education, and the New York City Teacher Center's Consortium of the United Federation of Teachers); "Conflict Resolution: A Workshop for Educators"; and The Second Annual Hollis L. Caswell Conference on Critical Issues in the Curriculum, which will feature a keynote address on issues of urban education.

IV. DIRECT SERVICE AND COMMUNITY-BASED PROGRAMS

Recognizing that not all learning occurs in schools, the College runs a variety of direct service programs that reach out to New York City children and their families in their own communities. In addition to meeting the needs of the individuals they serve, their research focus and affiliation with a major university helps these programs advance the level of knowledge and quality of service in their fields.

The Literacy Center

Funded in part by the McGraw-Hill Foundation and the State of New York, the Literacy Center brings together TC faculty and staff from a variety of fields in a multidisciplinary approach to literacy. The Center seeks to address the immediate needs of the individuals it serves, to advance basic research, and to produce models, techniques and materials that can be used by others. The Center is currently engaged in five projects: literacy assessment, types of literacy, literacy program evaluation, workplace literacy and intergenerational literacy.

Of particular note is the **Intergenerational Literacy Project**, which addresses the needs of two to three generations at once by increasing the literacy levels of all family members. The Teachers College model is founded on the idea of parental empowerment. Through access to information and the ongoing support of parent groups, parents are encouraged to create literacy-rich home environments, to help their children develop literacy skills, and to employ literacy activities as a way to engage in new and positive patterns of parent-child interaction. Designed to reach inner city families in social and community settings in which parents, grandparents and children naturally interact, the projects take place at community and day-care centers in Harlem.

Center for the Education of the Gifted

Housed in the Department of Special Education at Teachers College, the Center for the Study and Education of the Gifted is currently in its ninth year of providing high quality education and enrichment activities for the City's gifted children. A major component of the program is the Hollingworth Preschool, which is designed not only to forestall the educational disaffection of very bright young children, but also to provide a learning environment that is specifically designed to help such children begin to realize their potential. Throughout the academic year, the Center also offers a series of weekend enrichment courses for children ages two to fifteen, as well as professional forums and seminars for parents and teachers of gifted children.

The Center has embarked, as well, on a federally-funded research project focusing specifically on gifted children from poor or minority backgrounds. Within the vast City school system, such children are often in particular need of special educational programs to develop their talents and to keep them interested in school. The project will investigate the ways in which these children can be identified, and the ways in which teachers and parents can be empowered to recognize and fulfill their special needs.

New York Youth Network

Housed within the Institute for Learning Technologies, the New York Youth Network, supported by the NYNEX and Aaron Diamond Foundations and the New York Community Trust, provides electronic bulletin board services to young people who would not otherwise have access to telecommunications. The network enables youth affiliated with a wide variety of community-based organizations (including youth organizations, libraries, health organizations and schools) to comment on current events and issues, communicate with each other through electronic mail, and obtain information about health, education, and jobs. The network is monitored by students and professionals at Teachers College, and provides both a peer support network and adult guidance for disadvantaged youth in New York City.

The More Responsive High Schools Project

The More Responsive High Schools Project is a cooperative effort between Teachers College and four urban high schools that aims to improve the capacity of urban high schools to respond to student needs. Funded by the Center for Effective Schooling for Disadvantaged Students at Johns Hopkins University, the project seeks to apply new technology to improve the basic management operations of inner city schools. Through an intensive assessment of the information needs of school staff, researchers have determined that the staff--particularly those individuals who work most closely with the students--feel hampered in their efforts by a lack of information on student background and performance. Further, school staff believe their efficacy would improve considerably had they access to information on at-risk students that is more comprehensive, more timely and more accurate. The More Responsive High Schools Project is currently developing school-based information systems within each of the participating schools, incorporating existing systems as much as possible, that are designed to address the needs of school staff rather than simply comply with state and federal reporting regulations, thereby enabling the staff to better meet the needs of disadvantaged students.

Healthy Heart Project

This project, conducted in Washington Heights, studies the diet of residents of this predominantly African-American and Latino neighborhood and assesses its impact on long-term health and current performance. This study has vital relevance for the City's educational system--for if children do not have a healthy diet, how can they perform at their best in school? A related study conducted by another College faculty member analyzes the risk of heart disease in urban and minority children.

Earth Friends

Through the Earth Friends program, the **Nutrition Education Resources Project** provides technical assistance to strengthen and encourage food and nutrition education in New York City schools. Pre-school students from the surrounding Harlem neighborhood come with their parents and teachers to the program's demonstration centers at the College to learn how to select food that is good to their bodies and good to the environment on which we all depend. This program--which is great fun for all involved--has been successful in helping urban children to develop sound nutritional habits, and in making them aware of their place in the ecological structure.

V. RESEARCH AND DISSEMINATION

While intensifying its focus on New York City students and schools, the College has continued to maintain its leadership role in advancing the scope of knowledge in the fields of education, psychology and health. A variety of special research institutes and centers, a few of which are mentioned below, conduct a wide and varied program of research. Special conferences and publications, as well as the usual academic channels of dissemination, help ensure that important findings get to the scholars and practitioners who need them.

IUME (Institute for Urban and Minority Education)

Founded in 1973, IUME is a college-wide research and development enterprise that works toward improving the quality of urban and minority education through a three-pronged approach: (1) identifying fundamental problems and formulating systematic research programs to discover solutions; (2) translating and applying the research to practical situations; and (3) developing new programs, techniques, instruments and materials that can be disseminated for use in urban settings. To meet the needs of schools and other educational programs, the Institute conducts training, service, technical assistance and evaluation projects.

Recent IUME studies have included an evaluation of dropout prevention programs in New York City--widely cited by the press and the Board of Education, and leading to many important reforms--and research on literacy and on the effect of immigration on educational outcomes, particularly for Haitian and Dominican immigrants. IUME also houses the newly-established **Cross-Cultural Literacy Center**, which seeks to provide public school teachers with the knowledge, attitudes and skills that enable them to learn about and interact successfully with students from

widely different cultures. Teachers in turn pass these abilities and attitudes on to their students who, surrounded by a constant flow of new immigrants, need to learn to live in an increasingly multicultural society.

The Educational Resources Information Center/Clearinghouse on Urban Education (ERIC/CUE)

One of sixteen specialized clearinghouses in the ERIC system, ERIC/CUE collects and disseminates published and unpublished materials on urban education for a wide audience of educators, researchers and professionals in a range of disciplines, as well as interested members of the general public. Operating out of Teachers College since 1968, the Clearinghouse is an extraordinary facility for establishing and maintaining networks with disparate communities.

Institute on Education and the Economy

For the past five years the Teachers College Institute on Education and the Economy has been undertaking important, policy-oriented research on what today's economy requires of the nation's educational institutions--focusing not only on schools, but also on corporations, governmental organizations, community agencies and other entities concerned with the development of human capital. Supported by grants from the U.S. Department of Education and several smaller grants from foundations and other sources, the Institute has emerged as the nation's leading specialized source of research on the nature and creation of the skills and knowledge that future workers need to improve America's competitive economic position in the world.

NCREST/Center for School Reform

The newly-formed Center for School Reform, housed within the National Center for Restructuring Education, Schools and Teaching (NCREST) and funded by the DeWitt Wallace-Reader's Digest Fund, the Leon Lowenstein and Aaron Diamond Foundations and the New York City Board of Education, supports current efforts to restructure schools in New York City so that they become more responsive to students' needs and more effective in their teaching methods. Among the activities to be conducted through the Center are research and documentation of successful change efforts; information and resource exchange; staff development and technical assistance services for restructuring schools; and policy analysis aimed at developing policies and organizational structures that will support the efforts of schools to become more responsible, responsive, and effective on behalf of students.

The Teachers College Press

The publications of the Teachers College Press disseminate research about school problems and potential solutions around the nation and the world. With some 450 titles in print and 35 new titles yearly, the TC Press serves the wider educational, psychological and health profession communities by regularly publishing relevant, up-to-date studies. Recent books that address the crisis in urban education include: Improving the Urban High School: What Works and Why?; Schooling Disadvantaged Children: Racing Against Catastrophe; and Hanging In and Dropping Out, a major

study of the reasons dropouts give for leaving school.

The Teachers College Record

The Teachers College Record, the preeminent journal of educational scholarship and commentary, has been published continuously since 1900. Issued quarterly, the journal features academic writing by the nation's eminent and emerging scholars. Subscribing educators and academics around the world engage in the journal's discourse of ideas. Among the TC Record's recent articles focusing on the nature and challenges of urban education are: "What Makes Ghetto Schools Succeed or Fail?"; "Toward Effective University-Public-School Partnerships: An Analysis of Contemporary Models"; and "New Schools for New York," which focuses on the problems of New York City school designs and current efforts to build new schools and renovate existing ones.

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Goal

To ensure that the changes in education wrought by new information technologies enhance the public pursuit of humane culture and democratic equity.

Education

Princeton University, Woodrow Wilson School	A.B., high honors, 1961
Columbia University, History Department	M.A. 1963
Columbia University, Teachers College	Ph.D., with distinction, 1968

Teaching

Teachers College, Columbia University	
Department of Communication, Computing, and Technology	
Professor	1984 to now
Chairman	1985 to 1988
Department of Philosophy and the Social Sciences	
Professor of History and Education	1982 to now
Associate Professor of History and Education	1970 to 1982
Assistant Professor of History and Education	1968 to 1970
Instructor	1967 to 1968
Columbia University, University Seminars	
Co-Director, Seminar on Innovations in Education	1980 to now
The Johns Hopkins University	
Department of Education	
Assistant Professor of Education	1965 to 1967

Research and Development

The Dalton School, New York, NY	
Director, The Dalton Multi-media Library Project	
New Laboratory for Teaching and Learning	1991-1993+
JHM Corporation, Palm Beach Gardens, Florida	
Director, The Freedom Project (initial work on a technology-delivered social-studies curriculum, grades K-12 +)	1988 to 1990
Teachers College, Columbia University	
Institute for Learning Technologies, Director	1986 to now
Center for Intelligent Tools in Education	1984 to now
Institute of Philosophy and Politics of Education	1969 to now
Goethe University, Frankfurt am Main, West Germany	
Pädagogik Seminar, Visiting Scholar	1974 to 1975

Philipps University, Marburg, West Germany
Pädagogik Seminar, Visiting Scholar 1970

Government Service

U.S. Department of Health, Education, and Welfare, Immediate Office of the Secretary, Special Assistant for Policy Studies 1976

Awards and Honors

The Gale F. Johnson Prize, Princeton University 1961
International Fellow, Columbia University 1963 to 1964
Special mention, The Ansley Award, Columbia University 1968
Man and His Circumstances: Orgeta as Educator chosen by *School and Society* as an "Outstanding Education Book of 1971" 1971
Distinguished Service Award from David Mathews, Secretary of the U.S. Department of Health, Education, and Welfare 1977

Memberships

American Educational Research Association
Association for Computing Machinery
IEEE Computer Society
American Historical Association
American Political Science Association
Society for the History of Technology
Conference on Political Thought
Society for Scholarly Publishing
International Communication Association
International Interactive Communication Society
American Society for Information Science
American Center for Design

Books

Power and Pedagogy: Transforming Education through Information Technology. To be published December 1993. Englewoor Cliffs, NJ: Educational Technology Publications, 1993, app 180 pp.

Computing and Education: The Second Frontier. Edited and introduced. New York: Teachers College Press, 1988. xiii, 98 pp.

Man and His Circumstances: Ortega as Educator. New York: Teachers College Press, 1971, xix, 649 pp.

Henry Barnard's School Architecture. Edited and introduced with Jean McClintock. New York: Teachers College Press, 1970, xviii, 339 pp.

Proposals, Reports, and Guides

Risk and Renewal: First Annual Report -- 1991-1992: the Phyllis and Robert Tishman Family Project in Technology and Education. With Frank A. Moretti, Luyen Chou, and Tom de Zengotita. New Laboratory for Teaching and Learning, The Dalton School. September 1992. 372 pp.

The Cumulative Curriculum: Multi-Media and the Making of a New Educational System. Proposal requesting 5.4 million plus equipment over 5 years

submitted to the IBM Corporation, September 8, 1990. 187 pp. Awaiting action for 2.5 million plus equipment over 2.5 years.

Maxwell's Demon: An Aid to Sorting Options for Study. Version 2.1, September 1987, Department of Communication, Computing, and Technology, Teachers College, 90pp.

Prospectus, Institute for Learning Technologies, Teachers College, October 2, 1986. 15 pp.

Thinking about the Budget: An Informal Report to the Teachers College Faculty. Prepared for the TC Faculty Executive Committee, Fall, 1978.

Scholarly Articles and Essays

"Kant in the Culture Factory: Design, Study, and Technology in Education." In progress

"Marking the Second Frontier." *Teachers College Record,* Vol. 89, No. 3, Spring 1988, pp. 345-351.

"Into the Starting Gate: On Computing and the Curriculum." *Teachers College Record.* Vol. 88, No. 2, Winter 1986, pp. 191-215. (Spanish translation: "En el cajon en la linea del salida: Sobre la informatica y el curriculo," *Revista de Educacion*, num. 280 (September 1986)

"On Computing and the Curriculum." *SIGCUE Outlook.* Vol. 19, No. 1/2, Spring/Summer 1986, pp. 25-41.

"El nacimiento de la historia de la educacion: Los antecedents alemanes de la pedagogia historica." *Revista De Educacion.* Fall 1985. 17 pp.

"*Enkyklios Paideia*: The Fifteenth Edition of the *Encyclopaedia Britannica.*" *Proceedings of the National Academy of Education.* 1976, pp. 179-216.

"Rousseau and the Dilemma of Authority." *History of Education Quarterly.* Vol. XIV, No. 3, Fall 1974, pp. 309-333.

"Universal Voluntary Study." *The Center Magazine.* Vol. 6, No. 1, January/February 1973, pp. 24-30. Substantial excerpts reprinted as "Compulsory Education No Longer Suits Our Society" in the Opinion Section of the *Los Angeles Times*, Sunday, January 31, 1973, pp. 1 & 6.

"Toward a Place for Study in a World of Instruction." *Teachers College Record.* Vol. 73, No. 2, December 1971, pp. 161-205.

"Ortega y Gasset: The Partly Faithful Professor." *School and Society.* Vol. 99, No. 2,334, Summer 1971, PP. 304-315.

"On the Liberality of the Liberal Arts," *Teachers College Record.* Vol. 72, No. 3, February 1971, pp. 405-416.

"Ortega o el estilista como educador." *Revista de Occidente.* Madrid. No. 75, June 1969, pp. 267-292. English version: "Ortega, or the Stylist as Educator." *The Journal of Aesthetic Education.* Vol. 3, No. 4, October 1969, pp. 59-79.

"Architecture and Pedagogy." Co-authored with Jean McClintock. *The Journal of Aesthetic Education.* Vol. 2, No. 4, October 1968, pp. 59-77.

"Machines and Vitalists: Reflections on the Ideology of Cybernetics." *The American Scholar.* Vol. 35, No. 2, Spring 1966, pp. 249-257. Spanish version: "Maquinas y vitalistas: Reflexiones sobre la ideologia cibernetica." *Revista de Occidente.* Madrid. No. 63, June 1968, pp. 279-301.

Occasional Articles

"The Dynamics of Decline: Why Education Can No Longer Be Liberal." *Phi Delta Kappan.* Vol. 60, No. 9, May 1979, pp. 636-640.

"In Defense of Ideas." *Quad: The University of Alabama.* Vol. 2, No. 2, July/August 1978.

"Pestalozzi." *Teachers College Record.* Vol. 76, No. 2, December 1974, pp. 344-8.

"Diderot." *Teachers College Record.* Vol. 76, No. 1, September 1974, pp. 143-9.

"Some Thoughts on Permanent Education." *Notes on Education.* No. 3, December 1973, pp. 1-3.

"Ortega y Gasset Rediscovered." *Columbia Forum.* Vol. XIII, No. 2, Summer 1970, pp. 33-6.

"The Ides of March, 1969," (signed Robert Oliver). *Teachers College Record.* Vol. 70, No. 8, May 1969, pp. 761-3.

"Competence," (signed Robert Oliver). *Teachers College Record.* Vol. 70, April 1969, pp. 655-9.

"The End of an Order." *Perspectives on Education.* Vol. II, No. 3, Spring 1969, pp. 1-5.

"Of Privacy and Public Schooling," (signed Robert Oliver). *Teachers College Record.* Vol. 70, No. 6, March 1969, pp. 559-563.

"Pedagogical Praxis," (signed Robert Oliver). *Teachers College Record.* Vol. 70, No. 5, February 1969, pp. 459-463.

"On Pedagogy and Student Power: A Proposal," (signed Robert Oliver). *Teachers College Record.* Vol. 70, No. 4, January 1969, pp. 374-9.

"In Praise of Humble Heroes." (signed Robert Oliver). *Teachers College Record.* Vol. 70, No. 3, December 1968, pp. 251-3.

"A Message on the Media," (signed Robert Oliver). *Teachers College Record.* Vol. 70, No. 2, November 1968, pp. 139-142.

"Towards the Separation of School and State," (signed Robert Oliver). *Teachers College Record.* Vol. 70, No. 1, October 1968, pp. 73-6.

"Foreword," to R.L. Nettleship. *The Theory of Education in the REPUBLIC of Plato.* New York: Teachers College Press, 1968. pp. vii-xi.

Book Reviews

"Review of Education and Culture in the Barbarian West by Pierre Riche." Comparative Education Review. October 1979, pp. 460-1.

"Review of Learning for Tomorrow by Alvin Toffler." The Chronicle of Higher Education. Vol. VIII, No. 25, March 25, 1974, p. 12.

"Imagination in History." Review of An Interpretation of Universal History by Jose Ortega y Gasset. The New Republic. Vol. 169, No. 4 & 5, July 28 & August 4, 1973, pp. 28-29.

"The Humanization of Science." Teachers College Record. Vol. 74, No. 1, September 1972, pp. 103-8.

"Review of Giambattista Vico: An International Symposium edited by Giorgio Tagliacozzo." Comparative Education Review. Vol. XVI, No. 2, pp. 376-378.

"Reconsiderations: The Revolt of the Masses by Jose Ortega y Gasset." The

New Republic. Vol. 166, No. 16, April 15, 1972, pp. 30-31.

"Beyond Anarchy." Review of Superman and Common Man: Freedom, Anarchy, and the Revolution by Benjamin R. Barber. The Progressive. Vol. 36, No. 1, pp. 56-58.

"Review of The Degradation of the Academic Dogma by Robert A. Nisbet." Teachers College Record. Vol. 73, No. 1, September 1971, pp. 123-9.

"The Fall and Rise of Modern Europe." Trans-Action. Vol. 8, No. 11, September 1971, pp. 70-75.

"Review of Design with Nature by Ian L. McHarg." Main Currents of Modern Thought. Vol. 27, No. 4, March-April 1971, pp. 133-5.

"Review of Science and the Federal Patron by Michael D. Reagan." Comparative Education Review. Vol. XIV, No. 1, February 1970, pp. 113-4.

"Review of The Spanish Press by Henry F. Schulte." Comparative Education Review. Vol. XIII, No. 2, June 1969, pp. 235-238.

"Review of Other Schools and Ours by Edmund J. King." Teachers College Record. Vol. 65, No. 5, February 1964, pp. 471-2.

Selected Talks and Presentations

:The SDS -- Study Design System," talk at the 11th Conference on Interactive Instruction Delivery, sponsored by the Society for Applied Learning Technologies, Orlando, FL, February 26, 1993.

"The Cumulative Curriculum in Theory and Practice," a presentation at the IBM Advanced Business Institute to School Technology and Curriculum Directors, May 13, 1992.

"Comunicación, Tecnología y Curriculum: La Construcción del Conocimiento Escolar y el Uso del los Ordenadores," main speaker for a three day Colloquium on information technology and education, sponsored by the Spanish Ministry of Education and Science and the Universidad Complutense of Madrid, November 1991. ("El Computador como Sistema," November 18, 1991. "Dimensiónes de las Posibilidades Pedagógicas de la Informatica en la Educación," November 19, 1991. "La Construcción de un Nuevo Sistema Educativo," November 20, 1991. Texts will be published in mid-1992 in proceedings of the conference.

"Planning for a Student Resource Center," moderator, a day long Symposium in Honor of the 200th Birthday of Peter Cooper, The Cooper Union for Science and Art, New York, September 26, 1991

"Technology and Education: The Cumulative Curriculum," a presentation with Frank Moretti, 8th International Conference on Technology and Education, Toronto, May 8, 1991.

"The Cumulative Curriculum: Multi-media and the Making of a New Educational System," Invited Lecture at the Benton Center for Curriculum and Instruction, The University of Chicago, April 24, 1991.

"Education, Technology, and the Mission of the Museum," Presentation at the Smithsonian Institution, Washington, DC, December 11, 1990.

"Looking Where the Answers Are: Educational Innovation through Information Technology," Invited Lecture, IBM T.J. Watson Research Center, Hawthorne, NY, December 3, 1990.

"Technology, Work, and Education," Keynote Address, 5th Annual AHA/WEA Issues Conference, Seattle, Washington, January 27, 1990.

"Future Learning Systems," NECC '89, Presentation, June 22, 1989, Boston, MA.

"Prototyping Curriculum Materials with HyperText," IBM Symposium on Authoring Languages, February 27, 1989, New York, NY.

"Interactive Multimedia Curriculum Design," invited talk at the conference on "Connecting with the Future: Interactive Technologies in Education," sponsored by the Albany Symposium on Cognition, Education and New Technologies, April 21-23, 1988.

Panel presentation on "Misperceiving Media: The Mass Media and Historical Analysis," The Center for American Culture Studies, Columbia University, February 2, 1988.

"Emerging Technology, Applications, and their Educational Uses." Presentation to the IBM ACIS Conference on *Instructional Delivery Technology*, November 17, 1986, Fort Lauderdale, Florida.

Interpretation and Explanation: Some Methodological Reflections on the Study of Technology, Education, and Communication." Lecture at the CCT Colloquium, Teachers College, Columbia University, February 20, 1986.

"Technological Displacement and Cultural Responsibility", Invited lecture in the Science and Society series at IBM Research Yorktown. May 19, 1986.

"From the Ought that Is to the Is that Ought To Be: Ortega and Dewey on the Pedagogical Problem." Paper for the Centennial of Jose Ortega y Gasset's birth. CUNY Graduate Center, Spring 1983.

"Ortega, Quixote, and the Dream of Europe." Keynote lecture at the University of San Francisco Symposium, *Life is a Dream: Ortega, Unamuno, Falla*, August 7, 8, and 9, 1980.

"Citizens and Subjects: Educational Politics in Historical Perspective." Three lectures as Visiting Scholar, General Studies Program, New York University. April 15, April 22, and May 2, 1980.

Recent Consulting Activities

George Lucas Educational Foundation, San Rafael, CA (New Directions in Curriculum and Instruction and the Role of Technology) Spring 1993

IBM Knowledge Development Systems, Atlanta, GA (Multi-media series documentation) 1991-93

Senior Advisor on Strategic Initiatives, Office of the President, The Cooper Union for the Advancement of Science and Art 1990-91

The Smithsonian Institution (design of a CD-I product, development of the interactive component of a project on modern cultural history) 1987

The American History Workshop (design of an interactive museum exhibit on the Constitution) 1987

Personal

Maxine B. McClintock, wife -- teaches European history at the Trinity School, 9th and 10th grades.

Moira McClintock, daughter -- designer with MoiraMax, Inc.

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New York, NY 10036
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Education

Ph.D.	History Doctoral Dissertation: "Pietas and the Pedagogy of Power" Columbia University	1983
M.Phil	Columbia University	1976
M.Ed.	Columbia University	1976
M.A.	History and Education Columbia University	1973
M.A.	Latin Columbia University	1967
B.A.	Greek and Latin St. Bonaventure University	1965

Present Positions

Associate Headmaster	The Dalton School
Executive Director	The New Laboratory for Teaching and Learning
Adjunct Associate Professor	Department of Communication and Technology, Teachers College Columbia University
Co-Director	Cumulative Curriculum Project, Institute for Learning Technologies, Teachers College, Columbia University

Related Professional Positions

Board Member
- Batoto Yetu Inc.
- City Volunteer Corps
- Earth Environmental Group
- National Advisory Board, Center for American Culture Studies, Columbia University
- National Conference Committee

Committee Member
- Committee to Explore New York University's Relations with Black South African Schools and Colleges 1986-88

Seminar Member
- Innovation in Education, University Seminars, Columbia University
- Scientific Literacy, University Seminars, Columbia University
- Joseph Priestly Society

Previous Positions

1981-1986	Assistant Headmaster for Curriculum The Dalton School
1978-1981	Director of Degree Programs in Liberal Arts School of Continuing Education, New York University
1977-1978	Director of the General Studies Program School of Continuing Education, New York University
1975-1977	Director of Methodology Wŏrkshops Bloomfield College. Part of a Federal Grant (AIDP)
1975-1976	Assistant Director of Grant Program sponsored by the New Jersey Council on the Humanities
1973-1975	Assistant Professor of Education Supervisor of Area of Life and Continuing Education Director of Teacher Education, Bloomfield College
1970-1973	Associate of the Faculty Barnard College, Columbia University
1966-1973	Various Teaching

Teaching Experience

1981-present	Teachers College, Columbia University Adjunct Associate Professor, Communication Technology and Computing (from 1985)
	The Dalton School
1971-present	New York University Adjunct Associate Professor of Humanities
1973-1976	Bloomfield College Assistant Professor of the History and Philosophy of Education
1971-1973	Barnard College Associate in Department of education
1969-1971	Adelphi University Lecturer in Greek and Latin
	Union Catholic High School Teacher in Social Studies Department
1967-1968	St. Bonaventure University Instructor in Greek and Latin

1966-1967	St. Peter's Prep (Jersey City, New Jersey) Teacher of Greek and Latin

Recent Professional Activities

Fall 1993	"Semper Ego Auditor Tantum", Teachers College Record, Teacher's College, Columbia University
	"The Transformation of Education through Technology, Pomfret School
	"New Technologies and New Directions in Education", Harvey School
March 1993	International Conference on Technology and Education, MIT, Cambridge, Massachusetts
	Technology and the Revitalization of Progressive Pedagogy
	Teaching Texts with computers
	ILSS Meets CIRCLE (Computerized Information-Rich Constructivist Learning Environment): Envisioning the Possibilities of School-Base Networked Multi-Media
February 1993	The School of the Future: Its Content, Meaning and Practice, Society for Applied Technology, Kissimmee, Florida
November 1992	Multi-media and the Making of the Post-Modern School, Association for the Development of Computer-Based Instructional Systems, Norfolk, Virginia
November 1992	New Technology and Schools of Tomorrow, New York State Association of Independent Schools, Mohonk, New Paltz
August 1992	The Cumulative Curriculum: Multimedia and the Making of a New Educational System, Society for Applied Learning Technology, Arlington, Virginia
February 1992	New Technology & School's of Tomorrow: An Introduction to the Theory and Practice of the Pedagogy and Curriculum of the Future, New York State Association of Independent Schools, New York, NY
February 1992	New Technology and its Curricular Possibilities, Fourth Meeting of the International Consortium for Research in Science and Mathematics Education, San Juan, Puerto Rico

February 1992	The Cumulative Curriculum: Multimedia and the Making of a New Educational System, Multimedia '92, Society for Applied Learning Technology Conference, Orlando, Florida
October 1991	Socrates University Seminar on Innovation in Education in Great Neck, NY
May 1991	Technology and Education: New Wine in New Bottles, 12th E.C.O.O./8th I.C.T.E. Joint Conference, Toronto, Canada.
March 1991	New Directions in Technology and Education in the Humanities, ASCD 46th Annual Conference: "Breaking the Mold: Opportunities for Reshaping Schooling, San Francisco, California.
March 1990	The Playbill Program, International Conference on Technology and Education, Brussels, Belgium.
April 1989	Hermaneutical Pedagogy, Reality Club, N.Y.C.
April 1989	"Moral Education: Private School Dilemma", Progressive Education Conference, Chicago.
October 1989	Interactive Hypermedia Project: The Electronic Workstation, The Educational Record Bureau Conference, N.Y.C.
November 1989	Social Class and Its Relationship to Schooling: The Annual Conference of the Headmistresses Association of the East
Spring 1988	Boston College, Honors Humanities Lectures, Vergil and Politics
Spring 1988	Center for American Culture Studies, Race and Racism in American Society Series, presentation: Education and Racism
May 1987	New York University Homecoming, Politics, Hypocrisy and Education: Past and Present
December 1986	Columbia University, Seminar on Innovation in Education Twin Dynamos of Education: The Quests for Power and Truth
November 1986	Westminster College, Utah Distinguished Resident and Visiting Scholar
November 1986	Joseph Priestly Association Educator's Response to A Nation Prepared
October 1986	Response to Marvin Lazerson, Harvard University Democracy, Progressivism and the High School: You Got What You Wanted Progressive Education: Reassessment, a Conference Sponsored by The Libraries of Bank Street College of Education and Teachers College, Columbia University.

June 1986	The Dalton School, 1986 Graduation Address The Power of Knowing What You Don't Know
January 1985	American Representative: USA-UK Seminar, Science Education in a High Technology Society
May 1985	"Twin Dynamos of Education: The Quests for Power and Truth," Pathways
April 1985	Sarah Lawrence College Workshop, "Educating Children to be Productive Adults." Published with proceedings of the conference, Working Papers 1984

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PROFESSIONAL EXPERIENCE

The Brooklyn Museum, Brooklyn
Vice Director for Education
June 1, 1989 - present

Assistant Vice Director for Education
January 1, 1989 - May, 1989

Manager, Public Programs and Media
July 1, 1986 - December 31, 1988

Assistant Manager, Public Programs and Media
May 1, 1985 - June 1986

Education Specialist
December 1982 - April 30, 1985

Landmarks Preservation Commission, New York City
Researcher
September 1981 - September 1982

The Institute of Fine Arts, New York University
Assistant to the Director
August 1978 - February 1982

The Museum of Contemporary Art, Chicago
Assistant to the Director of Development
January 1978 - July 1978

Neville-Sargent Gallery, Evanston, Illinois
Gallery Manager
September 1977 - January 1978

Dittmar Gallery, Northwestern University
Student Curator
Spring 1976 - Spring 1977

The Park School of Buffalo, Buffalo, New York
Ceramics Instructor
Summers 1972, 1973, 1974

TEACHING EXPERIENCE

Faculty Member, Master's Program in Museum Education, Bank Street College, 1989 - present.

Guest Lecturer, Museum Studies Program, New York University, March 1987 and March 1989.

Workshop Leader
Educational Programming in the Arts, New England Foundation for the Arts, 1986.

Faculty Member, Museum Studies Certificate Program, Hofstra University, April 1985 - June 1986.

Guest Lecturer, "Methodology for Art History Majors," Queens College, CUNY, October, 1984.

RELATED PROFESSIONAL ACTIVITIES

Review panelist, National Endowment for the Arts, Washington, D.C. 1992

Reviewer, Institute of Museum Services, Washington, D.C., 1991.

Consultant, National Park Service and Georgia O'Keeffe Foundation, Abiquiu, New Mexico, July 1990.

Smithsonian Institution Advisory Board on Education, Washington, D.C., June 1990.

Review panelist, New York State Council on the Humanities, March, 1990

Consultant for Educational Programs
Cooper-Hewitt Museum, January, 1990.

Exhibition Coordinator, "O Write My Name," Portraits of Harlem Heroes
Photographs by Carl Van Vechten. The Brooklyn Museum, 1989

Juror, AFS Art Competition
International Youth Year, 1985.

Executive Producer, "The Great East River Bridge 1883-1983,"
Cable Television Channel L Show aired April, 1983.

Exhibition Coordinator, "Midwest College Architecture 1855-1976,"
November, 1976.

Exhibition Coordinator and Catalogue Editor
"Graphics from the Northwestern University Collection"
March, 1977.

SELECTED PAPERS AND PRESENTATIONS

"The Embattled Museum: Reflections on Surviving the Recession," Mid-Atlantic Association of Museums, The Courier, October, 1992.

"New Technologies, Museums, and Access to the Past," Columbia University Seminar on Computers, Man and Society, October, 1992.

"Synergy for Success: The Talents of Public Relations and Education Combined," Mid-Atlantic Association of Museums, 1987.

"Interpreting the Past through the Decorative Arts: Implications of Material Culture Studies for Museums," New York State Council on the Arts Workshop, February 1987.

"Interpretative Issues for Art Museums," New York State Council on the Arts Museum Workshop Program, April 1984.

"An Interview with Sylvia Sleigh," Arts and Sciences, Northwestern University, Vol. 1, Evanston, April, 1978.

EDUCATION

Queens College, CUNY, New York
Master's Degree in Art History in progress

Northwestern University, Evanston, Illinois
Bachelor of Arts in Art History, June 1977
Departmental Honors and Dean's List

PROFESSIONAL ASSOCIATIONS

American Association of Museums; Education Committee, AAM; Art Table Inc.; Gallery Association of New York State (Vice President, Board of Directors); Museum Education Consortium (Co-chair Board of Directors); Mid-Atlantic Association of Museums; National Art Education Association; New York City Museum Educator's Roundtable; The New Press, Fund for Independent Publishing (Advisor)

Vita

John B. Black

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New York, NY 10027
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Education:

Massachusetts Institute of Technology, 1965-1970, BS in Mathematics, 1970
Stanford University, 1974-1978, PhD in Cognitive Psychology, 1979

Professional Experience:

1987--Present
Director of Literacy Center, Teachers College, Columbia University

1987--Present
Professor, Department of Communication, Computing and Technology, and Department of Developmental and Educational Psychology, Teachers College, Columbia University

1984--Present
Series editor of Ablex Publishing series on *Cognition and Computing*

1984--Present
Consulting Editor of the journal *Human Computer Interaction*

1983--Present
Consulting Editor of the journal *Discourse Processes* and Member of the Editorial Board of the journal *Text*.

1992
Consultant to the American Psychological Association and the US Department of Labor on Cognitive Task Analysis descriptions for Dictionary of Occupational Titles

1991
Consultant to Secretaries Commission on Achieving Necessary Skills (SCANS) in the US Department of Labor

1988-1991
Member of the NYS Adult Learning Services Council and the Literacy Council for New York State that advises New York State Commissioner of Education

1988--1991
Chair, Department of Communication, Computing and Technology, Teachers College, Columbia University

1985--1986

Associate Professor, Department of Communication, Computing and Technology, and Department of Developmental and Educational Psychology, Teachers College, Columbia University

1984-1986

Consultant to the User Interface Institute at the IBM Thomas J. Watson Research Center, Yorktown Heights, NY.

!984-1986

Member of the Association for Computing Machinery Computer Human Interaction Conference Program Committee

1983--1985

Associate Professor, Department of Psychology, and Department of Computer Science Yale University

1983--1984

Consulting Editor of *Journal of Experimental Psychology: General*

1982-1983

Consultant to the International Telephone and Telegraph Corporation, Advanced Technology Center, Shelton, CT.

1978--1984

Consultant to the Applied Information Processing Psychology Project at the Xerox Corporation, Palo Alto Research Center, Palo Alto, CA.

1980--1985

Consulting Editor of the journal *Memory and Cognition.*

!980

Co-Chair of the Second Conference of the Congitive Science Society, New Haven, CT

1979-1983

Assistant Professor, Department of Psychology, and Department of Computer Science Yale University

1978-1979

Assistant Professor, Deparment of Psychology, University of Illinois, Chicago

1976

Visiting Scientist in the Learning and Instruction Research Group. Bell Laboratories, Murray Hill, NJ.

1973--1974

Officer in US Army assigned as faculty member in Computer Science Department US Army Command and General Staff College, Fort Leavenworth, Kansas

1970--1973

Office in US Army assigned as computer expert and operations reserach specialist at Sacramento Army Depot, Sacramento, CA

Selected Publications

Black, J.B. and Bower, G.H. (1979) Episodes as chunks in narrative memory. *Journal of Verbal Learning and Verbal Behavior*, **18**, 309-318.

Black, J.B. Turner, T.J. and Bower, G.H. (1979) Point of view in narrative comprehension, memory and production. *Journal of Verbal Learning and Verbal Behavior*, **18**, 187-198.

Black, J.B. and Wilensky, R. (1979) An evaluation of story grammars. *Cognitive Science*, **3**, 21-130.

Bower, G.H., Black, J.B. and Turner, T.J. (1979) Scripts in memory for text. *Cognitive Psychology*, **11**, 702-220.

Owens, J., Bower, G.H. and Black, J.B. (1979) The "soap opera" effect in story recall. *Memory and Cognition*, **7**, 185-191.

Black, J.B. and Bower, G.H. (1980) Story understanding as problem-solving. *Poetics*, **9**, 223-250.

Black, J.B. (1981) The effects of reading prupose on memory for text. In A. Baddeley, and J. Long (Eds.) *Attention and Performacne IX*. Hillsdale, NJ: Erlbaum.

Black, J.B. and Bern, H. (1981) Causal coherence and memory for events in narratives. *Journal of Verbal Learning and Verbal Behavior*, **20**, 267-275.

Black, J.B. and Seberchts, M.M. (1981) Facilitating human-computer communication. *Applied Psycholinguistics*, **2**, 149-178.

Robertson, S.P., BLack, J.B. and Johnson, P.N. (1981) Intention and topic in conversation. *Cognition and Brain Theory*, **4**, 303-326.

Black, J.B. (1982) Psycholinguistic processes in writing. In S. Rosenberg (ed.) *Handbook of applied psycholinguistics*. Hillsdale, NJ: Erlbaum.

Black, J.B., Wilkes-Gibbs, D. and Gibbs, R.W. (1982) What writers need to know that they don't know they need to know. In M. Nystrand (Ed.) *What writers know: The language, process and structure of written discourse*. New York: Academic Press.

Reiser, B.J. and Black, J.B. (1982) Processing and structure models of comprehension. *Text*, **2**, 225-252.

Britton, B.K. and Black, J.B. (Eds.) *Understanding expository text*. Hillsdale, NJ: Erlbaum, 1985.

Black, J.B. (1985) An exposition on expository text. In B.K. Britton and J.B. Black (Eds.) *Understanding expository text*.

Graesser, A.C. and Black, J.B. (Eds.) *The psychology of questions*. Hillsdale, NJ: Erlbaum, 1985.

Galambos, J.A. and Black, J.B. (1985) Using knowledge of activities to understand and answer questions. In A.C. Graesser and J.B. Black (eds.) *The psychology of questions*.

Abbott, V. Black, J.B. and Smith, E.E. (1985) The representation of scripts in memory. *Journal of Memory and Language*, **24**, 179-199.

Reiser, B.J., Black, J.B. and Abelson, R.P. (1985) Knowledge structures in the organization and retrieval of autobiographical memories. *Cognitive Psychology*, **17**, 80-137.

Galambos, J.A., Abelson, R.P. and Black, J.B. (Eds.) *Knowledge structures*. Hillsdale, NJ: Erlbaum, 1986

Abbott, V.A. and Black, J.B. (1986) Coherence inferences in text. In J.A. Galambos, R.P. Abelson, and J.B. Black (eds.) *Knowledge structures*.

Robertson, S.P. and Black, J.B. (1986) Structure and development of plans in computer text editing. *Human Computer Interaction*, **2**, 201-226.

Black, J.B., Kay, D.M. and Soloway, E.M. (1987) Goal and plan knowledge representations. In J.M. Carroll (Ed.) *Interfacing thought*. Cambridge, MA: MIT Press.

Black, J.B., Carroll. J.M. and McGuigan, S.M. (1987) What kind of minimal instruction manual is the most effective. In P. Tanner and J.M. Carroll (Eds.) *Human factors in computing systems and graphic interface*. Amsterdam: North Holland.

Black, J.B., Swan, K. and Schwartz, D. (1988) Developing thinking skills with computers. *Teachers College Record*, 89, 384-407.

Robertson, S.P., Zachery, W.A. and Black, J.B. (Ed.) *Cognition, computing and cooperation.* Norwood, NJ: Ablex, 1990.

Kay, D. and Black, J.B. (1990) Knowledge transformations during the acquisition of computer expertise. In S. Robertson, W. Zachery and J. Black (Eds.) *Cognition, computing and cooperation.*

Thallheimer, W., Wilder, H., deSoto, D. and Black, J.B. (1992) Multiple feedback mechanisms in a business simulation. In M.R. Simonson and K. Jurasek (Eds.) *Proceedings of selected research and developmetn presentations at the 1992 national conventionof AECT.* Washington, DC: AECT.

Thallheimer, W., Wilder, H., deSoto, D. and Black, J.B. (1992) Hierarchically anchored educational systems: Simulations, simulation experiences and the bigger program. In M.R. Simonson and K. Jurasek (Eds.) *Proceedings of selected research and development presentations at the1992 national convention of AECT.* Washington, DC: AECT.

Rosenthal, L. and Black, J.B. (1993) Building blocks to literacy: An intergenerational approach using hypermedia. In N. Estes and M. Thomas (Eds.) *Rethinking the roles of technology in education* Cambridge, MA: MIT.

Evaluation of *Archaeotype:* Professor Mark Petrini

Department of Classics
Columbia University

During the space of two days I observed classes at the Dalton School which use the *Archaeotype* program, a project within the New Laboratory for Teaching and Learning. My goal was to evaluate the program as a tool for introducing sixth and seventh grade students to the history and culture of ancient Greece and (though, at present, to a lesser extent) of ancient Rome. I was able to observe two classes and two group discussion periods; I also interviewed students, teachers, librarians, project managers, and administrators; I reviewed the collection of classics texts in the Middle School and High School library; and I observed students during free periods in the computing center. I returned to Dalton for two afternoons after classes had ended to evaluate the final results of the *Archaeotype* projects I had seen in progress. My total time spent observing and interviewing was about fourteen hours.

This evaluation will specifically address the following issues:

1) **Project overview**
   A) Computers and Print-Based Learning
   B) Computers vs. Print-Based Learning
2) **Students in the Classroom**
   A) Student/Student and Student/Teacher Interaction
   B) Gender Issues
3) **Comparison of *Archaeotype* Projects and Traditional Class Work**
4) **Some Possibilities and Recommendations**
   A) Expansions
   B) Staffing
   C) The Reference Library
   D) The Dalton Press?

1) Project Overview

The classes I observed were broken down into groups of three or four students.

Each group undertook the collective task of uncovering quadrants of an "archaeological field," a computer image of a fictional site containing "buried" artifacts from a six- or seven-hundred year span of Mediterranean history. Groups excavated small areas of their quadrant each day and evaluated the objects found there according to weight, color, and material; these data are provided by the program through simulated measuring devices. Students first take their objects (printed images) to the reference library for identification and dating: as each quadrant is excavated, the site is recreated on a "hard-copy" map with pictures of the objects in place.

The heart of the program then begins. With all the quadrants finished, the groups come together over the map and present their findings to rest of the class. Group by group, and then as a whole, the students form hypotheses about possible circumstances that might have produced the particular collection of vases, coins, armor, etc., that the site has yielded. The sites are fictional, but created by members of the faculty from real artifacts, and the students' hypotheses must be based on real historical events: the dates, places, and participants of the Persian and Peloponnesian wars, for example, must be accurately accounted for, and plausible explanations construed for the both condition of the finds (which might show evidence of burning, etc.) and for their presence in the site.

A. Computers and Print-Based Learning

This brief account of the program in action suggests a welcome and perhaps unexpected strength of *Archaeotype*: the relationship between the computer program and traditional primary and secondary texts. This is not a program which will replace or decrease the use of the library -- the opposite is certainly the case, and the book collection at Dalton is where the real work is done. Those who fear that the levels of computer-virtuosity I observed in these students threaten the written word need only spend an hour with this program. Much heavier library traffic is already a fact, and the increasing strain on library personnel and resources is a problem that will have to be dealt with (see below). I spent a

number of hours going through the library holdings at Dalton, both in the junior high school library and the high-school library; I examined borrower-cards, spoke with students, and watched them work. The collection is well-used -- more broadly and deeply used, I would add, than the collections at some small colleges. By the end of their time with *Archaeotype* very young students have begun to learn the basic principles of research. It is an impressive strength of the program that it leads to an increase in the use of books, and that it provides a precise model of how any scholar uses an actual research collection. These students will have a tremendous advantage when they arrive at universities with these skills already well in hand.

B. Computers vs. Print-Based Learning

The difference between the *Archaeotype* classes and more traditional history and social studies programs is immediately striking. The conventional classroom experience, with students passively absorbing canonized information from lectures and texts, can indeed be valuable and stimulating, and will no doubt remain an indispensable part of secondary and university education; its limitations, however, are notorious and profound, particularly in the study of the ancient past. To create a continuous and coherent narrative, teachers of Greek and Roman culture at all levels are obliged to make uneasy compromises: suppositions and possibilities become facts; elaborate reconstructions of wars, individuals, and vast migrations, depend at times upon a few coins or the charred ruins of a temple. We all learn to accommodate the discoveries that every few years displace the intellectual cornerstones of the day and require varying degrees of re-writing history.

The *Archaeotype* program aggressively addresses this problem in the study of antiquity. The direction of learning is re-oriented: the primary "text" students confront in the classroom is the body of evidence itself, the artifacts which, as they are weighed, measured, and identified, slowly acquire significance, and only collectively acquire meaning. Students are never given an officially-sanctioned account of the site, and their answers are not right or wrong except as they relate to the strongest interpretation of the evidence; the prize goes to the most plausible conclusion, the hypothesis which

most reasonably unites their discoveries with what they know about history. The key ingredients in this endeavor are information, imagination, and common sense.

The real work done in these classes, therefore, is synthetic thinking, a demand more often made only on students in upper-level university courses. It would be difficult to overstate my admiration for the results of the program and those who have brought it to life in the classroom. The sixth and seventh-grade students at Dalton have, first of all, learned an astonishing amount of information about the ancient world. Students know who fought in the Persian and Peloponnesian Wars, and why, and when; they know Themistocles and Pericles; they understand what ostraka are, and why they were used. I had a long discussion with one group about Archon-lists (!) They had found in their quadrant a fragment of stone engraved with the names of Archons and were in the process of creating short biographies of the characters. Most of us who instruct first-year university students scarcely flinch when bright undergraduates from good schools don't know that Greece "came before" Rome, that the Homeric poems are in Greek and the Aeneid in Latin, or that Athens in the fifth century was special. I was frankly stunned to hear sixth grade *Archaeotype* students at Dalton correcting each other in class on the dates and places of Greek history, and making detailed contrasts between the artifacts used in the fifth century and those used in Homeric times.

Students have acquired a well-developed sense of the intellectual, as well as the material, culture of the Greeks. They are thoroughly acquainted with the myths and legends of the Heroic Age; they understand which gods the Greeks worshipped, and what their chief attributes were. I was further impressed that students knew how these mythologies and theologies were practiced and applied: one group explained to me that myths of the Amazons were used in Athenian literature and art to reflect the Greeks' pride in their victory over Persia; other students made some interesting guesses about an engraving of Heracles and Apollo fighting over a tripod at Delphi. These are giant steps, in my opinion, for students so young to have taken: *Archaeotype* students have a solid elementary grasp of the sweep of Greek history and culture, and an

impressively precise knowledge of the major events and historical milestones. Best of all, they have more than the handbook views and stock opinions so often imparted by traditional courses. Students are learning how to deal with cultural studies in three dimensions, and they have begun to understand what lies behind the two dimensional accounts of the past found in text-books.

I would like to add a further observation. When a culture and its people are treated as idealized and monolithic -- "the glory that was Greece, the grandeur that was Rome" -- the game is over before it begins. Few students will ever love or understand or be changed by these larger-than-life creations that seem to exist only on the shelves of a Great Books series. *Archaeotype* students instead absorb history and culture piece by piece, one stone at a time. They know the general facts that any teacher wants students to have learned, but they have gone beyond the mystique and venerability that obscures the true beauty and real greatness of antiquity. For these students, Homer, Pericles, and the Parthenon have ceased to be remote and inaccessible objects; they have human size and proportion, and have the potential to be sustaining presences in students' personal and intellectual development.

2) Students in the Classroom

A) Student/Student and Student/Teacher Interaction

There are many features of the *Archaeotype* approach to learning which I would hope to see incorporated into other courses and other programs: of all of them, the qualities of interaction between students, and between students and faculty, seem to me the most immediately profitable transplants.

Unlike the traditional classroom struggle between enforced silence and adolescent energy, the *Archaeotype* program demands conversation among students and between students and faculty. Learning is almost entirely collaborative; ideas and information are exchanged and compared from minute to minute, and students have their questions answered more or less as they arise. Best of all, the questions which emerge seem (as one would hope) to represent stages of actively evolving ideas to which instructors give shape and direction rather than pat answers.

There is an inevitable amount of unrelated conversation in the room, and I watched closely to judge the proportions of time spent working and of time spent being in the sixth grade. I am convinced that the time thinking and working with the *Archaeotype* is at least as productive and as valuable as the comparable hours spent in ordinary classes -- I suspect that it is more productive. Students lose focus and re-focus, talk about both their work and their lives, just as any of us do while we work in teams.

It is further the case that classroom conversation seems directly related to the atmosphere which the project creates. Students are having fun, and they are enjoying the experience of working with each other. The sense of student ownership is unmistakable: students seem excited by the idea that these projects are their own creations, and that their energy, imagination, and initiative will be rewarded.

Finally, I was particularly impressed with the complementary specializations that had developed within groups. Students were conversant with all features of the program, I found, but some were unusually good with the technological side of the project, others with the details of the Persian wars; others could remember and compare artifacts from different projects or from different contexts (the visits to the antiquities collection at the Metropolitan Museum of Art seem to have been extremely useful and fruitfully absorbed). The exchange of these sub-specialties among students was a natural and effective component of the program which will no doubt continue to contribute to its success.

B) Gender Issues

The tendency of male students to dominate classes affects all of us who teach; few who have worked with this fact any longer believe that the problem, if left alone, will "sort itself out." It persists in undergraduate and graduate university classes and beyond, and it seems to require delicate and constant intervention. On its own, I cannot see that any technology, *Archaeotype* or another, will have much effect on this fact of life. It is due rather to the sensitivity and good judgment of the teachers in the classroom that *Archaeotype* has been made into a strategy for dealing with this

issue.

Archaeotype teams were divided by gender, and groups of girls and boys worked separately for most of the project's early stages. The effectiveness of this decision was obvious. Girls are given the room they need and the attention they need in individual groups, without having to compete with their male colleagues. The problem of equal distribution of time and attention does not really arise until all the groups meet together as the excavation is completed. In that context it is a much simpler matter to keep the gender balances intact than it would be day to day throughout the project; faculty can (and did) use the larger groups to impress upon the students the necessity of patience and fairness.

I was impressed and surprised, finally, to see the way in which girls in the groups formed bonds, and how they learned to interact together and to work out problems. At one point during a discussion session a student felt that she was lagging behind her group-members, and worried that she was being excluded. The teacher took all four students into the hall, and together they worked out a solution in a few minutes; later in the discussion the same student spoke up and offered her own ideas, and seemed to have been brought back into the fold. This incident strikes me as a fundamentally significant pedagogical event. Such problems, with different theme and variation, are a constant fact of all classroom life, and the hope of every teacher is that they be brought out into the open and resolved. In a conventional class, unfortunately, the student would have grown increasingly diffident and frustrated, and slipped further and further out of reach: I would also guess that a female student might be less likely to ask for the attention she needed. The fact that the student did ask for help speaks well for the ambiance that *Archaeotype* creates; it may further suggest that a small, single-gender group gave her the freedom and the confidence to speak up.

At the very least, it is clear that this project can be used in such a way that it does not exacerbate the familiar problems of gender-bias, and it can even -- as I saw in action -- begin to serve as a remedy.

3) Comparison of *Archaeotype* Projects and Traditional Class Work

Perhaps the most intriguing part of evaluating the *Archaeotype* project has been the opportunity to compare the work produced by *Archaeotype* students and work done by students in conventional courses. I have examined six papers from social studies classes in the Middle School on archaeological and historical subjects; four describe an Assyrian limestone relief from the palace of Assur-nasir-pal (900 BCE); one discusses the transformations involved in the evolution of human societies from hunter-gatherers to sedentary farming communities; the last paper is on the Parthenon in Athens.

These comparative texts demonstrate vividly some of the features of *Archaeotype* discussed in the previous pages. The best papers are well-written and thorough collections of information with appropriate documentation. The description of the Parthenon, the most sophisticated of these efforts, contains a great variety of facts from different sources, and ranges in topic from the mathematical minutiae of the temple columns, to the Athenians' attitude to the late-fifth century building program. The work shows access to and familiarity with some of the basic tools and methods of research, and the student will certainly thrive in university classes writing improved versions of the same.

As much could be said for the students' assessment Or the Assyrian "Birdman" bas-relief. These four papers show less "research" (the assignment was clearly different) and students describe and try to reconstruct the role the sculpture may have played in society and in worship. The best of the papers presents some acute and accurate observations about the details of the sculpture, as well as some interesting speculation.

Each of these very different assignments fulfills an important function. It is hardly controversial that students first need to acquire, and then to learn to process and organize large amounts of information as they advance through their education; and that a creative student will achieve this in more interesting and effective ways. I would like to look closely, however, at a sample of the

work I have reviewed, and suggest where it might differ from the work I saw done in the *Archaeotype* project:

> The birdman also has many motifs sculpted on him. A motif is a shape or unit. If a motif is repeated, it becomes a pattern. The motifs on the Birdman are mostly curls. The circles on his bracelet, his tassels, snail curls, and the flowers on his shirt are all motifs. The birdman is very importantly different from ordinary people because of his bird-head. He also has a beak on his head. Most of the other bas-reliefs have human heads. The birdman is in a position that shows you that something is going on right in front of him.

One could analyze this paragraph in a variety of ways, but my interest here is what the student has learned about critical observation. The description is reasonably full: the presence of feathers and wings distinguish the birdman from neighboring sculpted human figures; curls, circles, tassels, and flowers, are identified as motifs which form a sculptural pattern or overall design; a guess is offered as to what is not shown ("something is going on to the right of him"). These are admirable results, the work of a good student confronting an unknown object from a remote place and time: the student has obviously been well-taught and in the best possible traditional setting.

We can proceed next to what the student might have done better, or rather, what we might teach him or her to do better. The student is struggling, first of all, with the dilemma which every critical observer faces: which details are defining and essential, and which are not? The "default mode" in the present case (as it is for most writers) is the kitchen sink. The birdman essay is a rather shapeless collection of facts; the description is static, and details proceed by accident and intuition. I do not mean to be overly critical (I have seen worse paragraphs from a few college students), but we should notice that no amount of coaching on paragraph construction, sentence structure, or the like, will be of the slightest use here. The student has no context by which these data can be given shape, and no argument, despite the fact that the impulse is there: -the birdman has many motifs sculpted on him --"now what?"

we can almost feel the student ask, and then "Oh yea.... 'A motif is a shape or unit'." The student is looking for structure and direction, scanning back through the words and categories he or she has learned, but can discover no logical focus anywhere in sight. There are times when life and scholarship are diffuse and messy and when writing demands we supply order, if not context and argument, but there is nothing more difficult than writing without point.

Archaeotype in many important ways provides the point. Students are obliged to use actively the data they glean from artifacts; accumulation and description are never ends in themselves. As I read these essays I could not help remembering how often I heard *Archaeotype* students say "I've seen that (motif) somewhere before," and then watched them look through their earlier finds or through reference texts. Their vocabulary and body of visual material were clearly evolving and growing, and they knew how to build upon the details they had collected and described. *Archaeotype* students, like any good scholars, have learned that when the data are gathered and the facts assembled, a project is ready to begin, not to end.

These features suggest the more obvious strengths of the program, but I would like to consider some further advantages and benefits inherent in the process of working with *Archaeotype*. The final projects of the classes I observed consisted of presentations of the artifacts found in each quadrant. The presentations are designed by the groups in such a way that they first lead the reader/viewer through the material, and then, by the ordering and description of their assembled evidence, to the group's hypothesis. The viewer is shown an Index and can ask for pictures and information about the artifacts, category by category, and piece by piece: architecture, weapons, coins, statues, etc. Objects (where possible and appropriate) can be viewed from front, back, and side angles, and usually can be seen in close-up. The students provide commentary on each object: some groups decide on a printed text next to the pictures, and other choose an oral presentation, with a recorded voice of students reading the texts they have written.

The myriad choices and possibilities of format require that students make important decisions about the kind of material they

have, and the arrangement that will most effectively convey their argument. The burden of mere description is removed, since the object appears on the screen, but there is a further irresistible tendency to include only information which is essential: the torso of a statue was uncovered, for example, which the student had researched and dated to 415 BC; the student then explained the date -- the "wet drapery" style of garment depiction became popular in sculpture about that time -- and further described how the date fit in with her overall analysis of the site. In another part of the same presentation, the students analyzed and described the helmets they had uncovered but also cross-referenced them to other helmets from text-books and from the database in the Perseus program. The viewer could look at a Kegel helmet while reading a description of the helmet's features, and could then call up to the screen three other helmet styles for comparison. The students had investigated these, and included texts which gave the dates of earliest and latest use of the helmets, detailed commentary on their construction, and their relative effectiveness as protection.

We find in these products the ideal features of an educational process. Information-gathering is active, and students are encouraged (where possible) to make their data cohere -- one piece at a time, and then as a whole. The program rewards the creative attempt to make something of motifs and patterns of motifs, to compare them with others, and try to link them to some historical, artistic, or social context. Again, this will not always be possible, but learning the limits of speculation is as least as important as learning to speculate. Developing in students the instinct to look for unities and structures in the data they encounter will benefit them long after the details of the Birdman and the Parthenon have become vague memories. They will be better and more inquiring readers and more circumspect thinkers.

The advantages of this procedure over traditional paper-writing are manifold. *Archaeotype* students have a built-in reason to organize their paragraphs and their ideas: they need to explain their data to an actual audience who needs to be informed and kept interested. They also, whether they choose an oral or text format, are working in a naturally oral mode -- that is, of persuading an

actual audience (the viewer) of their opinions. I have taught university writing classes for a number of years and attended conferences and taught workshops on the teaching of writing. The consistent treatment of choice for beginning writers is to urge first of all, that they imagine an audience of their peers, and then that they write as if explaining their material aloud. These exercises are particularly effective in training students to be unaffected, concise, and clear; they also steer students away from the inevitably muddled imitations of "high style" professional prose that can make their writing so disagreeable to read and such anguish to compose. I was immediately struck by the fact that these improving features are built in to the *Archaeotype* format.

It is, furthermore, a dictum of pedagogy that one never really knows a subject until one teaches it. The format of *Archaeotype* demands that students work toward "teaching" their subject; they must know their material well enough to explain it, and their final projects are, in effect, lectures to their peers and teachers.

There is certainly room for and need for the new and old styles of learning. The *Archaeotype* program will not perform miracles, but it will train students to be more aggressive observers and more synthetic thinkers; properly taught, it will enable students to work as creative scholars, rather than as data compilers. They will better understand how the assemblage of facts they confront every day in lectures, published accounts, and, later in life, in the workplace, come into existence, and they will have power and control over these processes.

4) Some Possibilities and Recommendations

A) Expansions

It is clear to me, as it was to some other members of the faculty with whom I spoke, that more efforts should be made to relate the methods and principles of *Archaeotype* with courses and programs in other departments. There seem to have been gestures in this direction by the Mathematics Department, which I think should be encouraged. It will no doubt take time to develop a sense for the most productive directions these interconnections might be made, but I think that they should be encouraged at all costs. The more

that this project is integrated into the rest of the curriculum, the more effective it will become.

It is still more important that the Dalton Middle School and High School integrate the synthetic thinking about history and culture students have learned in *Archaeotype* with upper-level courses in history, language, and literature. This continuity ought not be left to chance: the two models of learning, the active and the passive, should not compete, implicitly in the students' minds; the modes of thinking they practiced in sixth grade cannot be viewed as a gimmick for children, which by high-school they will have outgrown.

I have real doubts that software-generated digs, even in some more sophisticated form, could satisfy high school juniors and seniors for more than a week or two; I am open to persuasion to the contrary, but I suspect that computer simulations of any complexity will lose their effectiveness beyond the Middle School. I am convinced, on the other hand, that the lessons of *Archaeotype* should be incorporated and elaborated as a formal part of advanced courses for upper-level students. The continuity should be explicit: "these are the methods you saw with *Archaeotype*; here's how they look on a larger stage and in real-world scale." Something like a "live" simulated dig at some point during the high-school years, perhaps modeled on the introduction to archaeology taught in Harvard yard every summer, would be a natural project for students with continuing interest. More generally, whole-class projects could be organized which collect every bit of evidence for a single event or character from antiquity; there are dozens of significant characters who could serve this purpose, (Themistocles comes to mind immediately) for whom the entire body of sources could fit into a few dozen pages. Student teams could divide along source-lines (literature, history, visual and plastic art, etc.), and assemble their findings (perhaps in a jointly-owned database program) as they have learned to do with pictures of artifacts; they could work through the semester creating their own narrative of the character or event; These narratives could be compared with the published histories; perhaps (with still more ambition) their conclusions could be considered against a century or two of

professional historians' accounts. These are only a few of many possibilities, but I think it is essential that advanced courses confirm in these students their first grasp of the sanctity of evidence, and foster in them the skepticism they will have begun to learn about certainties and facts.

B) Staffing

The faculty who actually work with the students have done exceptional work. Given the interactive nature of the class and the inevitable number and complexity of problems that arise, the ideal number of faculty seems to be two, at least one of whom is thoroughly proficient in computers for quick problem-solving. I also would recommend that (so far as is possible) the core members remain the same for extended periods of time. The same questions and problems will arise over and over, and strategies and ideas for moving through the program will accumulate by experience. Furthermore, the possibilities of *Archaeotype* have only begun to be explored and understood; it is likely that for the next few years the most interesting and useful developments will not come in the form of new technologies, but in the form of new applications for the current technology. Experience and practice will be the best guides.

It would be useful as well to form consulting groups of teachers to share ideas as the *Archaeotype* project grows: these groups exist now, but it is easy to imagine that there will be need for more, and relatively soon. Dalton is no doubt aware that the program will have far-reaching effects, not just on students, but on faculty and faculty roles, and that these changes will occur very quickly. The change from lecturer to "enabler" that takes place with the interactive, collaborative style of teaching will be exciting, and faculty, I suspect, will increasingly ask to be included as they become aware of its results and possibilities. Consulting groups, formal or informal, will help to make the best use of these transitions.

C) The Reference Library

I add this to lend support to the changes which are already taking place in the Dalton Libraries. The Middle School library will

need to grow, and will no doubt need to include an expanded and permanent collection of reference books that students will use while working through *Archaeotype* projects. Though the collection of books is very good and is increasing, it is even now being pushed to the limit, and the strains will worsen as the program grows in size and sophistication (no one seems to doubt that it will).

This reorganization should obviously include the librarians, whose pedagogical ideas will be invaluable. Every September at Columbia I teach a seminar in research methods and library use to new graduate students in the Classics department; the basic mechanics of library use seem sadly out of vogue these days, and it would be an added benefit and a great service if students were formally trained (via *Archaeotype*) about working through the basic stages of research, from reference works to more specialized texts. Professional librarians are probably the people best qualified to organize the necessarily scaled-down version of this kind of collection.

D) The Dalton Press?

It occurred to me throughout my review of the library at Dalton as I watched students work through the reference collection that there is no book I could imagine recommending to a junior high student as a introduction to fifth-century Athens or Republican Rome. If you will indulge me in this one last fantasy, I wonder if any of the faculty has considered (either as a solo or a joint effort) writing an introduction to Greek and Roman history and culture? It could perhaps be a conventional book, but I can also envision a text available (at the beginning anyway) on-line, including graphics, maps, study questions, etc. Dalton seems fortunate to have the quality of faculty who could, given the time and resources, produce such a work; they could also tie it in to *Archaeotype* and any of its later incarnations. If I am correct in assuming that few such texts are available, it might have applications beyond Dalton.

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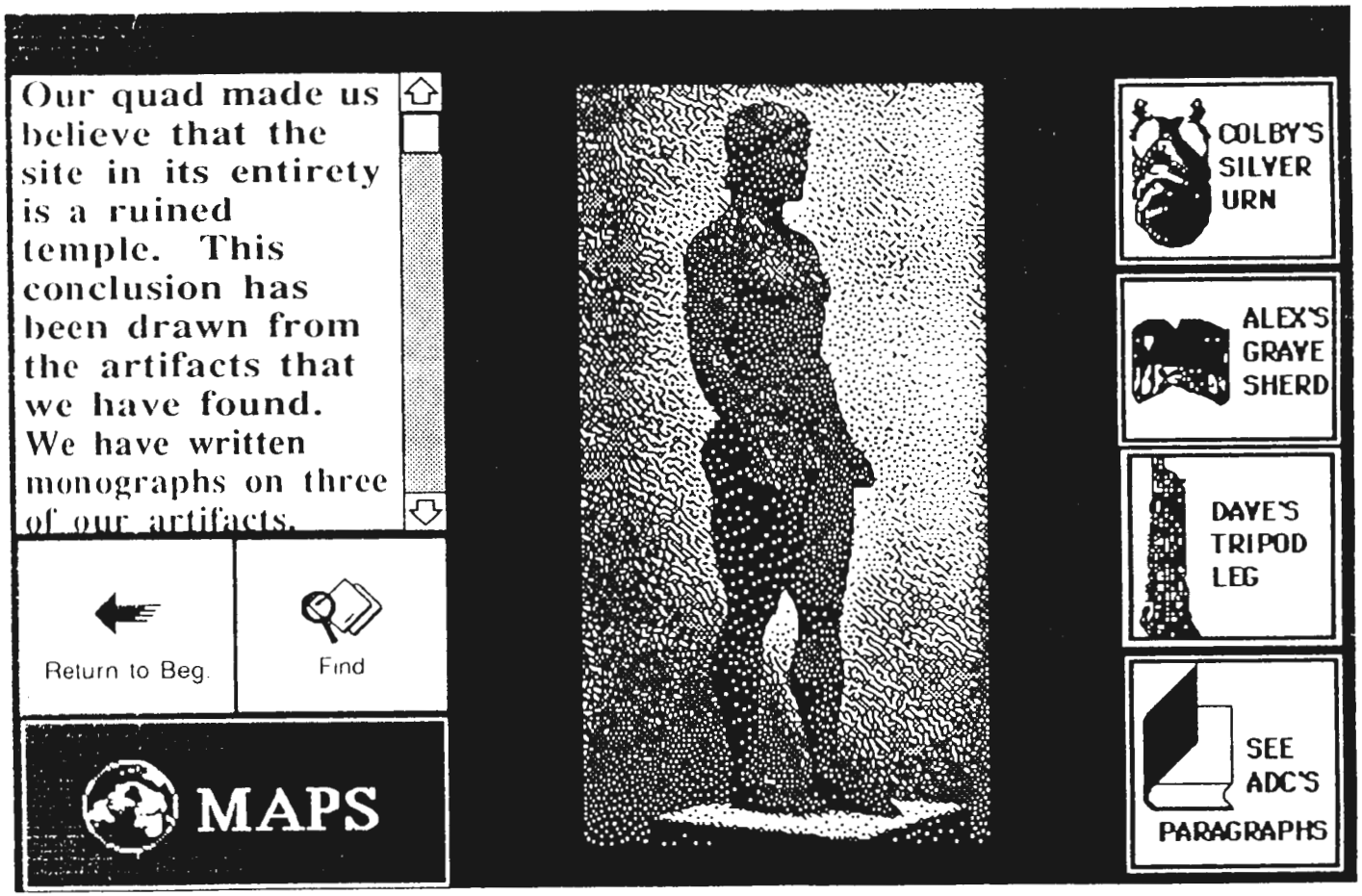
Our quad made us believe that the site in its entirety is a ruined temple. This conclusion has been drawn from the artifacts that we have found. We have written monographs on three of our artifacts.
Return to Beg
Find
MAPS
COLBY'S SILVER URN
ALEX'S GRAVE SHERD
DAVE'S TRIPOD LEG
SEE ADC'S PARAGRAPHS

MASTERPIECES IN

The Brooklyn Museum

THE BROOKLYN MUSEUM

in association with

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Foreword

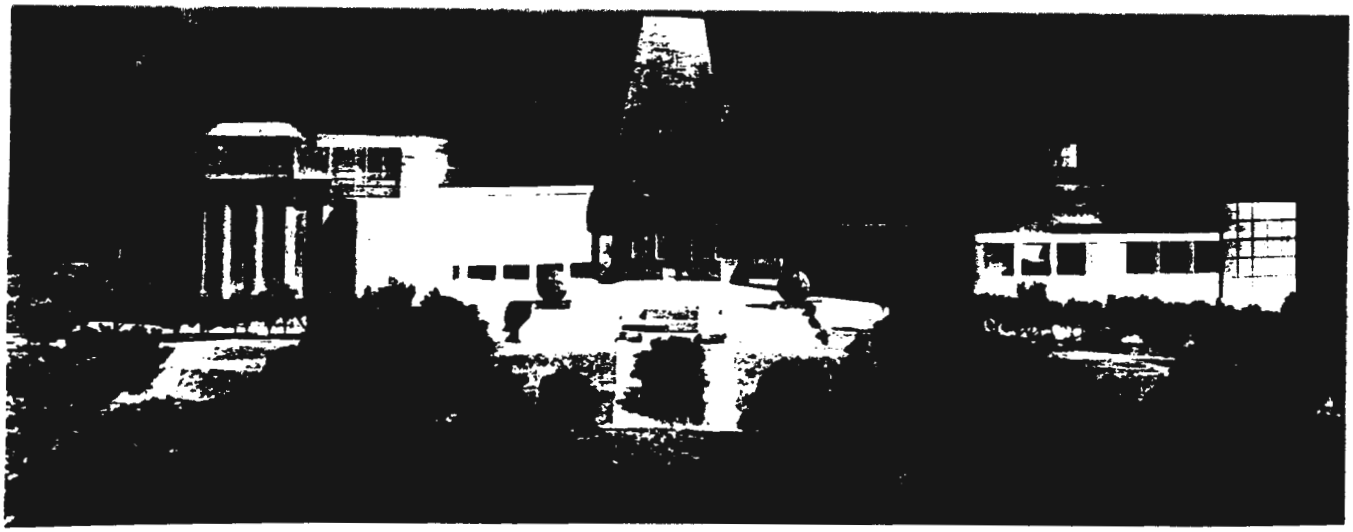
Robert T. Buck

DIRECTOR
THE BROOKLYN MUSEUM

When it opened in 1897, The Brooklyn Museum building was the finest achievement of the leading American architects of the late nineteenth century, the New York firm of McKim, Mead & White. It reflected a new era in America in which social responsibility and cultural awareness were intertwined with the inauguration of a large number of civic projects that were seen as uplifting and enriching a devastated and divided society, scathed by the Civil War only a few decades earlier. Indeed, the new museum was to be located just east of Brooklyn's Grand Army Plaza, which surrounds one of the nation's most striking triumphal arches, dedicated to the victory of the Union armies—no coincidence but rather planned in the spirit of the times by urban planners. Simply put, it was to be the largest cultural edifice in the world and the ultimate statement in this country of the civilized achievements of mankind in an institutional setting.

The Brooklyn Museum as we know it today is the product of a steady evolution resulting in a remarkable amassing of over a million works of art housed in seven curatorial departments and displayed in a grand structure of 450,000 square feet. Acknowledged for its major holdings in Egyptian art and American painting of the eighteenth and nineteenth centuries, the Museum is also a storehouse of extraordinary treasures in a large number of other areas, including fine examples of European painting from the fourteenth to the nineteenth century and contemporary painting and sculpture. In the Department of Costumes and Textiles, one of the largest and finest collections of nineteenth-century Russian women's festive wear forms part of a total holding of more than thirty thousand complete outfits from many cultures and periods. In the Department of African, Oceanic, and New World Art is kept one of the nation's outstanding collections of the art of the Southwest American Indians. These objects, many of startling quality, frequently entered the collection as the result of Museum expeditions undertaken by curators whose work in many instances represents the only written record of the trading habits of the peoples involved.

The Museum's Oriental Department has special strengths in the areas of Indian painting and sculpture and Islamic art, with noteworthy Qajar holdings in the latter. On the Museum's fourth floor, twenty-eight superb American period rooms, from the South to New England, unfold to reveal two hundred years of evolution in interior design and treatment and constitute the nucleus of one of America's major collections of decorative arts. Lastly, the Prints and Drawings Department has a long, distinguished record of first-hand involvement with graphic artists, building its collections especially through its National Print Exhibitions, which will soon be joined by a Drawing National.

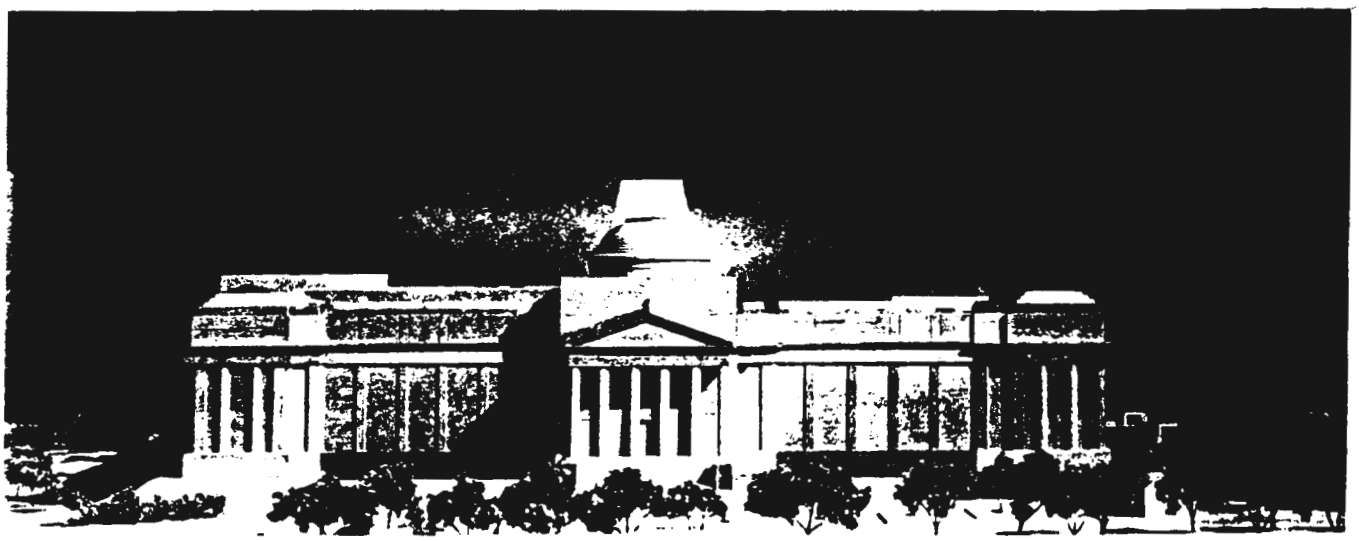


The Brooklyn Museum Master Plan Model. 1986, designed by Arata Isozaki and James Stewart Polshek. View of south facade from the Brooklyn Botanic Garden.

Midway through the tenth decade of its existence, The Brooklyn Museum anticipates celebrating its one hundredth anniversary as a very changed institution, poised to enter the twenty-first century after an intense period of self-inspection and analysis. In the spring of 1986, the Board of Trustees announced an architectural competition to commission a master plan for the renovation and expansion of the McKim, Mead & White building. The winning team—a joint venture of Arata Isozaki & Associates of Tokyo and James Stewart Polshek and Partners of New York—designed a stunning building that looks as sensitively to the past as it does daringly to the future.

Trusting that brilliant architecture, like all great art, is at moments the bearer of truth and may have therefore an element of inevitability contained within, The Brooklyn Museum community of board members, city officials, volunteers, Museum members, staff, and supporters in general has embarked together with the greater New York cultural community on a future full of opportunity of a unique kind. Paramount in our approach from the start of the institution's master planning has been the consideration of the Museum building as a masterpiece in its own right and therefore an integral part of the Museum's collection. Nowhere else in New York—indeed in the nation—is there an institution of such size and history that still remains unfinished from the previous century. By forging the sensibilities of two centuries into one of the most thoroughly researched museum projects of recent date, we have an opportunity to construct one of the great museum structures of all time. The treasures illustrated in this book are deserving of no less a home.

View of north (front) facade.



History of the Collections

Linda S. Ferber

CHIEF CURATOR

On Independence Day 1825, General Lafayette, on a triumphant tour of the United States, boarded one of the Fulton and South Ferry Company's steamboats for the short trip across the East River to the village of Brooklyn. The thriving community—then quite independent from its sister city on Manhattan Island—is depicted in Francis Guy's painting of 1820. Accompanied from the Brooklyn ferry landing by a great throng of "citizens, trade societies and Sunday Schools," the hero of the Revolution presided over the laying of the cornerstone of a large brick building, the Brooklyn Apprentices' Library—the ancestor of The Brooklyn Museum—at the intersection of Cranberry and Henry streets in today's Brooklyn Heights.

Francis Guy (American, 1760–1820)
Winter Scene in Brooklyn, circa 1817–20
Oil on canvas
58¾ × 75 inches (149.2 × 190.5 cm)
97.13, Gift of The Brooklyn Institute of Arts and Sciences

Only two years earlier, in the summer of 1823, a group of public-spirited citizens had met at William Stephenson's tavern to establish the village's first free circulating library. The idea was William Wood's, a merchant who had already founded libraries in his native Boston and in New York. The proposed audience was a specific one—young working-class men—and the mission was both practical and social: "Extending the benefits of knowledge to that portion of our youth, who are engaged in learning the mechanic arts, and thereby qualifying them for becoming useful and respectable members of society."

In 1824 these citizens incorporated the Brooklyn Apprentices' Library Association not only as a library but as "a repository of books, maps, drawing apparatus, models of machinery, tools, and implements." These somewhat disparate collections grew rapidly in temporary quarters on Fulton Street, and by summer 1825 a building for the Apprentices' Library Association was under construction.

The initial course of lectures was held in the new building early in 1827, and the first painting commissioned in 1831: William Dunlap's *Portrait of Robert Snow*, founding president of the Association. The building functioned as a center for the village, housing the Library as well as a number of civic functions. After a decade of activity public support waned, however, and in 1835 the Library closed and the books were stored. The building was sold to the city in 1836 for public use and demolished in 1857.

Sometime during 1838, the Library Association was revived and classes in mechanical, architectural, landscape, and figure drawing were begun in rooms rented in the Brooklyn Lyceum Building on Washington Street, north of the Heights and "then the center of the wealth and culture of our young city." The Brooklyn Lyceum, organized in 1833, was a local manifestation of the popular national lyceum movement, which, like the Apprentices' Library, promoted intellectual improvement and advanced the cause of public education through classes, lectures, and, at Brooklyn, a natural history collection as well.

The move to the Lyceum's elegant granite Greek revival building, completed in 1836, was to prove significant. In 1842 Augustus Graham, a prosperous manufacturer of white lead, a founder of the Library and by then the President, bought the building for the Association, thus reestablishing a permanent home for the institution that provided adequate space, not only for a library that exceeded 2,500 volumes but for other activities as well. The popular lecture courses were continued, and the first annual exhibition of paintings was held in October. In 1843 the charter was amended and the Library Association was renamed The Brooklyn Institute because the original name conveyed "too limited an impression of . . . usefulness." That same year, Library and Lyceum were consolidated as The Brooklyn Institute. The Institute's natural history department was established then with the acquisition of

The Brooklyn Institute, 1840s–50s
182 and 184 Washington Street near Concord Street
Photograph from Wallace Goold Levison, "Reminiscences of The Brooklyn Institute and some Early Collectors," The Brooklyn Museum Archives

the Lyceum's collection: "birds . . . reptiles in jars in alcohol; a few mammals; various fishes beautifully mounted . . . a considerable number of shells . . . and some minerals." The second annual Institute exhibition, held later that year, offered further evidence of the broadening scope of activity, consisting of "models of machinery, curious specimens of nature and art, a fine collection of prints, and flowers . . . pieces of sculpture, with many superior works in painting." These annuals were composed almost entirely of works and objects loaned by the citizens of Brooklyn, suggesting an abundance of local collectors who must have inspired the Institute directors to announce during the fifth annual in 1846 their intention of establishing a permanent art collection.

In 1848 Augustus Graham paid off the mortgage on the Institute building. While Graham was one of a number of library promotors, his traditional recognition as the founder of the Museum is due not only to his dedication to the infant institution during his lifetime, but also to his provision for its future. Graham died late in 1851 and was interred on Vista Hill in Greenwood Cemetery. His confidence in the Institute's future was embodied in a bequest. Along with funds to support the library, lectures on secular and religious subjects, classes in drawing, and the work of the department of natural history, Graham left a sum that marked the formal establishment of a Gallery of Fine Arts. Like a good mission statement, his endowment outlined what would remain the primary intellectual and social commitments of the institution until the mid-1930s, although the Museum's massive collections were not to be formed until the early years of the twentieth century.

The first Graham commission was extended in 1855 to Asher B. Durand, whose *First Harvest in the Wilderness* is a landscape allegory in tribute to the Institute and its benefactor, "that pioneer in the wilderness," as *The Crayon* hailed Graham. However, despite *The Crayon*'s optimism, by 1878, when a group of friends presented Guy's picture to the Institute, momentum had declined and the permanent collection consisted of only fifteen works, all of them American and seven of them portraits of officers. A report on the state of the "nucleus of a Fine Art Gallery" observed that, in the twenty-six years since Graham's bequest, "the value of works of Art have been enhanced greatly, and the value of money reduced." Thus the fund was "inadequate to purchase every year a work of Art worthy of the Institute."

By the mid-1860s, the activities of the Natural History Department were also on the wane, a state that was generally indicative of the depressed condition of the Institute itself. The Washington Street address was no longer fashionable. The center of cultural activity had moved to Montague Street, where buildings for the recently established Academy of Music and Brooklyn Art Association were completed in 1861 and 1872.

In an effort to keep up with the times, the Institute building was completely remodeled in 1867, incurring a debt whose repayment over the next twenty years absorbed nearly all income. As a result, the Institute entered "a long period of suspended activities."

Brooklyn, however, was on the move. The years between 1850 and 1880 had seen the establishment of many rivals for public support and attention: a short-lived Brooklyn Art Union (1851), the Brooklyn Sketch Club (1857), the Graham Art School (1858), the Brooklyn Art Social (1859), the forerunner of the very successful Brooklyn Art Association (1861), the Brooklyn Academy of Design (1866), the Brooklyn Art Club (1878), and the Rembrandt Club (1880). All testified to the lively art and cultural life of what was by then a large and busy city.

Optimism ran high about Brooklyn's future. The consolidation act of 1855 had enlarged the boundaries of the city to include the village and town of Bushwick and Williamsburgh, increasing the population to more than 200,000. Thousands commuted daily by ferry to businesses in New York. A substantial building boom took place from 1860 to 1880. Prospect Park, designed by Frederic Law Olmsted and Calvert Vaux on farmland, stimulated the development of nearby Park Slope, Brooklyn's own Gold Coast. By 1860

Brooklyn was the third largest city in the country. The ultimate harbinger of a glorious destiny for the City of Churches seemed embodied in John A. Roebling's Great East River Bridge, under construction by 1869.

An excerpt from Joshua Van Cott's 1881 address on the dedication of a building for yet another urban amenity, the Long Island Historical Society (now the Brooklyn Historical Society), captures the ambitious and competitive optimism of Brooklyn at the time:

It is obvious to anyone who will think about it that the business of New York must, in a few years, draw out of New York its residences, except those of the plainest and cheapest description. The great warehouses of New York, the great shops and factories will drive the more elegant residences of New York out of the city. . . . The great Merchants of New York with their accumulations will have to cross over the great bridge. . . . Every person who has seen the growth of New York knows that New York is to be abandoned in less than a half century, and the residences of the rich financiers will have to go to New Jersey or to Brooklyn. We are now at the beginning of a great movement of that kind when this City of Brooklyn of ours—no longer to be called the City of Churches but the Home City of America . . . —is to be aggrandized, to be built up in institutions, is to have its university, its great libraries, its great collections of art, is to have everything that adds to the sweetness of life and the moral and intellectual excellence of a great city.

This same spirit also galvanized supporters of the nearly defunct Institute—Van Cott among them—to ambitious and even daring plans once the final payment on the disastrous mortgage was made in 1887. The following year, the proceedings of a Citizens' Committee on Museums of Art and Science were outlined in *The First Year Book of the Brooklyn Institute:* "Boston has the Lowell Institute, a Society of Natural History and an Art Museum; . . . Philadelphia has the Franklin Institute, an Academy of Sciences and a Gallery of Fine Arts, and . . . New York has the Metropolitan Museum and the American Museum [of Natural History]," yet, the writer lamented, "Brooklyn has nothing corresponding to these institutions." Committee members spoke eloquently of "the educating and uplifting influence of true Art" and of the importance of securing "a collection of casts . . . that would not only indicate what was true in Art, but would also teach the history of its development." To the conventional pieties of "educating and refining" the working class, the citizens added the "element of enjoyment": "that people whose day's labor was long and severe, should find in a museum that which would give them rest and pleasure." Members reported on the origins and history of the successful Metropolitan Museum of Art (founded in 1870) and the American Museum of Natural History (founded in 1869).

Early in 1889, George Brown Goode, Assistant Secretary of the Smithsonian Institution, spoke before the Institute and the Citizens' Committee on "The Museum of the Future":

The founding of a public museum in a city like Brooklyn, is a work whose importance can scarcely be overestimated. The founders of institutions of this character do not often realize how much they are doing for the future. Opportunity such as that which is now open to the members of the Brooklyn Institute occur only once in the lifetime of a nation. It is by no means improbable that the persons now in this room have it in their power to decide whether in the future intellectual progress of this nation, Brooklyn is to lead or to follow far in the rear.

Brooklyn, the Committee decided, was to lead with a unique amalgam combining the best elements of The Metropolitan Museum of Art and the American Museum of Natural History, an institution that would, through its collections and programs, explore and present the entire spectrum of natural history and human achievement to the citizens of Brooklyn and "people from the other side of the river and from a distance." The directors therefore "determined to make the property of the Institute the nucleus of a broad and comprehensive

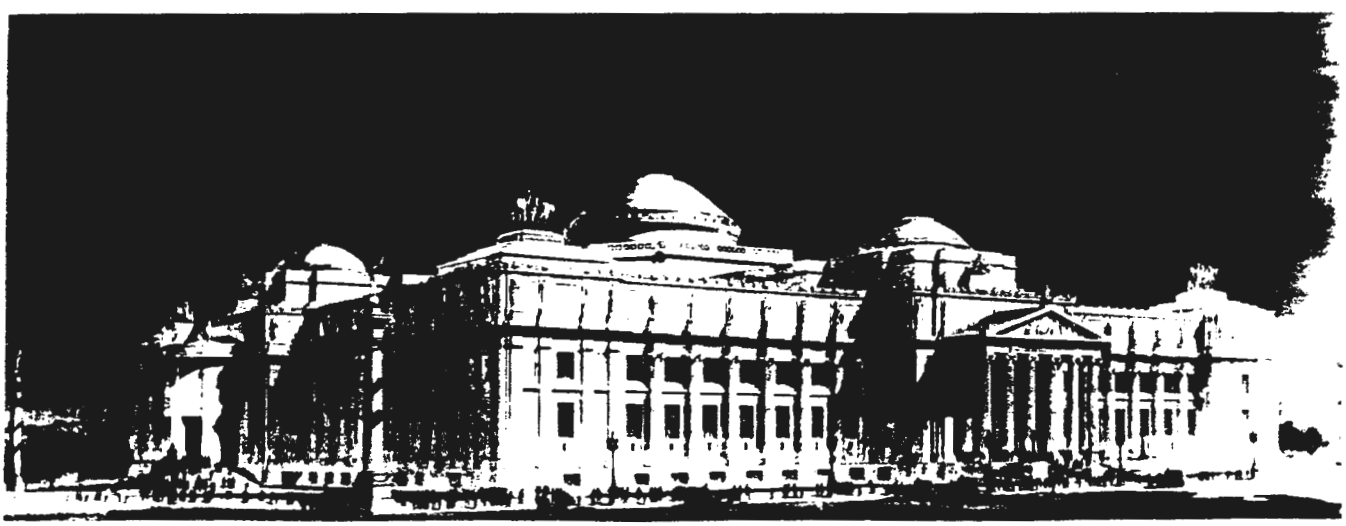
institution for the advancement of science and art. . . . laboring not only for the advancement of knowledge, but also for the education of the people through lectures and collections in art and science. It was felt," they concluded, "that Brooklyn should have an Institute of Arts and Sciences worthy of her wealth, her position, her culture and her people."

The old Institute, the germ of this grand scheme, was expanded into sixteen departments (which by 1897 had grown to twenty-five). Some were independent organizations that joined the Institute, like the Art Association and the Academy of Music. The loose combination resembled a large university, "each department forming a society by itself, and yet enjoying all the privileges of the general association." The Brooklyn Academy of Music, Brooklyn Botanic Garden, and Brooklyn Children's Museum were departments of the Institute until the 1970s. Sites for programs were located all over the city of Brooklyn while the existing collections were still mostly housed in the old Institute building on Washington Street.

It was obvious, however, that these existing facilities were inadequate to house this grand design, especially after a fire in 1890 damaged the building and destroyed part of the collection and library. By 1891, under the energetic leadership of President John B. Woodward (1835–1896), the Institute made plans to build a large museum, a complex that would house nearly all departments of the newly incorporated (1890) Brooklyn Institute of Arts and Sciences in a single structure. The City of Brooklyn, authorized by the state legislature to lease to the Institute the site on Prospect Heights just east of Olmsted and Vaux's great park, also appropriated funds for the construction of the building, a responsibility assumed by the City of New York when Brooklyn became a borough in 1898.

The land now occupied by The Brooklyn Museum, the Brooklyn Public Library, and the Brooklyn Botanic Garden was part of a 320-acre tract bisected by Flatbush Avenue that had been set aside earlier in the century as the future site for a public park. In 1866 Frederick Law Olmsted and Calvert Vaux submitted a report to the Brooklyn Park Commission suggesting that the wedge of land east of Flatbush Avenue be reserved for "Museums and other Educational Edifices" and that the area west of Flatbush Avenue continue to be developed as Prospect Park. Olmsted and Vaux conceived of this cultural and recreational complex as an organic unit to be connected to outlying areas of Brooklyn by a system of parkways—a term they coined in 1868—to the south (Ocean Parkway) and to the east (Eastern Parkway). Their grand urban plan was realized and remains intact today.

Prospect Park was opened in 1866 and some twenty-nine years later the Institute's directors and City officials were prepared to implement the rest of Olmsted and Vaux's scheme. On Saturday afternoon, December 14, 1895, Charles A. Schieren, Mayor of Brooklyn and soon to be an Institute Trustee



FRANCIS L.V. HOPPIN (American 1867–1941)
Architect's Rendering of the Central Museum of The Brooklyn Institute of Arts and Sciences. 1893
Watercolor and pen and ink
26 1/8 × 67 3/4 inches (66.4 × 172.1 cm)
X737. The Brooklyn Museum

The Hall of Casts, 1898–99
West Wing, third floor

and donor, laid the cornerstone for the West Wing of the Central Museum of The Brooklyn Institute of Arts and Sciences with the aid of William R. Mead of McKim, Mead & White, architects of the building, and P. J. Carlin, contractor for construction. Francis Hoppin's 1893 rendering presents the imposing Beaux-Arts building as originally proposed. Meant to house comprehensive collections of art, natural history, and science, as well as myriad education and research activities, the plan—if completed—would have been the largest museum structure in the world.

With the decision to concentrate most of the departments beneath a single roof and with building plans under way, the loosely amalgamated departments of the Institute required central administration. In 1890 Woodward appointed Franklin W. Hooper (1851–1914) first Director of the reorganized Institute. Hooper, a Harvard-trained scientist who had studied natural history with Louis Agassiz, taught in the 1880s at Brooklyn's Adelphi Academy (now Adelphi University), was active in the scientific endeavors of the old Institute, and had served on the Citizen's Committee. Hooper was very much the driving force in the development of the expanded Institute.

When the West Wing of the Central Museum was opened in 1897 the collections moved from storage to Eastern Parkway to be installed and enlarged as new sections of the building were opened in coming years. The organization and growth of the collections in the new museum building were regulated at the turn of the century by three departments: Fine Arts; Ethnology, newly established in 1903; and Natural History.

The Fine Arts Department came to the new museum building with a collection hardly larger than that recorded in the 1878 inventory of paintings. The "Opening Exhibition" of European and American paintings in June 1897 consisted almost entirely of loans from private collections. William Henry Goodyear (1846–1923) presided as Curator over the department for almost twenty-five years. A graduate of Yale University, Goodyear studied law, history, and art history in Europe before embarking on a career as an archaeologist, architectural historian, and educator. Called "America's first art historian," Goodyear had served from 1882 until 1888 as Curator at The Metropolitan Museum of Art. In 1890 he came to Brooklyn, first as Titular Curator and the architect of successful and long-lived educational programs and then, in 1899, as Curator of Fine Arts. He was Hooper's match in the boundless energy and conviction with which he took up the Institute's cause of public education. Goodyear's range as a scholar was extraordinarily broad. He published widely on art history and vigorously advanced his theory of architectural refinements—intentional departures from geometrical uniformity to enhance optical interest—with extensive travel, articles, lectures, and photographic documentation of monuments from ancient Egypt to the 1900 Paris Exposition. Goodyear's primary focus on European art and architecture did not prevent him from taking a strong interest in American art—an enlightened attitude at the time. He wrote regularly on these and other art topics in early issues of the Museum *Bulletin*.

Major gifts of these early years included the bequest in 1906 of Caroline Polhemus, a collection that included sixty-one nineteenth-century American and European paintings and watercolors. A portion of the estate of her brother, William Herriman, which included eleven works by Elihu Vedder as well as an important work by Jean François Millet, was given in 1921. While Goodyear was Curator of Fine Arts, collector and connoisseur A. Augustus Healy (1850–1921), who succeeded Woodward as President in 1895, masterminded major painting and sculpture acquisitions during these early years. One of the earliest purchases was secured by a campaign Healy led to raise funds for 344 gouaches by James Tissot illustrating *The Life of Christ*. In 1906 Healy and George Hearn purchased Henri Fantin-Latour's important *Portrait of Madame Léon Maître* (1882) for the Museum from the artist's Memorial Exhibition in Paris. Both purchases were probably made with the advice of Healy's friend John Singer Sargent, whose watercolors Healy saw to it were purchased for the Museum in 1909. In 1910 the Cyrus J. Lawrence collection of over one hundred bronzes by French animalier Antoine Louis Barye was purchased at auction.

Collections of European glass, ceramics, ivories, and metalwork were then also held in the Fine Arts Department, while Oriental materials were transferred early on to the Department of Ethnology. Original works were supplemented by nearly one hundred casts of Classical and Renaissance monuments as well as hundreds of Goodyear's photographs and lantern slides of European architecture. Goodyear worked closely with Susan A. Hutchinson, both librarian and curator of prints, from 1899 to 1934, acquiring Homer watercolors, Rembrandt and Whistler etchings, and other treasures, establishing what would become in 1937 an autonomous Department of Prints and Drawings. Goodyear died in 1924, an eminent art and architectural historian who was lauded as "one of the few survivors of a type of American genius which expressed itself in aggressive action with an intense fervor of intellectual conviction." Perhaps his greatest contribution was as a dedicated educator and tireless promoter of Institute programs.

The Institute Department of Ethnology, established in 1903, reflected the intention of planners not only to include traditional European fine arts but also to collect productions of non-Western European cultures, especially those of North and South America. The first curator, Robert Stewart Culin (1858–1929) was, like Hooper and Goodyear, a remarkable figure. A self-trained ethnologist and folklorist, he assumed a museum post at the University of

Installation of Pomo Indian Collection in California Hall, 1911
West Wing, third floor

Pennsylvania, where he established himself during the 1890s as an expert on folk culture and games of the world. After an initial focus on Oriental cultures, Culin turned to the art and artifacts of the North American Indian and in 1900 made the first of many collecting expeditions to the American west, a collecting practice he continued after coming to found the department at The Brooklyn Institute three years later. The energetic Culin immediately began to expand the meager holdings of the old Institute by means of a series of field trips through the Southwest, California, and Northwest Coast regions, acquiring and carefully recording information about thousands of objects.

Although Culin was dedicated to the systematic documentation of North American Indian cultures, his interests were by no means limited to those geographic areas. After 1910 he traveled to the Orient and Central Europe acquiring collections of paintings, sculpture, decorative art, and costume from a wide range of cultures. He was adept not only at collecting but also at display. His exhibits were admired and his clear labels praised. Sensitive to aesthetic issues, he saw objects in terms of their formal qualities and technical finesse as well as in terms of material and use. One of the notable early acquisitions of the department was a large collection of Central African objects Culin purchased in Belgium in 1922—today still the great strength of the Museum's African holdings. The interpretation of these objects as works of art in a landmark exhibition the following year marked the Museum as a pioneer in the reevaluation of such material—previously interpreted as anthropological specimens—as worthy of aesthetic appreciation on a par with European art.

The thousands of specimens Culin acquired on Museum expeditions provided the pool of objects later to be dispersed into four curatorial departments that have since been further developed and refined into collections that are today among the strongest and best documented in the Museum. These include the direct descendant of Ethnology—African, Oceanic, and New World Art—and some of the most important holdings in today's Department of Costumes and Textiles and Decorative Arts. From Culin's travels in the Far and Near East came the objects that formed the core of the Oriental Art Department: Japanese, Ainu, and Korean holdings as well as the first Indian art collections.

A small collection of Oceanic materials had been deposited at the Institute as part of the Natural History Department prior to Culin's arrival. While Culin's Museum field expeditions did not include this area, these holdings have continued to grow over the years and today include a number of important objects.

The Department of Natural History, Institute Director Hooper's own primary interest, was the oldest department, established in 1843, and in 1903 by far the largest collection, with more than 71,000 specimens. Vestiges may occasionally still be found in the corner of a remote storeroom. As construction of the building continued, the galleries in the West Wing would be largely reserved for exhibits of shells, animal habitats, and marine mammals, all of which were among the Museum's most popular displays for decades.

Hall of Invertebrates, 1920s
West Wing, fourth floor

When the Brooklyn Botanic Garden was originally established as a department of the Institute in 1910, the existing botanical collections and library were eventually transferred to the garden site just south of the Museum building. The Garden was intended by McKim, Mead & White's master plan to function not only as the parklike repository of a living collection but also as the setting for a monumental entry and stairway dominating the south facade of their great Beaux-Arts Museum building.

In 1914, when Hooper died, all recognized that an era had come to an end. His title—Director of the Institute—was retired, and three directors were appointed to guide the Museums (Central and Children's), the Botanic Garden, and the Education Division. William Henry Fox (1858–1952), engaged to oversee the Museum—a post he would hold for two and a half decades—paid tribute in his *Memoires* to the dynamic founding director of the Institute, characterizing him as a man of "energy and vision," a "spellbinder" whose "plans had no limits" and whose "ideas were colossal." As a practical administrator, however, Fox also recognized the unrealistic ambitions of the original promotors of The Brooklyn Institute of Arts and Sciences. Hooper was, in Fox's words "afflicted with the impractical." "Sheer size," he continued, seemed to be Hooper's "standard of excellence" with "no sense of economy whatever." Soon after his arrival in 1913, Fox appears to have understood that the projected "biggest museum building in the world," now the ward of New York City with several other major collecting institutions, had little chance of completion. The central portion of the facade had been added in 1905, and in 1907 the East Wing and Grand Staircase were completed. The original building campaign would come to a final halt in 1927, just four years after the Centennial of the Apprentices' Library, with only one-sixth of McKim, Mead & White's original conception realized.

Seeking both to define and to consolidate the collections of what he called this "composite museum," Fox early on entertained the "heretical idea" of placing the natural history collections elsewhere. The Board, then presided over by A. Augustus Healy, had, in fact, requested upon Fox's engagement that he seek, in the President's words, to "restore the balance between the art and science displays which at present is heavily scientific." Fox recalled Healy's words at that initial interview in 1912: "most of us on the Board of Trustees . . . have a greater personal interest in art than in science and we feel that it would be better for . . . Brooklyn if more attention were paid to the development of this branch of the Museum." Franklin Hooper's death soon afterward removed a primary obstacle to such a reordering of Museum priorities.

Fox accepted the challenge. Trained in law, with museum experience as director of the Herron Institute (now the Indianapolis Museum of Art), he had served as fine arts administrator of two international expositions. His vivid recollection of his first visit late in 1912 to what he described as "a massive Romanesque structure on the wide Parkway" is worth quoting at length:

The first few rooms we passed through were heavily scientific. The objects were quite well, if conventionally arranged. But they gave out an air of over-importance and when we carried our inspection further, of overbalance. . . . The Japanese hall through which we passed offered a kind of protest to the overwhelming force of natural science exhibits. This was part of the ethnological collection—and taste had been exercised in its arrangement and we thought the effect excellent. Naturally we were concerned with the section of the art exhibits which Mr. Healy had in mind, so we inquired our way to the gallery of paintings. The scene that assailed our eyes was awful. The walls of a room one hundred and ten feet long by forty wide with smaller galleries adjacent were covered with three rows of paintings, without regard to their relation to each other, a veritable maelstrom of clashing harmonies, color, subject, and school, resting heavily on a wooden cimaise. . . . In a connecting room Tissot's life of Christ was hung on both sides of permanent screens, forming a barrier to anything like revolving exhibits and was partly in the dark. In another gallery stood a lurid full length portrait of the Kaiser . . . which was so conspicuous as to prevent the other canvases from being noticed.

Painting and Sculpture Gallery, before 1904
West Wing, fifth floor

The director-to-be's interests ranged further afield in his conviction that "there was vast room for improvement in the art section" and in his and Mrs. Fox's interest in the decorative arts: "On another floor there was a loan exhibit of lace which Catherine pronounced to be very ordinary," he wrote, "and this, as far as we could then see, was the Brooklyn Museum's only representation of the applied arts." Catherine Fox was to play an important role in the development of these collections. A common passion for lace seems to have been the basis for a friendship with Theodora Wilbour which was to yield great benefits to the Museum. In 1931 Catherine Fox arranged for Mr. and Mrs. Edward S. Harkness to purchase the Shabelsky collection of Russian costumes and textiles for the Museum.

Fox characterized the "veteran" curator Goodyear as "somewhat impractical," but "a fine cabinet scholar," whose passion for research obviously outweighed installation skills. Characteristically, Culin was away on expedition when Fox arrived, but stories of his "eccentricities" abounded. Fox described him as "an odd character" who "preferred to be an independent figure in his special department with a minimum of control." When in residence, he occupied "a little dark den of an office" near the Japanese Hall that was book-lined, with a picturesque mass of objects littering the floor.

Fox's own exhibition philosophy called for "a compact and scientific installation, presenting each class of exhibit as a single unit." Such an arrangement was not only "convenient to the public," he wrote, but "a necessity" in making "the story of art clear and impressive." Fox admired Culin's skills in installation and turned first to those areas most in need of his attention—the "veritable maelstrom" that was the painting and sculpture galleries. Mindful of his mandate to "raise the art of the museum to the same standard set by the scientific section," Fox sought to establish a distinct field of endeavor for the Museum that would not compete with the "excessive old master atmosphere" of the Metropolitan Museum but, rather, guide the Museum's energies toward the exhibition and collection of modern or contemporary art, "as it was then understood," that is, primarily French Impressionist and Post-Impressionist works and American early modern works. Fox even proposed that the two museums "divide the Museum field in Greater New York"—the Metropolitan emphasizing "works of the past" and Brooklyn concentrating on later periods. Although the offer was declined for reasons of "insurmountable difficulties," the plan was pursued at Brooklyn, with the support of Healy, himself most interested in nineteenth-century French painting. In 1920, the President presented the Museum's first work by Monet, *The Doge's Palace*. In the following decade important works by Lautrec, Gauguin, Pissarro, Degas, Sisley, Cezanne, and Morisot entered the collection.

Healy's passing in 1921 and Frank L. Babbott's (1854–1933) assumption of the presidency may have checked the momentum of the modernist trend in Brooklyn. Fox was to lament lack of trustee support in his later quests for the Lillie P. Bliss and Havemeyer collections (now at The Museum of Modern Art and the Metropolitan Museum respectively), and although Katherine S. Dreier's Société Anonyme exhibited at the Museum in 1926, the collection went to Yale. Nevertheless, Babbott's own collecting proclivities were ultimately beneficial to the Museum's limited but choice "old master atmosphere." His fine collection of early Italian panel paintings, purchased between 1911 and 1916, would come to the Museum as gifts from his children over a span of some four decades.

Trustee enthusiasm and connoisseurship had positive results in other collecting areas as well. Fox had declared Museum interest in the "applied arts" early in his tenure, citing with pride the fact that the Museum was "early in the field" in building collections of "rarity and originality." The year after his arrival, in 1914, a Department of Colonial and Early American Furniture was established, predecessor of today's Decorative Arts Department, and most probably the idea of a new Trustee, Luke Vincent Lockwood (1872–1951), a Brooklyn attorney who was a noted authority on and pioneer collector of American furniture and decorative arts.

through the device of period rooms—then a relatively new idea in museum installation and a concept that has largely determined the growth of the Museum's strong collection to the present. Although acquisitions of objects and architectural elements began immediately, final installation of period rooms was not possible until the central portion of the building and the East Wing were completed in 1927. Over the next two years, under Lockwood's direction, twenty-one American period rooms of the seventeenth and eighteenth centuries were built. When they opened in late 1929, they formed the central focus of the collection and remain one of the Museum's most popular exhibitions. Continuing the tradition, the Museum in 1953 became the first art museum in America to install a series of nineteenth-century period rooms. Today the installation includes twenty-eight rooms ranging in date from a 1675 Dutch house from Flatlands, Brooklyn to a 1928 Art Deco library from a Park Avenue apartment. Like other portions of the Museum's collections, these rooms have been reinterpreted and reinstalled a number of times since 1929 in attempts to achieve more accurate approximations of the past. At this time, two other Trustee collector-scholars, John Hill Morgan (1870–1945) and Walter Crittenden (1859–1947), were also in advance of popular antiquarian taste and scholarship. They saw to it that the Museum began to build a fine collection of Colonial American painting in the 1910s and 1920s to parallel Lockwood's American decorative arts. Complementing the period rooms is one of the best American ceramic collections in the country in addition to strong collections of American furniture, glass, silver, pewter, and other metalwares as well as European decorative arts.

Fox retired in 1933 after a long career, during which time the building was completed and the major growth of the collections took place. The 1930s were to prove a decade of reevaluation, a turning point for the Museum and its collections.

Fox's successor, Philip Newell Youtz (1895–1972), trained as an educator and was a practicing architect and a committed modernist. He was to have a profound impact on the Museum during a short but highly active tenure, implementing a radical five-year plan that marked the emergence of the Museum as we know it today.

In 1934 the Board adopted a new collection policy, allowing Youtz to carry out Fox's "heretical design" of distributing the natural history specimens to other New York institutions, bringing to a close the era of the "composite museum" and laying to rest the nineteenth-century encyclopedic ambitions of the founders by finally abandoning science for art. The remaining collections were eventually organized into seven curatorial units, dividing the holdings of the Department of Ethnology between a Department of American Indian Art and Primitive Cultures and a Department of Oriental Art. The history of Western art was organized chronologically in departments of ancient, medieval, renaissance, and contemporary art—later consolidated as the Department of Painting and Sculpture—while print collections remained a division of the Library. The plaster casts, so prized by the Citizen's Committee of 1890, were discarded. Modern museum administrative practices and systematic collection care were introduced with the appointment of a registrar and the establishment of the conservation laboratory.

In his conviction that the "museum of today must meet contemporary needs," Youtz sought to encourage practical use of the collections not only for traditional educational purposes but as a research source for modern industry and manufacturing interests. Such practical application of the collections to the improvement of modern life was not new to the Museum. In fact, the original audience for whose benefit the Apprentices' Library had been founded was one of artisans and workers. While the Institute's constituency broadened rapidly, this initial impulse was not forgotten. As early as 1909, Culin considered the possibility of the Museum's collections being used by artists and designers working with industry. One motive for the acquisition of an African collection was Culin's conviction that this unfamiliar art form, as well as the other

"exotic" objects he collected, would provide inspiration for American industrial designers and manufacturers.

Herbert J. Spinden (1879–1967), Culin's successor, was of the same opinion: "It has already been demonstrated that the ethnological collections in our museums contain the best source materials in applied arts. . . . We should make it the slogan of American industry that the finest products of all ages and peoples are welcome ingredients but that all these must be reborn to fit the needs and ideals of our modern civilization." Fox, too, had promoted the growth of Museum collections of decorative arts: "I have always," he wrote, "tried to project this phase of creative effort in design up to the prestige enjoyed by the arts of painting, sculpture and architecture. . . . They are of equal value and the history of their development is just as important."

It would be Youtz, however, who organized these long-term Museum commitments into an institutional plan, proposing in 1935 that an Industrial Center for Greater New York be established at the Museum, to be funded by the Public Works Administration. While the project as Youtz envisioned it was not pursued, the collections of costumes, textiles, and jewelry were largely consolidated at that time into an Industrial Division, which encouraged use and research on these materials by member firms. This service developed in the late 1940s into the Edward C. Blum Design Laboratory, named in honor of the Institute Trustee who served from 1911 to 1946. Housed in the Department of Decorative Arts, the Lab was transformed by 1973 into today's Department of Costumes and Textiles, one of the most important costume collections in the United States.

Under Youtz's leadership, not only were the collections and their uses redefined but the building itself was reconfigured as well. The most radical change was the removal in 1934 of the Grand Staircase on the northern facade. While justly criticized today as an ill-conceived violation of the original design of the building, this controversial "improvement" was intended as a socially responsible gesture, eliminating the grand ceremonial entry, which literally elevated the visitor to the level of the arts, in order to facilitate public access directly from the street.

Youtz wanted to "turn a useless Renaissance palace into a serviceable modern museum." At his insistence a great deal of Beaux-Arts ornament was stripped from the Museum interior to create the "clean, neutral" gallery space deemed most desirable by modernist standards. The collections themselves were then configured into what was termed "chronological" order—a kind of visitor's art history survey through time and space—beginning with the ahistorical placement of American Indian Art and Primitive Cultures on the first floor and rising to a "gallery of living artists" on the sixth—a floor plan that survives nearly intact today.

In 1932 the children of the pioneer American Egyptologist Charles Edwin Wilbour gave a fund in his honor for the endowment of a curatorial department of ancient art. The collection of ancient art, originally begun under Goodyear's supervision, dates its beginnings from acquisitions of Egyptian antiquities in 1902, some obtained from excavations of Sir William Matthew Flinders Petrie, the father of modern field archaeology. In 1908 the Museum acquired more Egyptian antiquities from the famous private collection formed in the 1880s by Armand de Potter. In 1916 the Wilbour family began giving most of his collection and his library to the Museum. Some three decades later, in 1947, The Museum received Wilbour's important collection of papyri and the following year the Wilbour Fund made possible the acquisition of the Egyptian holdings of the New-York Historical Society. This huge collection complemented the core collection already in place—the Predynastic and Archaic antiquities acquired through early excavations, and the Amarna (New Kingdom) objects from Wilbour's holdings. Old and Middle Kingdom objects, including sculpture and reliefs of relatively large scale.

In the early 1950s, the Museum also acquired a number of important reliefs from The Metropolitan Museum of Art including the tomb reliefs of an

Egyptian Antiquities and Goodyear's Photographs Demonstrating the Theory of Architectural Refinements, circa 1904
West Wing, third floor

Egyptian vizier named Nespeqashuty. These reliefs were restored and installed in 1986. Acquisitions since the 1940s have consisted primarily of objects of high aesthetic quality, and the installations have been progressively redefined in displays emphasizing art history rather than ancient history, religion, and archaeology. Today, the collection is housed in nine galleries of pre-Pharaonic and Pharaonic Egyptian art with a tenth gallery devoted in part to the art of Roman and Christian Egypt. Those pieces of purely archaeological interest, once almost all on view, are now part of an important study collection.

The Classical and Ancient Near Eastern collections are much smaller in their scope and number of objects than the Egyptian holdings, but they include splendid Aegean, Greek, and Roman works as well as pieces of equally high quality from various parts of the Middle East. In 1955, with the support of the Hagop Kevorkian Foundation, the Museum acquired from the New-York Historical Society collections twelve monumental reliefs from a palace of the Assyrian king Ashurnasirpal II at Nimrud that are the most spectacular of the holdings of Ancient Near Eastern Art.

Culin's early ethnographic collecting trips to India, China, Korea, and Japan from 1909 to 1914 had established the foundation for what became an autonomous Department of Oriental Art by 1957. From the 1950s the holdings of later Near Eastern or Islamic art, today exhibited in the Department of Oriental Art, as well as the Indian and Southeast Asian collections were

enriched through the interest of Trustee-collector Ernest Erickson (1895–1983), who acquired important works in this and other non-European cultural areas. Placed on long-term loan as Erickson acquired them, some 474 objects were eventually given to the Museum by the Ernest Erickson Foundation in 1987. They are among the most important gifts of the last decade in magnitude and over-all impact on the quality of the collections.

Erickson's earliest contact at the Museum seems to have been with Herbert Spinden, Culin's successor in 1929 as curator of Ethnology. By 1937 Spinden was curator of the newly organized Department of American Indian Art and Primitive Cultures created out of Stewart Culin's original Department of Ethnology. He continued to strengthen North American holdings by borrowing and eventually acquiring the New-York Historical Society's important Eastern Plains Indian objects collected in the 1830s by Nathan Sturges Jarvis. However, Spinden had committed his major curatorial energies to establishing Pre-Columbian art as a presence at the Museum based upon his passion for the ancient Americas, especially Andean art and textiles.

Spinden was in advance of collecting taste and scholarship in also acquiring post-Conquest Colonial material at a time when there was little North American museum interest in this aspect of the hemisphere's art history. In 1941 he organized an important exhibition of Colonial and folk art of Latin America. During the 1940s and 1950s, he also acquired Spanish Colonial paintings, sculpture, decorative arts, and costumes for several departments forming a collection unique in American museums.

During the same period, Curator of Contemporary Art John I. H. Baur (1909–1987), a pioneer scholar in the field of American art history, was making crucial additions to the collection of eighteenth- and nineteenth-century North American paintings and sculpture. Paralleling the strengths in American paintings and sculpture is a watercolor collection distinguished by comprehensive coverage of the nineteenth century in particular as well as major holdings in the work of Sargent and Winslow Homer. In 1912 the first twelve Homers were purchased from the artist's brother, and with further additions over the years—including four superb works that had belonged to Babbott given in 1978—the Museum has acquired an important collection of Homer's work in the medium.

The William A. Putnam Memorial Print Room was established in 1937 to honor the Trustee and donor of prints. The creation of this study center marked the separation of the Department of Prints and Drawings from the Library collections, where Carl O. Schniewind had succeeded Susan Hutchinson as Curator-Librarian. Una Johnson assumed the curatorship when Schniewind left for the Art Institute of Chicago, continuing the National Print exhibitions, a biennial survey of current work in the medium begun in 1921. Acquisitions from the Nationals have played a major role in establishing the Museum's strength as a survey collection of five decades of contemporary American printmaking.

Photography has also been an important tool in the Museum educational process from the turn of the century, when Goodyear amassed hundreds of images of European monuments that are today of interest as historical documents in the history of the medium. Although curators began to collect photographs as art objects in the 1930s, they did not persist. Fortunately, acquisition has now resumed with emphasis on current work paralleling the Museum's interest in contemporary art in all media with the recent revival of a curatorship of Contemporary Art.

In 1966 the Museum charted a new collecting area and adopted novel methods of display with the opening of the Frieda Schiff Warburg Memorial Sculpture Garden. This outdoor gallery of nineteenth- and twentieth-century architectural ornament has become a favorite visitor retreat.

In his 1889 address to the Citizens' Committee, the Smithsonian Secretary warned the supporters of the Museum project that, if successful, their work would "never be finished."

When a museum building has been provided, and the nucleus of a collection and an administrative staff are at hand, the work of museum-building begins, and this work, it is to be hoped, will not soon reach an end. A finished museum is a dead museum, and a dead museum is a useless museum.

The measure of the founders' and their successors' achievement at "the work of museum-building" is recorded in this volume. Far from being a static treasure house, nothing—including the building itself—is ever "finished" at The Brooklyn Museum. Change has been the constant. Each collection, each department, has its own story, its own cast of characters, a chain of events—internal and external—that have charted or altered its course. Each has contributed to the history of the Museum as a whole while institutional goals have in turn exerted a powerful influence upon the growth of collections. Curatorial departments have come and gone as holdings have been repeatedly divided, redivided, and reorganized in efforts to define collections more accurately. The collections changed in response to new scholarship and changes in mission and curatorial vision, to new audiences and to the donors and patrons who continue to enrich Museum holdings.

The earlier ethnographic orientation of the Museum has left a rich legacy in the form of the non-Western collections as well as the core of the costume and textile holdings. Many of Culin's pieces came from the field with context intact rather than as isolated art objects. Consequently, the comprehensive nature of the collections made it natural for the Museum to play a major role in the reevaluation of non-European cultures as worthy of aesthetic appreciation—a role the Museum continues to play as successive generations discover and rediscover the extraordinary collections housed here. The diverse collections at Brooklyn reflect a history of taste and of ideas about objects and their makers in a way that those in other museums founded solely as museums of art cannot.

What is today The Brooklyn Museum began in 1823 as an idea—"extending the benefits of knowledge"—embodied in a series of collections through 164 years of constant change. The audience changed, Brooklyn changed, the building changed, and the collection changed. The idea, however, has remained constant as the mission that inspired the founding of the Brooklyn Apprentices' Library, The Brooklyn Institute of Arts and Sciences, and The Brooklyn Museum.

I want to thank Joan Darragh and Leland M. Roth for the opportunity to read their excellent essays before publication in *A New Brooklyn Museum: The Master Plan Competition*. Deborah Wythe offered invaluable support with her expert knowledge of Museum archives. I am especially grateful to Deirdre Lawrence for generously allowing me to consult her manuscript on Museum history and her copious research files and for reviewing and commenting so cogently upon my own effort.

The following members of the staff of The Brooklyn Museum have written the entries in this publication: Richard Fazzini, Curator, Robert S. Bianchi, Associate Curator, James F. Romano, Associate Curator, and Donald B. Spanel, Research Associate, Egyptian, Classical, and Ancient Middle Eastern Art: Diane Fane, Curator, Francine Farr, Assistant Curator, and Ira Jacknis, Assistant Curator for Research, African, Oceanic, and New World Art: Robert Moes, Curator, Sheila R. Canby, Associate Curator, and Amy G. Poster, Associate Curator, Oriental Art: Elizabeth Ann Coleman, Curator, Costumes and Textiles: Dianne Pilgrim, Chairman, Kevin Stayton, Curator, and Christopher Wilk, Associate Curator, Decorative Arts: Linda Konheim Kramer, Curator, Barbara Head Millstein, Associate Curator, and Barry Walker, Associate Curator, Prints, Drawings, and Photography: Sarah Faunce, Chairman, Charlotta Kotik, Curator, Barbara D. Gallati, Associate Curator, Barbara Head Millstein, Associate Curator, Ann Dumas, Assistant Curator, and Teresa Carbone, Assistant Curator for Research, Painting and Sculpture: and Deirdre E. Lawrence, Chief Librarian.

Egyptian,
Classical,
and Ancient Middle Eastern Art

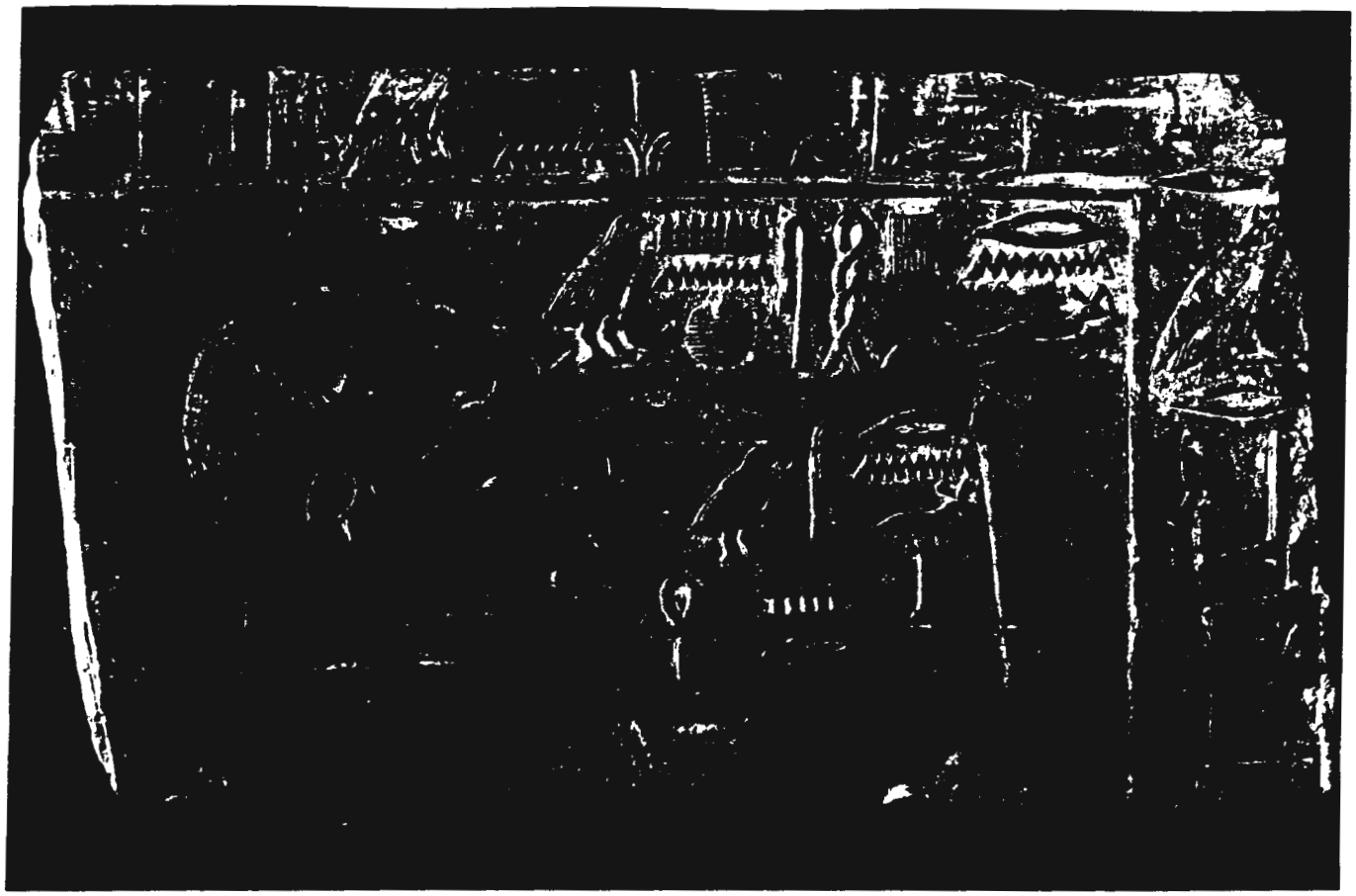
1 Early Female Figure

Egypt, El Ma'mariya
Predynastic Period, Naqada IIa (transitional), circa 3500–3400 B.C.
Terracotta, painted
11½ inches (29.3 cm) high
07.447.505. Museum Excavations 1906–7

Since the 1880s archaeologists have unearthed hundreds of pottery figurines of women in Egyptian Predynastic or prehistoric tombs. This striking image and a nearly identical piece from the same tomb are among the few acknowledged masterpieces of the type. It represents a slender female raising her arms above her birdlike head and bending her attenuated fingers downward in a bold, sweeping gesture. The entire figure is covered with a thin red wash. The craftsman who made it applied a layer of black resin to the head representing a wig or hair. The figure's lower body takes the form of a peg: it has been painted white to suggest a skirt.

The meaning of this statuette is unclear. Painted pottery vessels of this period sometimes have representations of females shown on a much larger scale than their masculine companions. These figures have long conical lower bodies and raise their arms in a manner echoing the statuette. Their exaggerated size suggests that they played a supernatural role, perhaps as a goddess or guardian of the deceased. The unusual head, resembling that of a great bird, enhances the feeling of otherworldliness. Since other Predynastic figurines show naturalistically modeled faces, we may presume that the artisan wished to imbue this figure with a nonhuman, perhaps divine, appearance.

The rounded bottom prevented the figure from standing. Only with the end of the Predynastic Period were statues given bases enabling them to stand upright.



2 Relief Representation of a Statue

Egypt, Saqqara, Tomb D43
Old Kingdom, late Dynasty V (2475–2345 B.C.)
Limestone, 29 1/4 inches (74.4 cm) wide
57.25E. Charles Edwin Wilbour Fund

Saqqara Tomb D 43 is dated to late Dynasty V on the basis of its inscriptions, and this dating accords well with the tomb's relief style, including its boldness. The physiognomy of the figure in this particular relief is, however, exceptional, being only partially paralleled in a few other works. Indeed, this face differs so much from the many conventionalized faces of its time that in the last century it was identified erroneously as a depiction of a non-Egyptian. Today this relief remains one significant focus of the ongoing debate over the existence and nature of portraiture in ancient Egyptian art, even though it is not a representation of a person.

Egyptian reliefs of people normally show both shoulders frontally. This relief, however, clearly had shoulders in profile, making it a representation of a statue of its owner, labeled with his two names of Smenkhuptah and Itwesh. The statue's unconventional face has led some scholars to interpret the phrase *shesep er ankh* accompanying the names as "statue according to life" or "lifelike image."

However, most scholars now translate those words as "living" or "receiving statue"—a reference to the sculpture's magical functions. In fact, the relief formed part of the largest known Old Kingdom image of a private person's statue, probably in a scene where the sculpture received offerings for its owner's spirit. Some of the peculiarities of the image presumably reflect the type of sculpture shown, one embodying an ideal state of existence in which the image is what one might call prosperously portly. Nevertheless, there is something indeed "lifelike" about this "living" statue.

5 Statue of Metjetji

Egypt, probably from Saqqara
Old Kingdom, late Dynasty V to early Dynasty VI, circa 2360–2340 B.C.
Wood, stone, metal, gesso, painted
24 1/8 inches (61.5 cm) high
31.1. Charles Edwin Wilbour Fund

Every large-scale Egyptian tomb contained at least one statue of the deceased. Tomb statues served as substitute bodies, sheltering the spirit if the mummy were destroyed. They also received offerings of food, drink, and clothing brought by the tomb owner's respectful descendants.

Since most tomb statues were sealed in chambers, never to be seen by mortal eyes, Egyptian artisans did not feel compelled to reproduce the subject's actual physical appearance. As long as the sculpture bore an inscription with the correct names and titles, the spirit could recognize it and return to it for refuge and nourishment.

Only on the rarest of occasions do we encounter a statue that breaks away from standard idealizing models and tempts us to believe that we are gazing on a likeness of a specific ancient Egyptian. This statue, representing a high official named Metjetji, is such a piece. The lively face is dominated by huge calcite and obsidian eyes. Their downward cast suggests intelligence and contemplativeness, perhaps characteristics of the man himself. The tautness of the flesh and the head's ovoid shape are rarely seen in the Old Kingdom. The sculptor's decision to fashion a statue of Metjetji with these features seems to indicate that they were distinctive of the man himself.

4 Pepy II and His Mother

Egypt, possibly from Saqqara
Old Kingdom, Dynasty VI, circa 2220–2210 B.C.
Calcite, 15 7/16 inches (39.2 cm) high
59.110, Charles Edwin Wilbour Fund

Pepy II ascended to the Egyptian throne as a child, perhaps at the age of six. An Old Kingdom document seems to indicate that he ruled for ninety-six years; some scholars, however, would shorten his reign to sixty-four years.

This statuette shows Pepy II as a child seated on the lap of his mother, Queen Meryre-ankhnes. No doubt the piece was carved in the earliest years of his kingship. Pepy II appears in the traditional costume of an Egyptian king: the *nemes*-headcloth, with its protective *uraeus*-cobra, and the short goffered kilt called a *shendyt*. The queen's trappings, including her wig and long dress, recall representations of noblewomen of the Sixth Dynasty. The tiny hole in her forehead, however, testifies to her royal status. It once accommodated a queen's symbol, the golden head of a vulture, the earthly manifestation of the Mother Goddess Mut.

Royal stone statues of the late Old Kingdom are extremely rare. All are quite small and show the artistic tendency, first recognizable in mid-Dynasty V, of carving the arms and legs fully in the round rather than connecting them to the rest of the statue by awkward stone "bridges." This figure of Pepy II is unique among Sixth Dynasty sculpture in its use of two primary views. Normally, Egyptian sculpture was meant to be seen only from the front. By placing Pepy II and his mother at right angles, an innovative sculptor has created a work that must be seen from two distinct views.

5 Recumbent Dog

Mesopotamia, perhaps from Babylon
Old Babylonian Period, circa 19th century B.C.
Aragonite, 8¾ inches (22.3 cm) long
51.220. Gift of Mr. and Mrs. Alastair B. Martin

A strong tradition of animal sculpture existed for millennia in ancient Mesopotamia (modern Iraq). However, few statues of animals have survived from the major historical periods. Those that we do have seem to come from temples and represent animals associated with specific divinities. The dog was sacred to the goddess Gula, the consort of the great Babylonian god Ninurta. Quite probably this image was a votive offering left in the temple by a pious adherent of Gula's cult. It may have once stood in a sanctuary of that goddess, perhaps in one of the temples of Babylon.

This figure reflects the great attention to naturalism that characterizes the finest creations of the Old Babylonian Period. The sculptor paid great attention to the dog's wrinkled muzzle: heavy jowls: thick, muscular neck: and stout torso. So faithful was his representation of these details that we can recognize the dog as an early form of the modern mastiff. The Mesopotamians used the fearless mastiff to protect their flocks against rapacious predators. The thick collar around the animal's neck signifies ownership.

6 Royal Woman

Originally from Egypt, found near Rome, perhaps at Hadrian's villa at Tivoli
Middle Kingdom, mid-Dynasty XII, circa 1920–1878 B.C.
Chlorite, 15⅜ inches (38.9 cm) high
50.85. Charles Edwin Wilbour Fund

Some of the finest sculptures of ancient Egyptian women were carved during the Twelfth Dynasty. Their faces convey a youthful radiance with wide-open eyes, fleshy cheeks, and slender lips. This tendency is most conspicuous on images of royal women.

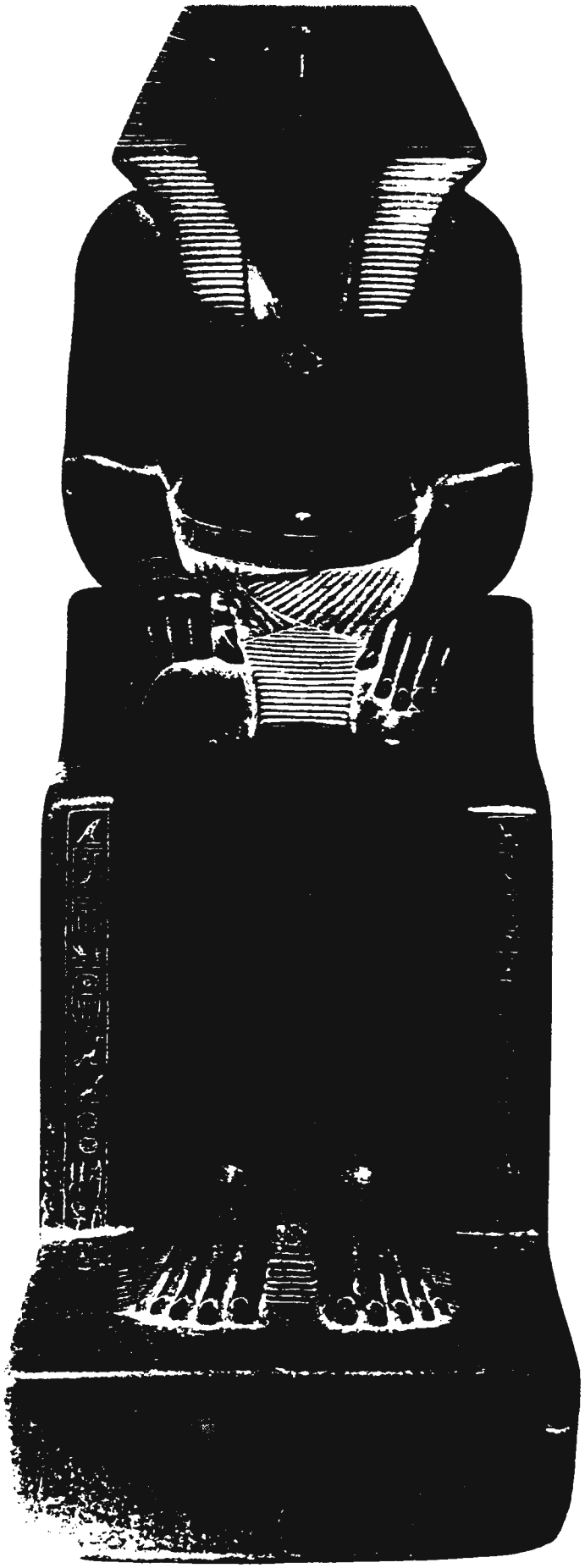
This head is recognizable as a queen or princess by the hairpin in the form of a *uraeus*-cobra on her forehead. A heavy striated wig covers her head; only a tiny portion of her natural hair is visible just beneath the *uraeus*. The statue survives in an imperfect state. The eyes, originally made of stone and metal, were pried from their sockets in antiquity. In addition, the figure's nose, lips, and chin have all experienced damage.

Since the end of the wig tails off toward the horizontal, we know this head originally belonged to a figure of a recumbent sphinx. Female sphinxes enjoyed great popularity in the court of Dynasty XII. One of these, showing a daughter of Amenemhat II named Ita, was found at Qatna in Syria. Its similarity to the Brooklyn head suggests that they were contemporaneous.

The head's recent history begins in 1771, when Galvin Hamilton, a Scottish painter, acquired it in Rome. Any Egyptian piece of this size and quality was probably found at Hadrian's villa at Tivoli, whence the Romans brought it from Egypt.

Sesostris III

Egypt, probably from Hierakonpolis
Middle Kingdom, late Dynasty XII,
circa 1878–1840 B.C.
Black granite, 21 7/16 inches (54.5 cm)
high
S.1.1, Charles Edwin Wilbour Fund



At the apex of Egyptian society stood the indomitable figure of pharaoh. Religious tradition taught that he was a god incarnate, the earthly manifestation of the Sky God Horus who ruled and protected Egypt. One of the mightiest of these divine pharaohs, Sesostris III, governed with absolute authority at a time when Egypt was the world's paramount power. Evidence suggests that when faced by an increasingly hostile feudal nobility, Sesostris III simply stripped the landed gentry of all its ancient rights and privileges. This action reduced the nobles to the level of nonentities and consolidated all national power in the king's person.

This impressive statue of Sesostris III shows him sporting the traditional regalia of a king: the *nemes*-headcloth with its protective *uraeus*-cobra, the *shendyt*-kilt, and the bull's tail between his legs. Sesostris III's role as protector of Egypt's borders is symbolized by the nine bows beneath his feet, representing Egypt's nine traditional enemies.

Since the king was seen as divine, royal statues normally have idealizing faces, without the blemishes or lines that mar mortal flesh. During Sesostris III's reign, however, royal sculptors abandoned this perfect model. The king's face now features heavily lidded eyes, deep creases running across his cheeks, and a stern set mouth. Sesostris III's statues come closer to conveying the impression of a real person than any earlier royal images.

8 Statue of Squatting Man

Provenance not known
Thirteenth Dynasty (1781–circa 1650 B.C.)
Brown quartzite, 2'7½ inches (160.8 cm) high
62.757. Charles Edwin Wilbour Fund

This magnificent statue of an unnamed person superbly illustrates the continued influence of late Twelfth Dynasty royal sculpture on works commissioned by private persons in succeeding generations. Every detail of the facial modeling is the legacy of Sesostris III and Amenemhat III, the two most important rulers of the latter part of the Middle Kingdom. The heavy eyelids, slightly downcast eyes, tightly drawn cheeks, pursed mouth, and especially the flaring ears are the distinctive characteristics of late Middle Kingdom royal and private sculpture. In the Thirteenth and Seventeenth Dynasties, however, these details were simplified and mannered. This statue, for example, lacks the folds and muscles in the cheeks that give late Twelfth Dynasty sculpture its force, although the eyes do have an exaggerated brooding look. The hands are rather large and the fingers flat, and each body part is treated as a distinct component, as if to signify that the artist was paying careful attention to his prototypes. As a reinterpretation of earlier work, this piece is thus an invaluable illustration of the ancient Egyptians' outlook on their own art.

Sesostris III was no doubt highly regarded by his successor, Amenemhat III, and by contemporary and later private persons. As a highly effective ruler who perfectly fulfilled his role as pharaoh, Sesostris III embodied a cosmic principle of equilibrium known as *ma'at*. Little wonder, then, that later persons sought to advertise their own virtue by copying the features of such a revered ancestor.

9 Minoan Jug

Originally from Crete
Purchased by Dr. Henry Abbott before 1852 (reportedly from Lower Egypt); formerly in the New-York Historical Society Collection
Late Minoan IB Period, circa 1575–1500 B.C.
Pottery, wheel-made, fired, burnished, and painted.
8 7/16 inches (22.2 cm) high
57.17E. Charles Edwin Wilbour Fund

Of all the potters of the ancient world, those of Minoan Crete perhaps came the closest to achieving a perfect harmony between painted decoration and vessel shape. The Minoans' most common motifs feature lively maritime scenes. On this vessel, five nautili are framed by various species of marine flora. The animals' hard shells occupy the space just beneath the vessel's widest point, calling attention to the jug's solidity and volume. The long, graceful tentacles of the nautili, however, extend upward toward the neck and spout, adding a sense of lightness to the pot's upper half.

In keeping with preclassical drawing conventions, the painter combined two viewpoints in a single-figure frieze. The nautili appear in pure profile while the water plants are seen from above. Such a merging of views also characterizes Aegean wall painting, including frescoes from the island of Thera.

This jug was found in Egypt, where it was, no doubt, sent as part of the trade that flourished between Crete and the Nile Valley during the sixteenth century B.C. Its transference to Egypt is responsible for the vessel's remarkable state of preservation. Minoan pottery found in the damp Cretan soil frequently shows severe surface deterioration. Burial in the drier soil of Egypt spared this masterpiece of the potter's art from such a fate.

10 Head of a King

Egypt, exact provenance not known
New Kingdom, Dynasty XVIII, circa 1554–1504 B.C.
Sandstone, painted, 24⅛ inches (61.8 cm) high
37.58E, Charles Edwin Wilbour Fund (formerly in the Abbott and New-York Historical Society Collections)

With the expulsion of the Hyksos, Asiatics who ruled Egypt for more than a century, Egyptian sculptors faced the challenge of reviving an art form that had been largely dormant during the long period of foreign occupation. Since very few statues were made in the final decades of Hyksos rule, artisans working for the first kings of Dynasty XVIII, Ahmose (circa 1554–1526 B.C.) and Amunhotep I (circa 1529–1505 B.C.), were not obliged to perpetuate a flourishing style. Instead, they were free to seek inspiration from Egypt's long artistic past.

These artists devised sculptures with details hearkening back to the style of the early Middle Kingdom. No doubt the historically conscious Egyptians wished to draw a parallel between that remote era, which marked the beginning of a glorious age in Egyptian history, and their own fledgling dynasty.

So similar is the art of earliest Dynasty XII and Dynasty XVIII that for many years this uninscribed head was attributed to the Middle Kingdom. We now know it to be an Eighteenth Dynasty piece with a treatment of the eyes, eyebrows, and mouth deliberately recalling early Middle Kingdom royal sculptures. Its open, ingenuous expression and curious half-smile, however, are characteristic of the New Kingdom and seem to invoke the sense of confidence that pervaded Egypt following the reestablishment of native rule. In all probability the head represents Ahmose or his son and successor, Amenhotep I.

11 Statue of Senenmut

Egypt, Armant
New Kingdom, Dynasty XVIII, reign of Hatshepsut (1479–1458 B.C.)
Gray granite, 18½ inches (47.2 cm) high
07.68, Charles Edwin Wilbour Fund

Senenmut, one of the most powerful officials of the time of the female pharaoh Hatshepsut, had at least twenty-five statues made of himself. These display a variety of innovative types, including that of a private person offering a divine symbol or image.

According to its inscription, this statue depicts Senenmut offering an image of Renenutet, a goddess of the city of Armant, on behalf of the well-being of his sovereign and in the hope of eternal blessings for himself. However, as the cobra resting on a pair of upraised human arms and crowned with cow horns and a solar disk is also a rebus for Maat-ka-Re, the throne name of Hatshepsut, the entire statue, made to stand visible in a temple, can be "read" as a statement that Senenmut offers the name of his sovereign. For the same reason, the statue can be viewed as a declaration of, and an appeal for, loyalty to a controversial female pharaoh, who was likened to a goddess of nourishment in accord with the traditional concept of pharaoh as sustainer of Egypt.

Stylistically the statue's oval face, arched eyebrows, widely opened eyes, narrow and straight mouth, and aquiline nose relate it to several royal sculptures of its era. This explains why scholars still debate the question of whether any of these features reflect Senenmut's actual physiognomy rather than the influence of a royal atelier, whence the statue may have come.

12 The Lady Thepu

Egypt, Thebes, Tomb 181
New Kingdom, Dynasty XVIII, late reign of Amunhotep III–very early reign of Amunhotep IV (circa 1500–1540 B.C.)
Painting on gesso over mud plaster
14¾ inches (37.6 cm) high
65.107. Charles Edwin Wilbour Fund

Although painting, as distinct from painted relief, was used for Egyptian tomb decoration from very early to very late times, it was seemingly most popular during the New Kingdom in the cemeteries in the cliffs at the southern capital of Thebes. There, where the stone was not always suitable for carving, artists evolved styles of painting that exploited many of the medium's potentials.

One apogee of this painting tradition was reached in the reign of Amunhotep III and survived into the very early part of the reign of Amunhotep IV (Akhenaten), a time that also witnessed the first flowering of the art of the Amarna Period. Amunhotep III ruled over an Egypt made wealthy and cosmopolitan by its military, commercial, and cultural contacts with other lands, a fact that helps account for the sophisticated elegance and opulence evidenced in much of the art of his era, such as this painting of the Lady Thepu, with her elaborate wig and floral headband, lavish jewelry, and fancy, diaphanous garment.

This image comes from a scene in which Thepu accompanied her deceased son, Nebamun, a Chief Sculptor and Administrator of Workshops, in making burnt offerings to the gods as part of an annual religious ritual of great magical benefit to the noble dead. Although Thepu appears to have been depicted as still alive, in keeping with the Egyptian desire to represent the ideal, essential, and eternal essence of a subject, she is shown as young and beautiful despite the fact that she must have been advanced in years.

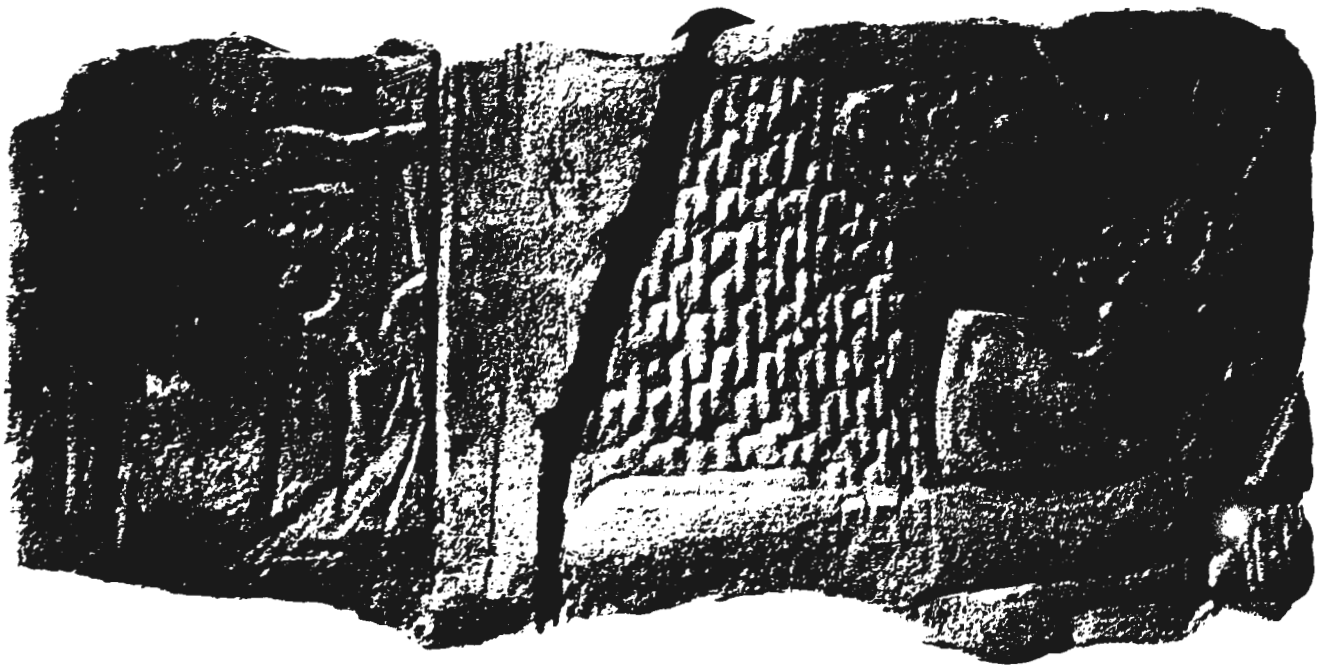
15 NEFERTITI

Egypt, Karnak (Amun Precinct)
New Kingdom, Dynasty XVIII, circa 1365–1361 B.C.
Sandstone, painted, 16⅞ inches (42.5 cm) wide
58.30. Gift of Christos G. Bastis

In Year 5 of his reign, Amunhotep IV changed his name to Akhenaten and moved the Egyptian capital from Thebes to El Amarna. By then Amunhotep IV had already drastically altered traditional Egyptian art and religion. Prior to his kingship pharaohs appeared as perfect beings with flawless faces and slender, well-conditioned torsos. Similarly, the major gods of earlier times often assumed some combination of human and animal form.

Amunhotep IV soon abandoned these conventions. In the precinct of the god Amun at Karnak he erected several sanctuaries to the Aton. This mysterious version of the sun god looked like no other Egyptian deity. It appeared in purely iconic form: a sun disk whose projecting rays ended in tiny hands. Images of the king and his consort, Nefertiti, show a similar rejection of classic style. The royal couple appears with elongated eyes set at an unnatural slant, long straight noses, emaciated cheeks, thick lips, lantern jaws with knobby chins, and attenuated necks. Both king and queen invariably show bodies with swollen, almost feminine breasts, a distended abdomen, and spindly arms and legs.

This relief represents Nefertiti presenting offerings to the Aton: the tiny *ankh*-sign before her nose is proffered by one of the Aton's rays. The block probably came from the *Hewt-benben*, the Aton's Karnak sanctuary where Nefertiti served as principal celebrant. The hieroglyphic inscription behind the queen mentions Princess Meryt-Aton: no doubt her figure originally appeared behind her mother.

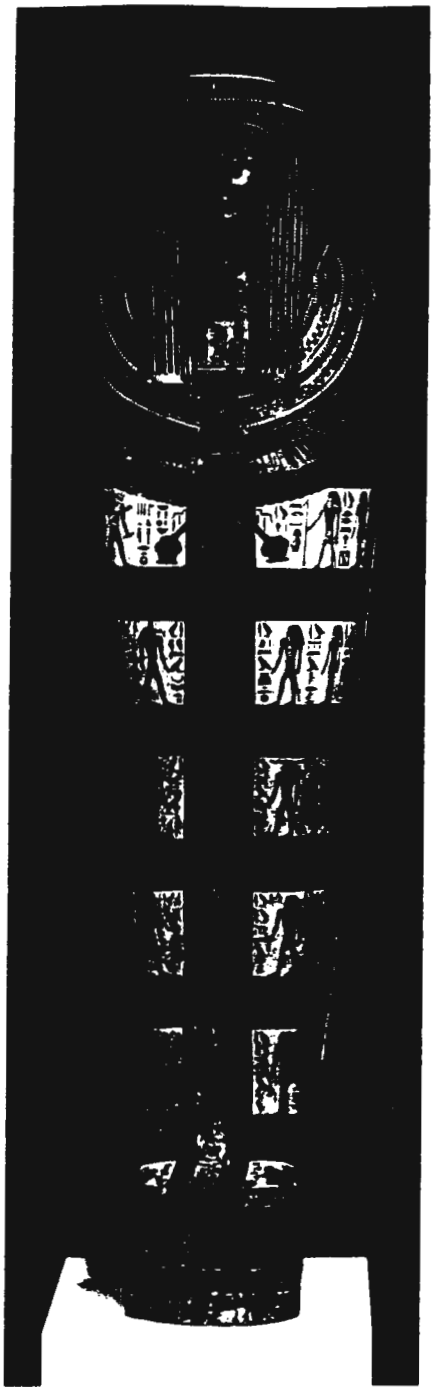


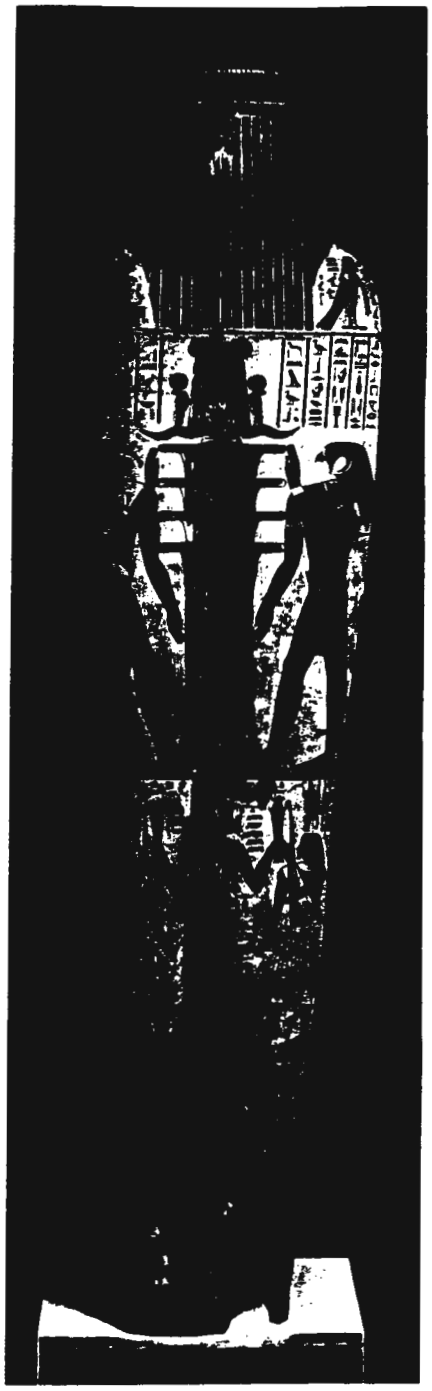
14 Statue of Sa-Iset

Egypt, Assiut
New Kingdom, Dynasty XIX, reign of Ramesses II (1270–1212 B.C.)
Wood, 22½ × 5½ × 6 inches
(57.0 × 14.0 × 15.5 cm)
17.1120.2, Charles Edwin Wilbour Fund

Were this sculpture uninscribed, it would be attributable to Dynasty XIX (1291–1185 B.C.) on the basis of the style of its finely detailed wig, its elaborately pleated garments, and its physiognomy, although its face—once enlivened by inlaid eyes and eyebrows—deviates to some extent from more conventional faces of that era. Happily, the statue's inscriptions not only place it in the exceptionally long reign of Ramesses II and associate it with the city of Assiut, they also identify it as belonging to Sa-Iset, Royal Scribe and Overseer of the Granaries of Upper and Lower Egypt. Although two like-named and like-titled men—grandfather and grandson—are known from Dynasty XIX Assiut, it is most probable that this statue is of the second Sa-Iset, who held office during the latter part of Ramesses II's reign and the very beginning of the reign of Merenptah (1212–1202 B.C.). Much more problematic are the questions of whether, as has been argued, the faces of the Brooklyn Sa-Iset and a few other statues of, or probably of, Sa-Iset the Younger deviate sufficiently from artistic conventions of their time to warrant the label "portraitlike" and whether they resemble each other sufficiently to help attribute them all to the second Sa-Iset.

Sa-Iset is represented here holding a divine staff, a pose that in private statuary was limited to the New Kingdom and was particularly common in the time of Ramesses II. The inscriptions indicate that it was a staff of Wepwawet, chief god of Assiut, and that one function of the sculpture was to help ensure that Sa-Iset would enjoy his god's aid in achieving a long lifetime and a blessed existence in the hereafter.





15 Cartonnage of Nespanetjerenpere

Egypt, Thebes
Third Intermediate Period, probably Dynasty XXII (945–718 B.C.)
Cartonnage (linen or papyrus mixed with plaster), inlaid with glass and lapis lazuli (eyes and eyebrows)
69⅞ inches (177.0 cm) long
53.1263, Charles Edwin Wilbour Fund

A mummy cartonnage is a container for a body and was normally interred within a coffin or sarcophagus of more durable material. This cartonnage was made for a man named Nespanetjerenpere, whose priestly titles suggest he lived in the southern capital of Thebes. The cartonnage's date is based on its medium, general style (including the almond-shaped eyes and slightly arched eyebrows), and scheme of decoration. Every aspect of its form and decoration had the magical purpose of helping to ensure a happy hereafter for its owner.

A depiction of Nespanetjerenpere wrapped as a mummy, the braided and curled "divine beard" indicates an intention to associate the deceased with the gods. This intention is also evident in the image of the ram-headed solar deity on the chest and the scene of Horus and Thoth erecting the *djed*, symbol of enduringness, and the god Osiris, on the back. More unusual is the decoration of the front panels, which for the most part consists of deities whose accompanying texts identify each of them with a part of Nespanetjerenpere's body. The priest also appears in human guise in these panels and on the back, where he is shown receiving life-giving water twice from a goddess and then kneeling under a flow of life signs.

This massing of divine images, propitious symbols, and magical texts in lively colors on a white ground is characteristic of funerary furnishings of Nespanetjerenpere's era, when, in part as a reaction to widespread tomb robberies, prominent and well-decorated sepulchers were not made.

16 Winged Genie

Iraq. Nimrud (Assyria), from Room H of the Northwest Palace
Reign of Ashur-nasir-pal II, circa 883–859 B.C.
Alabaster, 91 inches (231.1 cm) high
55.155. Gift of Hagop Kevorkian

Beginning in the reign of Ashur-nasir-pal II, Assyrian kings decorated the lower portion of their palace walls with monumental alabaster reliefs. These reliefs show the king performing the official duties of an Assyrian ruler: fighting, hunting lions, governing, overseeing the crops, and participating in religious rituals. The Brooklyn Museum possesses twelve of the earliest Assyrian palace reliefs: all were removed from Ashur-nasir-pal II's royal residence at Nimrud in 1853 but did not reach Brooklyn until 1955.

This slab depicts a great winged genie who attends the king at a religious ceremony. He holds a single ritual object, a pail, which may have contained liquid used to purify the "Sacred Tree," a major icon of Assyrian religion. The genie's long braided hair and beard are in keeping with the fussiness of Assyrian royal art. He wears a fringed shawl draped over his knee-length, tasseled tunic. The ensemble is enhanced by an elaborate array of jewelry, including a rosette on his forehead, earrings, bracelets, and a beaded necklace. The handles of two daggers project from beneath the genie's shawl.

A long cuneiform text appears across the center of this and other scenes from Ashur-nasir-pal II's palace. This "Standard Inscription" recounts the major events in the illustrious reign of the self-proclaimed "king of the World."

17 Amun-Re and Mut

Egypt, Thebes, Karnak
Dynasty XXV, circa 760–656 B.C.
Sandstone, 20 × 31 × 1¾ inches
(75.5 × 79.0 × 4.5 cm)
85.184.2, Charles Edwin Wilbour Fund

In the first quarter of the first millennium B.C. a powerful state arose in Kush (modern Sudan), far to the south of Egypt proper. This state was to survive for centuries to come. Far shorter lived was the conquest and control of Egypt by six of its kings, who are counted as Egypt's XXVth Dynasty. While their own civilization rapidly accommodated Egyptian influences, in Egypt these Kushite kings played the role of traditional pharaohs, a fact clearly reflected in the Egyptian art created for them. To be sure, some Egyptian depictions of their Kushite overlords are decidedly un-Egyptian in terms of their physical appearance and royal regalia. Nevertheless, most Egyptian art of Dynasty XXV is characterized by the continuing evolution of native styles that reflect Kushite influence in some details of costume or—though not always—hints of a Kushite physiognomy in the depiction of heavy noses, prominent cheekbones, and full mouths. Those same features could also be used for representations of other individuals and even the gods. Such is certainly the case with the relief illustrated, especially the figure of the goddess, which is in all respects a splendid example of royal relief at the southern Egyptian capital of Thebes during the second half of Dynasty XXV.

The great god Amun-Re and his consort Mut were worshiped throughout Egypt and Kush, but their traditional and most venerable Egyptian cult places were at Karnak at Thebes, also the location of many of the most important building projects of Dynasty XXV in Egypt.

18 Reliefs from the Tomb of the Vizier Nespeqashuty

Egypt. Thebes. Tomb 312
Late Period. Dynasty XXVI. reign of Psamtik I (664–610 B.C.):
Limestone. section illustrated: 20⅞ inches (75.2 cm) high
32.151.1–.32 and 68.1. Charles Edwin Wilbour Fund

In the upper register of the section of reliefs illustrated here is part of a depiction of funeral ceremonies for the vizier Nespeqashuty. Though the ancient Egyptians believed death might be followed by life eternal, they were not anxious to leave the existence they knew. Hence the presence here of female mourners who, as in much Egyptian art, convey their messages—aversion to death, the pain and loss of separation, the affluence of a man whose family could afford numerous professional mourners—much more by poses, gestures, and garb than by facial features. Here the women are wearing a mourning garb with a tie at the waist, leaving the breasts bare, but their faces are virtually expressionless. The man with a quiver of arrows at the left was presumably part of a procession of figures bearing to Nespeqashuty's tomb the funerary equipment he might wish or need in the hereafter.

While the existence of related female figures in works made well after Dynasty XVIII (1550–1291 B.C.) suggests that these figures are part of a living artistic tradition, they also clearly owe some debt to works of that much earlier age. This archaizing, a tendency displayed by much art of Nespeqashuty's time, is also apparent in the lower register of female offering-bearers. Derived ultimately from depictions as early in date as Dynasty IV (2600–2475 B.C.) of personifications of estates established by kings to furnish their spirits with offerings of food and drink, Nespeqashuty's figures are related to their New Kingdom descendants, that is, to depictions of offering-bearers of less exalted status.

19 Portrait of Wesirwer

Egypt
Dynasty XXX, 380–342 B.C.
Green schist, 6 7/16 inches (13.4 cm) high
53.173, Charles Edwin Wilbour Fund

The identification and dating of this head were the result of a continuing international collaboration aimed at developing a more complete assessment of the true aesthetic achievements of ancient Egypt. In the 1960s a European Egyptologist noticed that the top of the back pillar of the statue is decorated with a figural scene depicting the deity Osiris seated on a throne, the side of which is decorated with a swallow. Upon reflection it was noticed that the god and the bird are, in and of themselves, hieroglyphs that read "Wesir-wer," or "Osiris is great," and that that phrase is a rebus, or visual pun, for the name of a man who had been identified in the inscriptions on a headless statue in the Cairo Museum. Since the dimensions of the breaks of both head and body are identical, it appeared that the pieces belonged together—a hypothesis confirmed when casts of the originals were joined break to break.

The history of the statue could now be determined. It had been erected originally in the Temple of Amun at Karnak during Dynasty XXX. At a somewhat later time, however, the priests of the temple reverently buried it along with hundreds of others during a routine weeding out of the dedicatory statues then cluttering the site. Subsequently the head seems to have been broken off and separated from its body—that is, until the 1960s, when for a short time, head and body were reunited at The Brooklyn Museum.

The modeling of the portrait is both abstracted and mannered, executed with subtly merging planes. Earlier academic formulas have been adapted and modified in a schematic way so as to produce a masklike image that, although divorced from reality, still engages the spectator's interest.

20 Statuette of Alexander the Great

Egypt
Probably 1st century B.C.
Alabaster, 4⅛ inches (10.5 cm) high
53.102. Charles Edwin Wilbour Fund
Right: actual size

In 332 B.C. Alexander the Great entered Egypt without a struggle. The native Egyptians heartily welcomed him as the liberator who would free them from the oppressive yoke of the Persians then ruling the country. He was subsequently crowned as pharaoh at Memphis, the religious capital of the land, traveled to the remote Oasis at Siwa in the Western Desert, and laid out with his own hands the foundations for Alexandria, a city destined to become the undisputed cultural center of the classical world. For the next nine years he set about completing his conquest of the known world. When he died in Babylon in 323 B.C., he had changed the course of history and had brought the culture of Greece to the nations of the East. His body was ceremoniously laid to rest in his beloved Alexandria in a sumptuous tomb, which has yet to be discovered.

Alexander the Great not only changed the course of history but so affected the subsequent development of Western art history. He was the first Greek ever to commission his portrait during his lifetime. Fair of complexion, exceedingly handsome, and boyish in appearance with a full head of hair that his contemporaries likened to a lion's mane, Alexander had features that clearly distinguished him from all other men. Of his contemporary portraits, none was more famous than that created by the court sculptor Lysippos. The Roman biographer Plutarch, writing in Greek in the second century A.D., described that image in his *Life of Alexander* as one depicting Alexander with a melting gaze in his eyes and his head inclined to one side over his left shoulder.

This remarkably well-preserved statuette is based on that famous work. Because of its small size, it was probably the focal point of a private shrine erected in honor of Alexander by a wealthy Egyptian. Conforming to the luxurious tastes of the times, the white alabaster bust was initially set into a draped body sculpted from a different-colored stone. That sense of color was enhanced by the addition of a diadem representing the rays of the sun, each metal spike of which was affixed to the head by means of tiny drill holes that are still visible. The sculptor was an accomplished master and has crafted the piece with jewel-like precision, as is evident from the rendering of the irises and pupils of the eyes. The sketchy, almost impressionistic rendering of the hair is but one indication that this statuette could have been sculptured in late Hellenistic times when the memory of Alexander was linked to Egypt's renewed imperial aspirations.

21 The Brooklyn Black Head

Egypt
4?–44 B.C.
Diorite, 16¼ inches (41.3 cm) high
58.30. Charles Edwin Wilbour Fund

This head, named for the hard, black diorite from which it is sculpted, is a quintessentially Egyptian work that owes nothing to Graeco-Roman artistic traditions. In keeping with pharaonic sculptural principles of the Late Period, the artists have consciously endeavored to juxtapose the smoothly polished surfaces of the face with the rough surfaces of the hair, only the first three rows of which have the individual strands articulated. The remaining curls are only roughly blocked out. The hair does not grow organically from the scalp, as in classical works, but rather rests on the head like a cap. From such observations, it is evident that this classical coiffure, with its crab-claw configuration of locks lapping the forehead, is rendered by purely pharaonic stylistic means. The same conclusion applies to the sculpting of the features of the face, which are modeled as a series of subtly merging planes enhanced by linear adjuncts. So, for example, the subtle undulations of the forehead and cheeks are punctuated with faintly incised lines that effectively paint a picture of a mature man. That maturity is emphasized by the gaunt, sunken cheeks, by the naso-labial furrows emanating from the wings of the nose to the corners of the mouth, by the thin, pencil-lined horizontal [illegible] by the heavy, upper lids of [illegible] rendered Egyptian [illegible]

All these physiognomic features are evident only in the frontal view and are not developed in the profile views. This absence of an integration of the front and side views of a face, wholly lacking in developed Hellenistic and Roman portraits, is a hallmark of Egyptian art in all periods. All the features of the head, when taken singly, can be paralleled on other Egyptian portraits of the Late Period.

22 Ibis Coffin

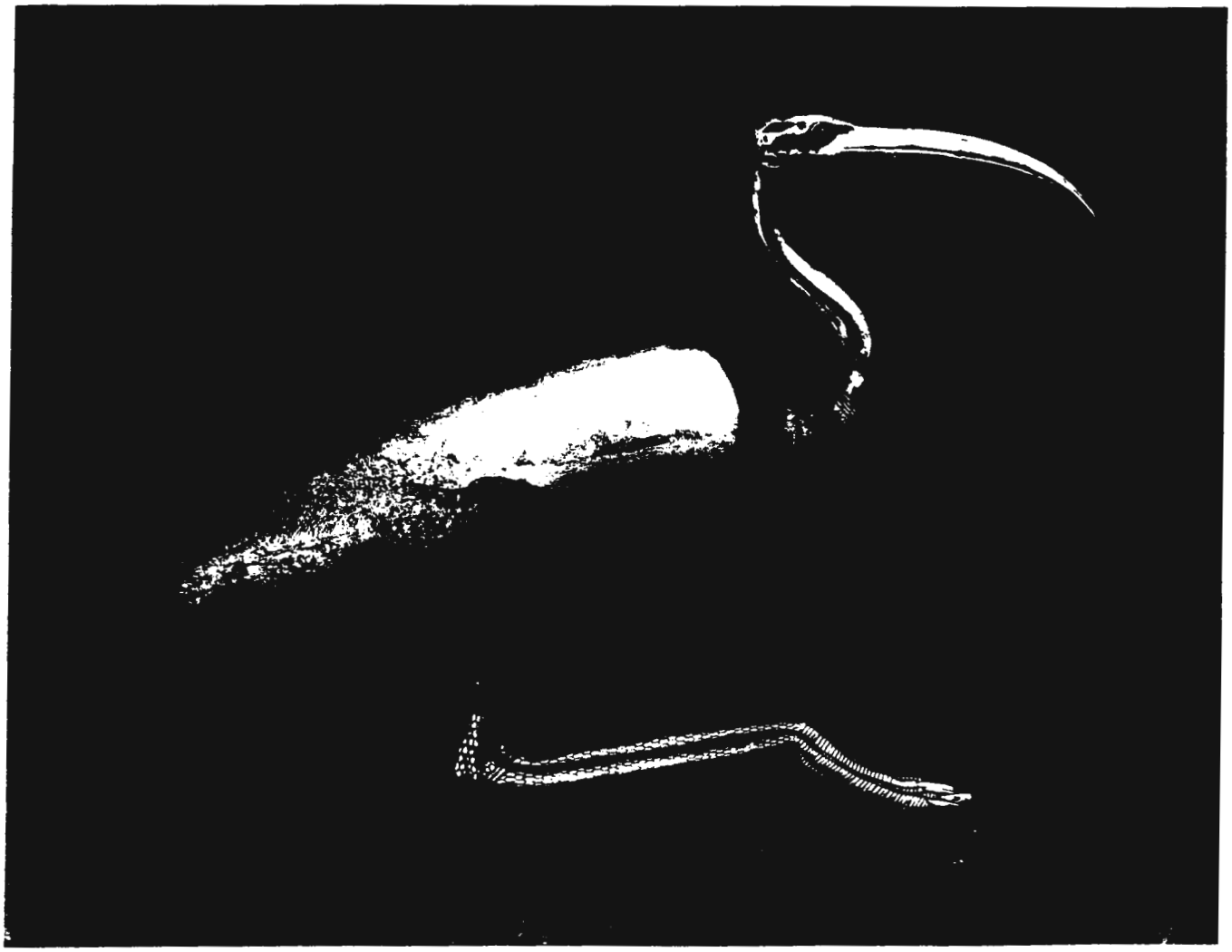
Probably from Tuna el-Gebel (Greek Hermopolis, modern Ashmunein)
Ptolemaic Period (305–30 B.C.)
Gilded wood, rock crystal, gold, and silver
23 1/2 × 15 inches (59.7 × 38.2 cm)
10.48. Charles Edwin Wilbour Fund

Most likely from the vast animal cemetery of Tuna el-Gebel in Middle Egypt, this beautifully fashioned coffin once held the mummified remains of ancient Egypt's most sacred bird. The ibis was the more common manifestation of the god Thoth, who is sometimes also depicted as a baboon. Indeed, Tuna el-Gebel has yielded the mummies of thousands of ibises and baboons.

Thoth was the god of scribes and was equated by the Greeks with Hermes. Perhaps because writing was considered an activity reserved for the elite, he was also associated with wisdom in general. In fact, in some New Kingdom texts, Thoth is the creator of all languages, not just Egyptian. As a scribe, he is often shown in vignettes of illustrated funerary papyri, such as the *Book of the Dead*, at the judgment of the deceased, tallying the results on his notepad as the dead person's heart is weighed against the feather of truth.

This coffin is fashioned from silver and wood overlaid with gold leaf. The eyes are rock crystal set in gold bands, and the head, legs, and tail are made from pure silver. Dating to the Ptolemaic Period, the coffin is not unique but is nonetheless an especially fine, large, and well-preserved example of its type. The artist has adroitly captured the sinuous curve of the beak and neck, and the highly detailed legs are evidence of the ancient Egyptian craftsman's careful observation of anatomy.

Even today, an occasional ibis can be seen in rural Egypt, strolling freely through the fields and irrigation canals of the Nile Valley. Now, as then, the ibis is a treasured bird.



25 Funerary Cartonnage of a Lady of Means

Egypt
Roman Imperial Period, 1st century A.D.
Linen, painted and gilded gesso, with various inlays
22¾ inches (57.8 cm) high
00.33, Charles Edwin Wilbour Fund

Despite their conquest of Egypt in 30 B.C., the Romans were initially unable to alter the cultural fabric of the country. Wealthy Egyptians continued to practice their millennia-old religious beliefs, and the pious habitually interred their deceased with all the traditional funerary paraphernalia. Nevertheless, the use of gold and wood for anthropoid, or human-shaped, sarcophagi gradually gave way to cartonnage, a combination of layers of papyrus and/or linen coated with gesso, or plaster, which resembles modern papier-mâché. The cartonnage was modeled by hand to depict the features of the deceased and while still wet could be inlaid with various materials, as seen, for example, in the eyes and eyebrows, which are made of glass and faience, a typically Egyptian glazed material. The finished object could then be both painted and gilded.

The deceased here is depicted as a wealthy and fashionable Roman matron. Her coiffure is elaborately arranged as a series of three rows of tightly twisted spiral locks that frame her forehead and are set off by a series of corkscrew locks at either side of her face. Her accessories, most of which are shown from actual examples in gold, reveal just how accurate the artist was in his depiction of jewelry. These include a pair of stunning U-shaped earrings and two necklaces. The first is a string of green beads and the second a lavish, bejeweled creation, most of the inlays of which are, unfortunately, no longer extant. In addition, the figure wears two finger rings, two bracelets, and an armlet, all of which are serpent-form. Her right palm presses a hand garland of rose-colored petals against her chest while her left hand clasps a cluster of ears of wheat. Her costume consists of an opulent Egyptian three-piece ensemble, the fringed shawl of which is knotted to her wraparound skirt at her breast.

To the ancients, the serpent, who annually shed its skin, and wheat, which would sprout again from seed stored during the winter season, were symbols of rebirth in the hereafter. These attributes, like the entire cartonnage itself, were gilded in an attempt to imitate gold, a material itself imbued with the symbolic values of incorruptibility and permanence. Thus, this anonymous Roman matron is ostentatiously dressed with the means to ensure her resurrection.

24 Head of the Omphalos Apollo

Greece, Athens
Roman copy after an original of 460–450 B.C.
Marble, 12¾ inches (32.4 cm) high
18.166. The Woodward Fund and a gift from A. Augustus Healy

One of the cultural characteristics of the Roman Imperial Period was the propensity to collect copies of famous Greek works of art, some of which were made over five centuries earlier. The originals have, for the most part, disappeared with the passage of time, but a knowledge of and an appreciation for those works is provided by the Roman replicas, which often survive in numbers. Such is the case for the so-called *Omphalos Apollo*, replicas of which have been identified in The Brooklyn Museum, London's British Museum, Paris's Louvre, and Athens's National Museum. The statue is named after an altar, in the shape of a stylized everted navel, or *omphalos*, with which it was found in 1862 in the Theater of Dionysos beneath the South Slope of the Acropolis in Athens. This *omphalos*-shaped altar was a conscious allusion to Delphi, the most famous oracular center associated with Apollo. That site was anciently considered to be in the center of the known world in the same way that the navel was regarded as the center of the body, midway between the crown of the head and soles of the feet.

Apollo, the Greek god of music, archery, prophecy, medicine, and to a lesser degree the care of flocks and herds, was also associated with the loftier, ethical aspects of civilization. He was invoked whenever law codes were ratified and was habitually offered as an example of both the highest moral principles and uncompromising religious tenets. This unsullied, upright god was represented in art as the ideal of youthful, but postpubescent, male beauty, an image consummately captured in this head of the *Omphalos Apollo*. The god is depicted with his head turned slightly to one side, and with his long locks, characteristically parted in the middle of his brow, tied up in a series of braids visible at the back. The eyes and mouth, with its parted lips, are no longer arranged on strictly horizontal planes, a feature that departs from earlier traditions and anticipates that found later in the sculpture of the high classical period. The subtle modeling of the facial lineaments has been somewhat obscured by a disquieting coating of the surface in the nineteenth century with a resolutely unremovable material that attempted to mask the infelicitous restoration of a nose that has since been removed. The treatment of the hair, especially the drill holes in the ends of the locks on the forehead, indicates that this head is a copy of the second century A.D. of a bronze original attributed to the Attic sculptor Calamis.

25 Beasts of Prey and Their Quarries

Egypt
Roman Imperial Period, circa A.D. 300
Painted limestone
14 × 51 inches (35.6 × 129.5 cm)
41.1266, Charles Edwin Wilbour Fund

This frieze, or band of sculptural decoration, is so well preserved and unweathered that it must have once adorned an interior wall of a building. The sculptors have used several different types of drill bits and chisels to sculpture the stone in order to achieve the desired effect of light and shadow across the surface of the composition. Notice how the contours of each of the five beasts stand out vividly from the scarcely visible dark background. That effect would have been originally heightened by the application of paint, faint traces of which are still visible here and there if one looks carefully. The skins of the beasts have been embellished with a variety of lines or dots that would have been filled with black pigment in order to depict each beast as distinctively as possible.

The five animals are, from left to right, a wild boar chasing a hart, a hyena stalking a canine, and a spotted beast. A floral motif, perhaps to be identified as laurel, surrounds each animal and contributes to the feeling that the chase is taking place in a dense forest. Moreover, the attitudes of the weaker animals with their heads turned back are echoed by the S-curve of the tendrils, which likewise turn back toward the spectator's left. Such a compositional device is artfully employed to suggest the ultimate outcome in which the boar and hyena will fell their prey.

In the past, such relief representations have been considered examples of Coptic art, that is, creations of the early Christians in Egypt. Such a designation is inappropriate because much of what has been labeled Coptic art has great affinities in both style and theme with the artistic production of the Roman Empire as a whole. The close parallels between this relief and that commissioned by the Roman Emperor Diocletian for his palace in Split, Yugoslavia, show that this wonderfully playful piece is better regarded as a product of the late Roman Empire.