

An Optimistic Time

George E. Hein

The period described in *Boston Stories* reflects a time in which all of us were affected by the powerful forces then transforming our society....The events of that tumultuous decade that impinged upon us are too rich and extensive to describe in detail here. They have been analyzed and discussed repeatedly in an extensive literature. But there can be little doubt that for both better and worse, they shaped what all of us, including the staff at The Children's Museum, accomplished. The major social/political events include the civil rights and women's rights movements; the Vietnam War and its powerful anti-war movement; the emergence (reemergence?) of protests as a political force, both peaceful and violent; the widespread use of federal statutes and policies to bring about social change, ranging from federal support for education to the Civil Rights Act of 1964; the emergence of new thinking both in the natural and social sciences; and the general loosening of social strictures prevailing in previous decades.

George and I, in parallel maneuvers, arrived in Boston just in time for the 1960s. Although at the time we might have been innocent of the forces that were about to shape what we tried and did, and

INTRODUCTION

Mike Spock

then what followed, looking back we have admitted that our ideas and impulses didn't come out of thin air but were grounded in the times in deeply influential ways.

So I asked George Hein in the chapter that follows, to narrate his personal story as a way to set the contextual stage for both that decade and for *Boston Stories*. George's essay offers a convincing, if not definitive, explanation for what happened to all of us during those "yeasty years." George's memories also hint at the leadership challenges, endemic in the '60s, that will be the organizing theme of *Boston Stories*.

It's hard to conceive how button-down the years after World War II were and to appreciate what an extraordinary opening the '60s turned out to be. You had to be there. It wasn't just that The Beatles, James Brown, and Joan Baez displaced Patti Page, Frankie Laine, and Billy Eckstine in the popular culture in which we were immersed, but it is not an exaggeration to say that those changes were profound and iconic, and that *everything* else—politics, education, relationships, you name it—was up for grabs too.

We didn't have to settle for the world as it was, we could make things better. If you had a good—even a wild—idea, why not give it a shot? It didn't occur to us not to invent new ways of getting things done. We thought we owed it to ourselves and others to ask, why not? And coming from an education (Fieldston School, Antioch College) that encouraged learning by doing, I thought experimentation was more than okay. Try it out and see how it worked. I was taught to expect, even demand, a high level of tolerance for my own and other's mistakes. How else could we find out what was possible—for us and the world?

George's essay gives us a sense of the intellectual currents that informed thoughtful people who were trying to understand how people learned and were taught in the '60s. But with my off-center background and the search committee's charge to make something different and relevant out of the old museum, we adopted a largely atheoretical approach to our work. It wasn't that we didn't have ideas about why what we observed made sense—we were not anti-intellectuals—but our

ideas weren't always grounded in current educational and development theory and research. We came up with all sorts of interesting things that moved us in new and unconventional directions, but we were performing without a net.

In small organizations like ours (staff of seventeen when I arrived) everyone did a lot of everything. In our big house across from Jamaica Pond, each of us led afterschool clubs, took turns inventing paper-and-pencil floor games, and was in the rotation for covering Sunday afternoons. (One day, taking my sons into the Boys Room, we encountered my predecessor, dressed in jacket and tie, working on a john that a neighborhood kid had plugged with paper towels.) Without a directorial model to follow, but with exhibit experience learned from my mentor, Bill Marshall, at two Ohio museums, I moved comfortably into the developer/designer job for our first new exhibit, *What's Inside?* And when the MATCh Box Project was funded, I still held on to my secondary job as codeveloper for its *Grouping Birds* unit. Eventually, my fuzzily defined Renaissance directorship got me into a lot of trouble in the '60s when staff grew, jobs became more specialized, and I failed to adapt to the increasing complexity of an expanding museum.

Boston, a generation late in getting its renewal underway, was a worn out and depressed city when George and I arrived. But when it finally got around to shaking off its depression in the '60s, Boston adopted the strategy of selectively recycling the handsomely rugged nineteenth century commercial buildings and warehouses, and of preserving the winding eighteenth century downtown and waterfront street layout that were also mostly still intact. And it did its redevelopment in such creative and sensitive ways that it didn't get in the way of the development of modern office, retail, housing or infrastructure that would support a city determined to finally enter the twentieth century. George and I shared the physical and economic renewal that was also part of our Boston experiences.

Finally, George's story suggests that a dominant feature of the '60s was an abundance of smart, thoughtful, and generous people, many clustered in the Boston community—artists, craftsmen, scientists, educators, and donors; educational and community organizations; laboratories and high-tech businesses; curriculum development projects. Extraordinary collaborations were spawned. Feeling their oats in ways that added to the sense of unlimited possibilities, many different people were part of the intellectual and creative mix of the Boston area.

So, begin with George's wonderful story. As one contemporary absorbing the insights of another, I think George got it just right. From my point of view the '50s were perfectly awful; on the other hand, while not without its challenges, the '60s were a breath of fresh air. This radical shift made all the difference in what each of us would try and what all of were able to accomplish.

An Optimistic Time

George E. Hein

Incompetence has never prevented me from plunging in with enthusiasm.

—Woody Allen

Mike Spock and I are the same age and moved to the Boston area at approximately the same time, early in the tumultuous 1960s. In his chapter, he describes how his personal attributes and institutional experiences influenced the work included in *Boston Stories*. The rich and turbulent '60s was another important influence on the development of The Children's Museum, as was much previous activity in education and museums, some rediscovered in the '60s. All of us were impacted by those times of great social and political change.

I came to Boston in 1962 as a thirty-year-old to begin my first professional job, teaching chemistry at Boston University. Although the first few years of my life were unsettled, my school experience was conventional for a middle-class child. Learning was easy for me, and once I'd learned English—not so difficult for a seven-year-old—I had no problems attending public elementary and high school in Upstate New York. I attended nearby Cornell University intending to prepare for a career as a doctor, my father's profession, but switched to chemistry after unpleasant encounters with my highly competitive classmates as well as delightful summer jobs in a chemical research laboratory. I continued to graduate school and then spent a few years as a post-doctoral fellow, all of which left me well prepared for an academic career in the rapidly expanding higher education field of the 1960s. When I arrived in Boston, the world felt stable and prosperous to me, despite the Cold War, civil rights struggles in the South, and obvious inequalities in society. I was aware enough to know that I had been lucky in being too young for World War II (my older brother served in Europe); able to avoid the Korean War because science majors who did reasonably well on the Draft Deferment Test (a version of the SATs I'd taken just two years earlier) were not called up; and qualified as a beneficiary of the recently initiated National Science Foundation's generous graduate assistantships, postdoctoral fellowships and research grants to scientists. Whatever social consciousness I could muster was not sufficient for me to think that there was anything fundamentally in need of change in our society; at least nothing that required major commitment from me. I felt free to pursue my middle class life.

In 1962, I was married, had three young children, and believed (naively!) that most major life decisions were behind me for years to come. A year later, my wife

and I had bought a large Victorian house in suburban Newton; she, too, had an academic position; our older children were settled in the Newton schools (the youngest still at home with a live-in *au pair*) and I had established a research program, planted a garden, and built a grape arbor. We had begun a family life in a community of similarly situated young professionals and I was even more certain that I was settled for decades. I recognize now that this view was shockingly narrow. My own limited perspective seems even more incomprehensible in hindsight when I reflect that I was the son of Jewish refugees from Germany, the youngest of a family that had already lived in three countries, that we all had learned (at least) three languages and that my father had last re-established himself professionally with some difficulty at the age of fifty!

By 1972, a short decade later, every aspect of my life had changed. I was no longer a chemist but was on my fourth career as a director of an early childhood educational consulting group. I had become politically engaged through active participation in the anti-war movement; was no longer married; and had become fiercely critical of many aspects of our society.

The period described in *Boston Stories* reflects a time in which all of us were affected by the powerful forces then transforming our society. My own innocence no more shielded me from the drama of the 1960s than did either Mike's awareness of his own complex development or his bold step to assume a position for which he had little formal preparation. The events of that tumultuous decade that impinged upon us are too rich and numerous to describe in detail here. They have been analyzed and discussed repeatedly in an extensive literature. But there can be little doubt that for both better and worse, they shaped what all of us, including the staff at The Children's Museum, accomplished. The major social/political events include the civil rights and women's rights movements; the Vietnam War and its powerful anti-war movement; the emergence (reemergence?) of protests as a political force, both peaceful and violent; the widespread use of federal statutes and policies to bring about social change, ranging from federal support for education to the Civil Rights Act of 1964; the emergence of new thinking both in the natural and social sciences; and the general loosening of social strictures prevailing in previous decades.

What follows is my personal reflection of how the events and moods of the 1960s might have served as a frame for the exciting stories that make up this volume. I can only describe that time through recollecting my own experiences. In 1966, I decided to leave my position as an academic chemist and after some searching I joined the Elementary Science Study (ESS), a project at Educational Development Center (EDC) in Newton, Massachusetts. My motives were mixed, but included dissatisfaction with my closest colleagues, who were mostly more conservative than I, dismay that my own research had become associated with defense-related activities

(and was supported in part by Department of Defense funds) as well as general concerns with education, as I observed my own children's progress through schooling. Joining ESS made me feel that I was associated with more like-minded colleagues, free of the locked cabinet in my office with "secure" files, and actively engaged in a socially important activity, namely improving education.

Our work in the domain of formal education was closely connected to the work at The Children's Museum. That commonality was reinforced by the many personal connections between people associated with the two organizations. For example, Phylis Morrison,

Educational Development Center (EDC) and Elementary Science Study (ESS)

EDC, today a major corporation with hundreds of employees involved in health care, national and international development and education, grew out of Jerrold Zacharias' efforts to improve science education in the United States. Its first incarnation was as the Physical Science Study Committee (PSSC) a project within MIT, that began as a conference convened by Zacharias in December 1956 (well before the launch of Sputnik) and quickly became a full-fledged curriculum project to develop a new high school physics course. Zacharias had the bold idea not only to have physicists write most of the material, but also to include films as part of the pedagogy. In addition, a series of booklets for students on various physics topics was commissioned. As PSSC grew, bringing in filmmakers, teachers, writers and others, some on leave from universities, others as employees and more as consultants, it became necessary to form an independent nonprofit corporation. In December 1958, Educational Services Incorporated (ESI) took over PSSC and moved to offices in Watertown, Massachusetts, with a film studio in an old movie theater nearby. It was unique in the United States (and perhaps the world) as a freestanding organization devoted to developing educational materials. Within a few years, partly because the National Science Foundation (NSF) expanded science education, and because imaginative and ambitious staff proposed new activities in the free-wheeling (some observers called it "disorganized") atmosphere at ESI, new projects were initiated, often springing from one of Zacharias' brainstorming conferences. By 1963, these included, among others, the Elementary Science Study (ESS), The African Primary Science Program and *Man: A Course of Study* (MACOS), a middle school social studies curriculum. ESI had more in common with the new for-profit R&D groups sprouting up on Route 128 in the Boston area than with traditional research and development programs within universities or with curriculum publishers. When the U. S. Office of Education began to fund research and development at an unprecedented level in the mid-1960s (partly as a result of the 1965 Elementary and Secondary Education Act that initiated the now familiar "Title" programs), ESI morphed into EDC and became one of the first federally funded education

R&D centers.

Conversations at ESI about an elementary school science project began in 1960, when there was little science education of any kind in elementary schools in the United States and certainly scarcely any materials-based inquiry curricula. ESI submitted a proposal to NSF for ESS in 1961 and work began even before it was funded. The decision at the National Science Foundation to provide government funds for pre-college education had been politically risky, since public education was considered the prerogative of local school districts and individual states. NSF deliberately supported a range of projects that espoused different educational philosophies. At the K-6 level, NSF funded (among others) the Science Curriculum Improvement Study (SCIS) conceived by Robert Karplus at U.C. Berkeley that had a rigorous Piagetian developmental approach, and a curriculum devised by the AAAS (American Association for the Advancement of Science), *Science-A Process Approach* (SAPA) that followed a strict behaviorist view of learning, attempting to develop a hierarchy of skills and concepts to be learned in sequence. Compared to these projects, ESS was essentially a non-curriculum; a series of units roughly age-appropriate and devoted to individual topics, mostly described by the natural world materials they offered for the students' exploration. The fifty-six units developed over a decade included now commonplace elementary science subjects—*Batteries and Bulbs* begins with the students challenged to light a bulb using only a battery, a wire and a small flashlight bulb—as well as topics such as *Ice Cubes*, *Sand*, *Butterflies*, or *Whistles and Strings*. There were few student workbooks, but extensive and richly illustrated teachers' guides. Assessment was not emphasized. All required considerable input from teachers and were designed to bring materials and opportunities for inquiry into the classroom. ESS is generally considered to be have been most influential in shaping the materials now included in many elementary school science curricula. It also has a powerful legacy in interactive science center exhibits. Some common ones, such as colored shadows, optics tables, spinning tables, and many pendulum activities can be traced back directly to ESS units.

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along with her then future husband, Philip Morrison, was involved in the early period of ESS and later worked at The Children's Museum; my first office mate at ESS, Bernie Zubrowski, subsequently joined the museum staff; Cynthia Cole, who first invited me to Lesley University a few years later, had worked previously at the museum. Also, the actual activities at the two organizations had significant commonality. Our "units" and the museum's MATCH Kits were two parallel approaches to bring materials into classrooms (and shared similar problems) and more important, both groups shared a legacy of progressive education that formed a theoretical and social background to our work. I feel confident that the spirit and atmosphere at the museum couldn't have been too different from what we were experiencing across town in response to the climate of the times.

Confidence in the Future

My memory is that we all had enormous confidence that the future was bright. We believed that whatever we did in our lives, it was likely to be interesting, challenging and not lead to dire personal consequences. When I think back on my first dramatic professional switch (it seemed momentous to me at the time), what now impresses me most is that in leaving a secure profession for which I had trained for a decade, it never occurred to me that I might be out of work, not able to contribute to supporting my family or even forced to take on work that was demeaning (in my eyes), unpleasant or dull. The opportunities, even as I plunged into an unknown professional world, seemed limitless. Besides, there were others who were taking what might have appeared to be similarly outrageous risks only a decade earlier. My more senior colleagues at ESS—public and private school teachers, academic scientists and editors—had come mostly from stable careers to spend a few years in an experimental setting. Younger staff had no difficulty in taking a year or two off from "serious" professional efforts to try their hand at a temporary position.

Spending a few early adult years finding your way either after high school or college is common today, at least for children of the affluent middle class. My own children in the 70s (and more recently my grandchildren) didn't appear to be anxious to follow an uninterrupted trajectory from school to college to settled careers. But it was still novel in the early 1960s to pursue a more flexible path; it was certainly a new attitude for

young professionals. The willingness to take a risk, to try something challenging became familiar at least partially by the experiences of those who came of age during the Second World War. Despite interruptions in their lives, most were now leading rich and increasingly comfortable lives. Higher education opportunities, many financed by the 1944 Servicemen's Readjustment Act (the GI Bill), and general economic abundance—even if not distributed equitably—allowed us to be optimistic about the future and freed us from the concerns and advice of our parents, most of whom had experience of economic hard times and urged us steadfastly to pursue practical, remunerative careers. When presidential candidate John F. Kennedy first suggested the Peace Corps in a speech at the University of Michigan in October 1960 his challenge was novel both in urging young Americans to go to developing countries (international travel, especially to exotic locations, was hardly common then) and in suggesting that service activities unrelated to a direct career path were appropriate for young people. The idea caught on quickly and established a model for our society: In 1961, the Peace Corps' first year, fifty-five volunteers went to several destinations. About 7,300 were dispersed two years later and 15,000 were in the field in forty-four countries by the middle of the decade. Other bold (or escapist) pathways also blossomed in the '60s from civil rights work (such as the Mississippi Summer Project of 1964) to hanging out in Haight-Ashbury. We were all freed from the lingering Victorian rules of conduct that our parents had absorbed as children and the economic crises that had shaped their young adult lives.

Faith in Our Power to Bring about Change

Along with the willingness to try something new was a faith that our actions could lead to significant change. One of my most powerful memories from our work at ESS is that we were convinced that our approach to elementary science education would be a major component of a revolution in U.S. public education. I was confident that our inquiry-based, materials-rich units—we eschewed the idea of a curriculum and insisted on the opportunity and responsibility for teachers to combine our "units" into individually organized curricula—would lead to significant changes in classroom organization, teaching and assessment. At a minimum, we felt they would provide substantial support to the "open classroom" approach and that it would transform

schools. Our model at EDC was the major change in British schools initiated after the Second World War. The rigid class system that exemplified their society was shaken by the wartime experiences. Post-war Labor governments were determined to create a new, more equitable, educational system. The system of examinations and separate tracks for a meager 15 percent of the population that went on to higher education were modified and, especially in the early school years, rich materials and developmentally appropriate activities were introduced into classrooms. What had been started out of necessity during the war, as children and teachers were evacuated from cities into the countryside where teachers had to improvise and *ad hoc* curricula flourished, was transformed into policy in the '50s and '60s. Both art and inquiry science were emphasized as Piagetian approaches to education were introduced in what was called "The Integrated Day." In addition, teachers were given significant individual authority to create curriculum and assess children, although all this was within the framework of a still relatively structured society (compared to the U.S.) and a centrally controlled school system. Jay Featherstone's articles in *The New Republic* in 1967, describing and praising the new educational approaches taking hold in Britain, later published in book form with additional descriptions of similar efforts in the United States., were read widely and were influential in shaping our work. We envisioned similar national impact for our work; the political and social movements associated with the '60s were not about bringing incremental change to society, but about transformation and revolution.

Our challenges to current society at ESS were, of course, modest but it felt as if they were tremendous and that gave us both courage and energy. The scale of any novel practice in disrupting traditional patterns is sometimes hard to judge. For example, in our desire to make classrooms more materials rich, to resemble a workshop more than a space for the use of packaged "kits" (or no materials at all), we thought of suggesting that schools provide individual teachers with a modest credit at local hardware stores so they might purchase small items—plastic cups, straws, containers, etc.—to use with their students. This turned out to be a revolutionary idea, and was seldom adopted, due to the bureaucratic, authoritarian structure of almost all school systems.

Our work at ESS was also part of a larger social agenda that involved scientists (and others) who had been engaged in large-scale military projects during World War II. Our parent institution, EDC, owes its

existence to the drive and commitment of Jerrold Zacharias, a major figure in the World War II scientific effort to develop weapons and defenses. Like other scientists of his time, Zacharias felt that the power of organizing vast numbers of scientists that had resulted in producing the atomic bomb and operational radar could and should also be harnessed for positive social ends. He chose science education as his area and used his extraordinary skills and contacts to create institutions to bring about educational change. Philip Morrison and Frank Oppenheimer, who were associated with both EDC and with the modern science center movement, were part of this community of socially conscious scientists. The overarching conception of a national sense of purpose for a specific goal, a powerful driving force during the war, was still present in the 1960s since most adults, especially influential professionals now in their '40s and '50s had personal experience of the successful war time efforts. There was a palpable sense that publicly funded activities could achieve material and social change in the society.

A larger social vision was never far removed from the practical work of reforming schools. During the war, society had been united in the goal of winning the war. But, it was also generally acknowledged that the task was in pursuit of a greater good, as the slogan had it, "saving the world for Democracy." A similar, overarching vision motivated the people engaged in specific reforms in the 1960s. Reflecting on his work later, Zacharias said,

The reason I was willing to do it [develop a new high school physics course, his first effort in K-12 science education] was not because I wanted more physics or more physicists or more science; it was because I believed then, and I believe now, that in order to get people to be decent in this world, they have to have some kind of intellectual training that involves knowing Observation, Evidence, the Basis for Belief.

Government Support

The enthusiasm for major social actions intended to dramatically improve society was backed up by actual political events. Civil rights legislation, Supreme Court decisions granting more personal liberty, social agendas to combat poverty, providing education and health services to young children (for example, the Head Start program, initiated in 1965) were the background that made our own work match a more general mood of the times and helped to convince us that our efforts would

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Jean Piaget

Jean Piaget (1896-1980) was one of the most significant and influential scientists of the twentieth century. Our modern conceptions of children's intellectual development are derived largely from his thorough empirical work and novel research methods. Piaget was born and raised in Neuchâtel and lived most of his life in French-speaking Switzerland. He was a precocious, academically inclined student who wrote his first scientific paper (on an albino sparrow) at age eleven and became an expert on mollusks while still in high school. He studied natural science at Swiss universities and found his life career when he became fascinated by children's wrong answers and their reasons for them during a year in France standardizing early intelligence tests by administering them to children and discussing their answers with them.



After he became director of the J. J. Rousseau Institute in Geneva in 1921, he developed a rigorous research program with his staff documenting children's intellectual development, based on clinical interviews, often using physical objects or posing challenging questions about the natural

world to find out how children's thinking developed as they grew and matured. For example, if a young child, said, "the moon follows me when I walk" the interviewer would ask, "what happens if you and a friend are walking together and you go one way and your friend goes the other way?" Children under the age of five to six usually answer, "The moon will follow both of us." Somewhat older children may give complex answers, while mature adults will recognize the logical problem involved with the "childish" answer. Other famous experiments involve conservation: when shown a tall narrow glass half full of orange juice and then watching the juice being poured into a wider glass, young children will state that there is now less orange juice than before. On reaching intellectual maturity, it becomes obvious that the quantity of juice has not changed. Piaget recognized the distinct phases involved in this development from confident naïve answers to disequilibrium followed by equilibrium at a deeper intellectual level. The consistency and universality of children's mental development continues to surprise adults when they perform such simple, profound tasks with children. Piaget also carried out thorough observational studies on his own three children during the first two years of their lives (When is a child old enough to play peek-a-boo, and when is a child too old to find this sufficiently mysterious to be interesting?).

His custom was to gather data for a whole academic

year using carefully trained researchers and then to write a book on the findings during the summer months. This style accounted for most of the sixty volumes he published during his lifetime. Piaget created a whole field of research he named genetic epistemology, the biological (developmental) origin of knowledge, and he argued that the mental structures we use to explain our experience go through stages of development so that the internal structure of knowledge is itself changed as we mature. For some, he is seen as the "father" of constructivism. He wrote extensively on a wide range of academic and philosophical topics (about the significance of Comenius, for example) and was a leading intellectual figure of his time.

In the United States up to the late 1950s, when behaviorist psychological views dominated educational research and laboratory protocols modeled on the physical sciences were the norm, Piaget's work was ignored and even ridiculed in American academic circles while his reputation grew in the rest of the world. His elucidation that young children's reasoning about the natural world was more likely to depend on the extent of their concrete actions and experiences rather than referring to theoretical explanations encouraged the use of materials in classrooms. This stage theory of development influenced progressive educational efforts in Europe and the United Kingdom but it was not until the 1960s that American educational psychologists and educators began to appreciate (and read!) Piaget. One of his rare trips to the United States was to a conference sponsored by two NSF-supported science education projects, the Elementary Science Study and Robert Karplus' SCIS program at U. C. Berkeley.

Current cognitive science and worldwide expansion of application of Piaget's clinical interview methods have shown that his stages are neither as universal nor as age-specific as he postulated. Culture can play a significant role in how children respond to traditional Piagetian tasks or questions. Aspects of more sophisticated thinking have been noted in children much younger than Piaget envisioned; while attaining the level of hypothetical-deductive thought that Piaget postulated happened in the teen years, is often not reached until later for many and perhaps never for most of us in some domains of thinking. But the general concept that children's thinking is different from that of adults, that experience with the natural and human world is required for developing minds, and that insight into the actual state of children's minds (and adults', for that matter) is best gained through careful observation of individual children's actions and careful listening to what they say, have become methodological mainstays of cognitive science research.

Like Darwin, Freud, or Einstein in their own fields, Piaget transformed the way we think about children's development, a topic particularly important for education. And like them, his is the most revered name associated with a major intellectual and social movement that resulted not only from his work, but also from the imaginative and industrious contributions of many less celebrated individuals.

also bring about dramatic change.

The high point of this term for government action was achieved in 1965 and 1966, the period of the eighty-ninth Congress. (This session has been described as a "miracle" among other laudatory comments.) Much of the 1960s legislation that supported education, health and child welfare was enacted during these first two years of President Johnson's second term, when large Democratic majorities in both houses made possible the passage of landmark legislation in support of his Great Society agenda. Both the National Endowment for the Arts and the National Endowment for the Humanities were legislated into existence in 1965; and state agencies, such as the Massachusetts Council for the Arts (now the Massachusetts Cultural Council) also came into existence then. The federal support for the arts was based on a model created by Nelson Rockefeller as governor of New York earlier in the 1960s.

The National Science Foundation (NSF), founded in 1950, originally stayed away from funding pre-college education, because they feared backlash if they interfered in public education, an acknowledged prerogative of state and local governments. Partly through the efforts of Zacharias and his colleagues, NSF began to tentatively fund secondary school science in the mid 1950s with big increases in funding after the Soviets' successful launch of Sputnik in October 1957. By the 1960s, NSF was supporting a number of elementary science curriculum projects (including ESS), teacher training and had expanded its agenda to include social sciences. By late in the decade, they had begun to fund informal science activities, including work in science centers and children's museums.

And these new agencies and new directions were not just symbolic government acts; they brought significant financial backing. In its first full year, FY 1967, NEA's budget (converted to 2007 dollars) was \$49.7 million, but by the early 1970s, under Nixon, it grew to an astonishing \$265.7 million in FY 1974. The National Science Foundation was also generous in support, first for formal education projects like ours at EDC—over its ten-year life span, ESS received close to \$50 million (in 2007 dollars) for curriculum development, a princely sum compared to today's government awards for similar projects. As is often the case, private funding, large and small, followed the government lead in providing support for education and culture. The 1960s also saw an expansion of foundation funds for education and other social causes. The Ford Foundation was the most notable example: although founded in 1936, it greatly expanded activities in the '60s, and as the older generation of Ford family members died and left huge estates to the foundation, it became the largest philanthropy in the U.S. at that time. And, similar to the Gates Foundation today, education was one of its prime beneficiaries.

The enormous political impact of federal education legislation today—no one can deny that "No Child

Left Behind," the political title of the latest reauthorization of the Elementary and Secondary Education Act of 1965, casts a heavy shadow on all education—is a legacy of the same period. But the general attitude and interest in education then was dramatically different. NSF followed a policy of "let a 100 flowers bloom" and deliberately funded projects with different philosophical and pedagogic bases. The "open classroom" model, as well as major efforts to improve urban education were funded with few restrictions that "scientifically based" research needed to demonstrate that they were successful over short periods. When the federally funded Follow Through Program (to "follow through" on the demonstrated gains of children in Head Start by providing comprehensive services to children in the early years of public school) was initiated in the late 1960s, it was conceived as an experimental program that would test the efficacy of various educational approaches (ranging from strictly behaviorist ones to ones modeled directly on the British experience). After many years, the research on the various approaches concluded that the intra-program variance in student achievement was greater than the differences between competing approaches. Educational ideology proved to be less important than local conditions for implementing any educational improvements.

Educational Theory

Among the major changes in the United States in the 1960s was a gradual, but progressively more influential, shift away from behaviorist views about human learning. The range of programs that merited federal funding mentioned above was evidence of this change. At the beginning of the decade, schools of education were not only dominated by behaviorist, stimulus-response approaches to research and teaching, but were resistant to other views about how humans learn, how teaching should be carried out. Child development research and practice were beginning to acknowledge that learning was complex, involved a range of influences and needed to be examined more holistically, *in situ*, than was imagined in the behaviorist paradigm. But Piaget's work, influential in Europe and available in English translation beginning in the 1920s was essentially ignored in the U.S. From the behaviorist perspective, it was considered subjective, biased and not rigorous enough. If it was discussed in academic literature, it was frequently ridiculed as irrelevant and of limited interest. Jerome Bruner and others began to champion his work in the late 1950s, but it received only scant mention in the schools of education that produced most of the teachers in the United States. Not until James McVicker Hunt's *Intelligence and Experience*, published in 1961, was Piaget's work described in detail in a popular text for education students. As far as I know, in 1971, teaching science education in the School of Education at Boston

John Dewey

John Dewey (1859-1952) is considered by many to be America's greatest philosopher. Born and raised in Burlington, Vermont, he graduated from the University of Vermont and then taught high school sciences and algebra for two years before deciding to study philosophy at Johns Hopkins (at that time the only U. S. research university comparable to European ones). In 1884, he obtained a position in the philosophy department at University of Michigan, where he met his wife Alice, a student who lived in the same boarding house. In 1894, Dewey accepted a position as chair of three departments—philosophy, psychology and pedagogy—at the two-year-old University of Chicago.



Within a year he established a laboratory school (his wife as principal), and wrote some of his earliest works on education. In 1904, when President Harper reorganized

the university's departments and subsumed the school under different leadership, both Alice and John resigned and the family moved to New York, where Dewey taught philosophy (and psychology in the early years) at Columbia University for the remainder of his career.

The couple had six children, two of whom died young; both while the family was on one of their frequent trips to Europe. In 1908, the Deweys adopted an eight-year old Italian boy during another European vacation. Alice died in 1927 and Dewey remarried in 1946 at age 87. He and his new wife adopted two young Canadian children.

When Dewey began studying philosophy in the 1870s, most professors in the field were Protestant clergymen. Dewey set out quite early to develop a new, comprehensive system of philosophy based on William James' ideas about pragmatism. His system emphasizes the importance of experience and encompassed all aspects of life as it is lived. He rejected metaphysical absolutes, final causes or ideal forms and dualisms such as the categorical distinctions between mind and body. In one of his most influential books, *The Quest for Certainty* (1929), he criticized all previous Western philosophy for assuming that certain knowledge was attainable, arguing that life was uncertain and in constant flux and any philosophical system needed to accommodate this condition. *Democracy and Education* (1916) spelled out a detailed philosophy of education that has influenced all progressive educators and is still widely read. In it, he argued that "progressive" education was the appropriate educa-

tion for any society that wanted to progress towards a better social condition, meaning more democratic and with increased social justice. In this, he was reacting to circumstances of his time, not so different from today, of huge gaps between rich and poor, erosion of civil rights and xenophobic attitudes towards immigrants.

Dewey was a prolific writer as well as a profound thinker. During his long life he was considered America's leading public intellectual and delivered innumerable talks to academic, political and cultural audiences and wrote numerous essays and book reviews. The Center for Dewey Studies has published his complete works in thirty-seven volumes that cover every possible domain of philosophy, including not just pedagogy and political philosophy, but fields ranging from logic to aesthetics. His 1934 volume, *Art as Experience*, grew out of his long association and close friendship with Albert C. Barnes, whose magnificent art collection was intended as a pedagogic showcase in the manner that Dewey's Laboratory School was intended to explore and illustrate best pedagogic practices.

Personally, Dewey was a mild and gentle man. He and Alice lost two young children and later two grandchildren, and his wife died when Dewey was sixty-six. Despite these losses, he lived another quarter century and seems to have been optimistic and productive most of his life. He loved farming, wrote romantic poetry for a time in mid-life, and gave speeches and seminars constantly. He was a founder, active member, and later in life often honorary figure, for countless academic, political and cultural organizations. He enjoyed travel and besides the frequent European trips, Alice and he visited several countries that underwent revolutionary changes in the late nineteenth and early twentieth century: Japan (1919), China (1919-21), and Turkey (1924). Later, accompanied by one of his daughters or colleagues, he added Mexico (1926 and 1937), Soviet Union (1928) and South Africa (1934) to this list.

The most striking aspect of Dewey's work for me is its relevance today. Whether reading his description of schools as they are and his ideal model in *The School and Society* (1900), his analysis of *How We Think* (1911), or his views on politics in a democracy in *The Public and Its Problems* (1927), I'm struck by the contemporary tone. Dewey's narrative style reflects his nineteenth century roots and he is often considered difficult to read. However, increased acquaintance with the works (and rereading them) allows his thoughtful critiques of common human practices, his faith in democracy, his fierce rejection of traditional metaphysics and dualisms, and his powerful arguments for accepting life as it is with all its uncertainty and difficulties as well as delights, to shine through.

University, I offered the first course on Piaget in that graduate school.

Jerome Bruner, an influential figure for both The Children's Museum and EDC, has written about the struggle of the newly emerging fields of developmental psychology and cognitive science to break out of the restrictions of behaviorist thinking and force a "cognitive revolution" by invoking the methodologies widely used in other disciplines to study how people learn. In 1990, reflecting on the effort to accomplish this, he wrote:

Now let me tell you what I and my friends

thought the [cognitive] revolution was all about back in the late 1950s. It was, we thought, an all-out effort to establish meaning as the central concept of psychology—not stimuli and responses, or overtly observable behavior, not biological drives and their transformation, but meaning. It was not a revolution against behaviorism with the aim of transforming behaviorism into a better way of pursuing psychology by adding a little mentalism to it. Edward Tolman had done that to little avail...The

John Amos Comenius

John Amos Comenius—the last name is the Latinized form of Komensky and the middle one was bestowed on him by fellow theology students in recognition of his love of learning and of mankind—was a towering intellectual figure in the seventeenth century. He became a priest and later bishop in the Protestant/



Moravian Unity of Brethren and spent a lifetime trying to bring about unity (or at least peaceful coexistence) among contending forms of Protestantism at a time of particularly fierce military struggles for dominance among European Christian

factions. He even participated in efforts to reunite Protestants and Catholics. His own Brethren were exiled from Moravia when Catholic princes gained power and he lived precariously in exile for the rest of his life. For many years, a large settlement of Unity of Brethren survived in Leszno, Poland, under the patronage of a friendly nobleman allied with the Protestant Swedish crown, but always in danger of expulsion as the tides of the Thirty Years War ebbed and flowed in their favor. At age sixty-five, Comenius lost all his possessions along with a large library (which contained all his unpublished work, including a huge Czech-Latin dictionary on which he had worked for forty-six years) when Leszno was burned to the ground by Spanish troops. This was only one of a series of tragedies during his life; he had been orphaned as a teenager and a decade later bereft of his first wife and children, both calamities due to disease.

Besides a huge output of theological works, most promoting tolerance and love for fellow humans based on his deep Christian faith, others expressing his mystical faith, he took up pedagogy as his pastoral duties included education—schools were almost exclusively sectarian at that time, each affiliated with one or another church group. Unlike most clerical pedagogues,

whose intolerance towards non-Christians and also towards adherents of other Christian sects was echoed in their schools, he argued that all men were children of God, and that "there are three fundamentals upon which the unity of mankind rests: natural unity of our common humanity; individuality of each person; and, finally, free will." (Spinka, p. 109). He preached that school should be pleasant for children and that corporal punishment be diminished and limited to dealing with transgressions, not, as was common, used as a prompt for intellectual effort. In Comenius' schools, children learned through experience, not only from texts. They produced plays, and music was taught as well as other arts. He advocated a developmental curriculum, adjusted to the progressive ages of children and that curriculum should start with the vernacular, not Latin (and certainly not with classics that children learned by rote but didn't understand). He produced one of the first picture books to facilitate learning about the world and advocated compulsory education for all including the poor and girls. Above all, he had fierce faith that his form of Christian education could save humanity and eventually lead to a heaven on earth.

In 1642, he was invited to Sweden to reform their school system and set it up based on his principles. There he was undermined by more partisan clerics who disagreed with his pansophic views and his continuing efforts at religious reconciliation. He was also bitterly disappointed that at the end of the Thirty Years War in 1648 Sweden allowed Moravia to be governed by the uncompromising Catholic Hapsburgs, perpetuating exile of his brethren. At other times, sympathetic sponsors invited him to England and Hungary to develop school systems (he refused other offers) but repeatedly adverse political climates thwarted his efforts. He ended his days, still an exile, in The Netherlands continuing his writing (all together he published well over 100 major works) and efforts at religious reconciliation.

While in England in the mid 1630s, it is thought that he was offered the presidency of Harvard, a young college in the wilderness in the British colonies.

Spinka, M. (1967/1943) *John Amos Comenius*, New York: Russell & Russell.

cognitive revolution, as originally conceived virtually required that psychology join forces with anthropology and linguistics, philosophy and history, even with the discipline of law.

It took some time for these pioneers to receive acceptance in many schools of education and the associated research approach of what became known as naturalistic or “qualitative” methodologies, long the staple of anthropologists and sociologists. In the early 1970s, students at most schools of education who wished to submit doctoral dissertations that used such methodologies still had to find committee members outside that school to supervise their work. This tension between various research traditions still exists, and is influential in policy decisions—most evident in the privileged, but hotly contested, position that “standardized” test results have in national discussions about education and former President George W. Bush’s administration’s championing of “scientific” research. But in many current communities of both research and practice, the predominant models are based on socio-cultural models of learning, holistic concepts of meaning-making and expanded views of what constitutes the basis of human behavior. The 1960s were a time when an expansive, liberal social climate allowed more leeway for both practitioners and researchers to begin to accept these approaches and that encouraged us to pursue richer concepts of human development and behavior.

The Larger Picture

When I joined ESS, I entered a new world both intellectually and practically. Developing science materials for elementary school children required going to classrooms and trying out activities with actual children, a situation dramatically different from mixing chemicals in a flask. And all my reading of the *Journal of the American Chemical Society* was of little use in attempting to understand how people learn. I began my education with the kind assistance of experienced staff learning about the significance of Piaget’s findings that thinking itself *developed* and that his clinical interview research style was a valid approach to learning about this development, and I was introduced to the wonderful example of the post-World War II British school movement. Several ESS staff members had visited British schools and some had come from progressive private schools in the U.S. (primarily Shady Hill School in Cambridge) and thus

also had a familiarity with John Dewey’s important educational writings and the example of his experimental school. But it took some time for me to realize that what we were proposing and implementing was only the latest phase of a decades-old—today, forty years later, we can say century-old—progressive education effort to change schools. The British literature that was so influential was itself based not only on their experiences during the war, but also on their own tradition of progressive education, derived from earlier work of a generation that had applied Dewey, as well as Piaget to their society. More directly, both the Shady Hill veterans at ESS and David Hawkins, the first director, were knowledgeable and clear that what we were doing was a version of the progressive education movement. Dewey had already written about the importance of unbolting the school desks from the floor, on using the natural world as a starting point for curriculum and on harnessing children’s interest and curiosity to provide teachable moments. While I thought I was contributing to inventing the world, we were actually reapplying older ideas.

A similar historical framework hovered over the activities at The Children’s Museum. Providing kits for classroom use goes back to the very early 1900s. Both children’s and other museums pioneered developing interactive exhibits and taking the objects out of cases as long ago as the first children’s museum, founded in 1899. As Mike suggests in his autobiographical article, it is probably not a coincidence that the Ethical Culture School—where Dewey sent his own children and where he lectured frequently—instilled in him as well as in Frank Oppenheimer models for interactive learning they expressed in their museum work decades later.

Politics and Pedagogy

Our work in the 1960s at ESS and at The Children’s Museum, was about educating children in the broad sense of providing for them what Dewey would call “educative” experiences. It didn’t take too long for me to realize that despite my own ignorance when I began, the activities we were proposing and the rationale for their existence came from a long tradition and were backed by thinking and practice that went back at least to the days of Comenius in the seventeenth century. Johann Amos Comenius, 1592–1670, was a Moravian clergyman who was critical of traditional harsh educational methods and developed a gentler, kinder pedagogy remarkable for

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Work to democratize education, to improve the opportunities for all children and to provide rich learning experiences cannot succeed without simultaneously addressing other impediments to achieving a just society. Consciously or not, our work in the 1960s was carried out in an atmosphere that was supportive, despite the continuing problems that faced us. I don't know how much the staff at The Children's Museum, anymore than I, was aware of the legacy they were continuing or how much their work had a political influence as well as shaping the future of museums. The combination of novelty, confidence and financial support made bold initiatives relatively normal.

his time. He is credited with writing the first texts that used illustrations to help children learn. Piaget wrote a laudatory introduction to a collection of his writings published by UNESCO.

We also did our work under relatively free and collaborative conditions. There was a minimum sense of hierarchy at ESS (and I suspect at The Children's Museum). We collaborated, were free to experiment and had few formal reporting responsibilities. The culture was liberal and trusting. It is only in recent years that I have come to realize the organic relationship between the nature of the working environments where we developed these progressive practices and the political agenda of progressive education. I owe this understanding to continuing to read Dewey, especially in the most recent decade. Dewey wrote that he considered *Democracy and Education*, his major pedagogic treatise, "for many years, the book in which my philosophy . . . was most fully expounded." He meant that his philosophy as a whole, including his political views on the importance of democracy (note the title of the pedagogic treatise) and social justice, were covered in that book. And they certainly are, as he constantly links his views on education with his critique of anti-democratic practices. Dewey also argued that democracy should be dominant, as much as possible, in the administration of educational institutions themselves.

The origins of progressive education are inseparable from the larger social and political climate that spawned it. The very name, "progressive education" makes the connection to Progressivism. The reference is to a progressive society, one that, in Dewey's words, progresses towards more democratic practice and greater social justice. Especially today, as I look back on Dewey's time it becomes clearer that the application of progressive ideas in museums and schools was part of a more comprehensive response to social conditions. In the early 1900s many of the conditions we still face today were preva-

lent: huge gaps between the rich and the poor, fierce debate about immigrants and their impact on our society, attacks on civil liberties and an expression of American imperialism in foreign policy. The Progressive agenda addressed all of these. The connection between various approaches to social reform weren't always clear to me as I joined in the educational and political activities in the 1960s. I was not alone. Many were surprised when Martin Luther King, Jr., linked his campaign for civil rights and for overcoming poverty with anti-war sentiments. But his later speeches made clear that social problems don't exist in isolation but are connected to the structure of the society in which they arise. Work to democratize education, to improve the opportunities for all children and to provide rich learning experiences cannot succeed without simultaneously addressing other impediments to achieving a just society. Consciously or not, our work in the 1960s was carried out in an atmosphere that was supportive, despite the continuing problems that faced us. I don't know how much the staff at The Children's Museum, anymore than I, was aware of the legacy they were continuing or how much their work had a political influence as well as shaping the future of museums. The combination of novelty, confidence and financial support made bold initiatives relatively normal.

The problems that call for progressive efforts are, obviously, still present and in many ways reflect the social conditions of the early twentieth century more than they do those of the '60s. The gap between the rich and the poor is widening after narrowing earlier; we are more engaged in foreign wars than just the one conflict in Vietnam, and the political climate is less supportive of civil rights than in the 1960s. But these danger signs only serve to emphasize the importance of continuing the struggle for progressive museums and progressive education today. They serve to remind us of the significance of *Boston Stories* today.