THE ART OF CREATING A SCHOOL: THE ILLINOIS MATHEMATICS AND SCIENCE ACADEMY, 1979-1986^(MATHEMATICS, SCIENCE)

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THE ART OF CREATING A SCHOOL:

THE ILLINOIS MATHEMATICS AND SCIENCE ACADEMY 1979-1986

A DISSERTATION SUBMITTED TO

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IN CANDIDACY FOR THE DEGREE OF

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BY

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Heartfelt gratitude is also extended to my professional colleagues, and most of all to my loving family and friends for their patient support and encouragement during this time consuming project.

For students, at all levels,
who challenge and expand the learning and teaching ability of educators . . .
For educators,
who dare to respond by taking the essential creative risks . . .

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LIST OF ABBREVIATIONS

BHSS	Brooklyn High School of Science
CPEE	Corridor Partnership for Excellence in Education
Fermilab	Fermi National Accelerator Laboratory
FFL	Friends of Fermilab
IIT	Illinois Institute of Technology
IMSA	Illinois Mathematics and Science Academy
IRC	Information Resource Center
ISBE	Illinois State Board of Education
LSMSA	Lousiana School for Mathematics, Science and the Arts
NCSSM	North Carolina School of Science and Mathematics
NIU	Northern Illinois University
SSC	Superconducting Supercollider
VIA	Valley Industrial Association

CHAPTER I

INTRODUCTION

The art of creating the Illinois Mathematics and Science Academy, (IMSA) covered in the following pages, occurred over a period of seven years. The events took place between the summer of 1979, and 'move-in' day, September 7, 1986, the day the students arrived on the IMSA campus for the first time.

Located in the Fox River Valley community of Aurora, Illinois, the Illinois Mathematics and Science Academy has earned international recognition for its unique curriculum and teaching strategies.[1] It has grown into the most renowned three year residential math and science high school in the nation. Each year more than 160 gifted high school students from all over the state of Illinois join its community of close to 800 students. Approximately 99% of its graduates accept invitations to attend institutions of higher education, with an average of 45% of the graduates staying in Illinois.[2]

When it began its "life" in September of 1986, the Academy had "210 gifted high school students, twelve creative faculty members, a list of twenty-one courses, no residence halls, no computers, no library books, limited funding, many unanswered questions and an uncertain future. Students lived in converted classrooms while the first residence halls were being built."[3]

What attracted the students, faculty and staff to what appeared to be an unstructured think-tank of talent? The IMSA pioneers believed in the possibilities. They took a risk. The possibilities on which they set their sights evolved into amazing realities.

The Art of Creating A School: Seven Phases

What can the creation of IMSA teach us about the art of creating a school? The Academy evolved in seven distinct phases: (1) a specific purpose for IMSA's existence was defined; (2) support from businesses, educators, scientists and the community was developed; (3) stable financial backing was established; (4) collaborating administrative teams were formulated; (5) an appropriate site was purchased and renovated; (6) students were recruited; (7) faculty and staff were employed.

In the "art of creating" the Academy, the most essential phase was the first; the definition of a specific purpose for IMSA's existence. Without a clearly defined purpose, the next six phases of the Academy's creation would have been difficult, if not impossible, to accomplish. Although it can be argued that all seven phases had to occur if the creation of the Academy were to be successful, it would be difficult to determine if the last six phases had to have been sequential.

Perhaps that is why the creation of the Academy can be considered an "art." Essential characteristics of art, like phases of creating a school, must be present, but they may remain unpredictable in their order of development. The order, the design, the combination of colors, texture, the depiction of culture, the unexpected patterns that arouse deep reactions, rest in the hands of the artists who assemble the masterpiece.

The individuals who nurtured IMSA into existence were "creative artists," or "creativists." The most distinguishing characteristic of the Academy's "creativists" was their ever-present, unmitigating, unwavering, passionate determination to 'will' the Academy into existence against all odds. The fact that the Academy exists today is a tribute to their dauntless creative, artistic approach to strategizing successful solutions to what may have appeared, to less courageous individuals, as insurmountable challenges.

Their artistic passion was, and continues to be, fueled by a belief in the purpose of IMSA - to cultivate the untapped talents of gifted high school students throughout the state of Illinois, a resource desperately needed to create a future high-tech workforce. It was a purpose not being fulfilled by any other existing school in Illinois. It was a clearly defined, unmet need. The establishment of IMSA's purpose marked the beginning of the seven year quest.

A drawing used on many of the first IMSA documents reflected the "art" of creating IMSA (see figure 1). The pen and ink rendition of the Grecian "volute crater" or vase by Fermi National Accelerator Laboratory (Fermilab) Designer, Angela Gonzales, appeared for the first time in December of 1983, on the cover of the original IMSA proposal, "The Illinois Science Academy." For IMSA, the images depicted on the "volute crater" and the historical significance of the vessel represent the value of human intellect and the essential blend of science with art, human errors with successes, discoveries with visions (see appendix 1). The artist, Angela Gonzales, explained the origins of the design:

ILLINOIS SCIENCE ACADEMY: "GRECIAN VASE"

Figure 1

The Grecian Vase pen and ink drawing by Angela Gonzales, Fermilab, was designed in December, 1983, as the cover of the original proposal, the "Illinois Science Academy." It was frequently used as a symbol for the Academy before a formal IMSA logo was adopted in 1986. The symbolism of the vase's ornamentation is explained in Appendix 1.

> The "volute crater" or Grecian vase is a vessel which dates back to the 5th century, B.C. It was found to be used by the Greeks to mix water with wine. The vessel was often ornamented with illustrations documenting an individual's deeds of great merit and then presented as an award to individuals for their accomplishments. The "volute crater" became cherished in every country of the world as an object of great value. Most country's riches are measured in copper, gold or silver. The "volute crater" was created not from gold or silver but from mud, heat, and intellect. These beautiful pieces of art were made from nothing except brains, something from nothing. What the Greek artists created centuries ago is today still cherished in every country of the world as an object of great value.[4]

The "volute crater" provides an excellent analogy to the Academy's evolution and current function. IMSA is a valuable object of educational "art" that was created from "nothing" and brought into existence through pure intellect.

Using the concept of the "volute crater" as a form of art, the beauty and function of the Academy, like the Grecian vase, can be understood as an artistically created, highly valued vessel. The "mud" or "clay" of the Illinois Mathematics and Science Academy was "thrown" by the needs of gifted students and the growing economic and technological issues of the 1980's. The collaborative fingers of scientists, educators, businessmen, legislators and community leaders delicately formed it as it spun on the "potter's wheel" of public perception and opinion. The "fiery kiln" of politics, finance, and location strengthened its purpose.

IMSA, like the timeless beauty of the Grecian vase, continues to be adorned by the creative legacy of its graduates as it attracts, harbors, and matures the raw talent, creativity, and curiosity of gifted high school students from all over the state of Illinois.

As the students reside within the Academy, they are mixed and stimulated by the realistic influences of science, humanities, and real world issues. Once appropriately

"aged," the rich resource of students is poured from the vessel into a society that absorbs their talent and nurtures them to higher levels of achievement and productivity.

The following pages document the art of creating the Illinois Mathematics and Science Academy. Throughout the document, individuals and organizations responsible for the creation of IMSA are referred to as "creativists." Correspondence, newspaper articles, personal interviews, and authentic documents from a variety of sources were researched, assembled, and organized to create the following story. Quotes from the individuals who lived the story of IMSA's development are used frequently throughout the document to authenticate, whenever possible, the true ideas, thoughts, and beliefs actually experienced during this historic period of time.

The chapters are organized to reflect the seven phases of IMSA's creation. IMSA established a unique purpose. The "creativists" rallied the support of influential individuals and groups. They negotiated finances with an eye toward the needs of its future. They formed collaborative teams to administer and manage its growth. An appropriate site was identified, renovated, and eventually purchased. Students were recruited and faculty and staff were hired. As a result, IMSA students and the IMSA staff joined together for the first time on September 7, 1986.

IMSA continues to successfully expand its creative approaches to serve its defined purpose. The Illinois Mathematics and Science Academy has become a legend in the world of education.

CHAPTER I

NOTES

[1] IMSA Annual Report, 1996, Illinois Mathematics and Science Academy Archives, Aurora, Illinois.

[2] Connie Jo Hatcher, "The Illinois Mathematics and Science Academy: A Case Study of the Creation of an Organizational Culture," Dissertation, 1990, Northern Illinois University, Illinois Mathematics and Science Academy Archives, Aurora, Illinois 47.

[3] IMSA Admission Brochure, 1996, Illinois Mathematics and Science Academy Archives, Aurora, Illinois.

[4] Angela Gonzales, interview by author, 9 July 1997, phone, Fermilab, Batavia, Illinois.

CHAPTER II

DEFINING THE PURPOSE: "WHY A SCHOOL?"

> It is here within this volume of space, in middle America, that we will make history, that legends will be told and retold about how IMSA began . . . I think it is crucial that we be very sensitive to the fact that we will be part of legends . . . the beginning of a dramatic evolution of science education . . . a response born in the prairies to the alarms sounded in Washington and throughout the nation . . . [1]
>
> Dr. Leon M. Lederman, Founder
> Illinois Mathematics and Science Academy
> August, 1986

The Illinois Mathematics and Science Academy (IMSA) is a legend. With each graduating class, it continues to cultivate its own growing legacy in the ever-evolving world of education. Like most legends, it began as the dynamic vision of a group of individuals. They shared the collective passion and determination to create an educational environment that would unbridle the talents of gifted high school students while grooming a high-tech workforce for the future. What natural force of creativity and talent bonded the IMSA "artists" in the creation of a school that would challenge the existing approaches to traditional education? The natural force that bonded the artists was the fact that the Illinois Mathematics and Science Academy had a clearly defined, specific purpose for coming into existence. The Academy would fill an unmet need. There was a unique purpose for its conception and creation.

The Economic Climate of the 1980's

In the 1980's, the United States was in the midst of an economic shift. Manufacturing and heavy industrial regions were diminishing, and a wave of high technology industries were beginning to flourish. Resource pools of employees in midwestern cities were being drastically reduced by the "brain drain." High-tech industries were rapidly developing in Texas, California, and the Southwestern United States. A mass exodus from the midwestern states began to occur. Experienced employee populations and 'raw talent' from colleges and universities were being seduced by the environment and the economic climate of the emerging and multiplying "Silicon Valleys." Communities and well-established industries, unprepared for this shifting economy, watched helplessly as the "cream" was being "skimmed" from their existing and future workforce.

Illinois joined other neighboring states in desperate investigations to identify methods of revitalizing local economies. A crucial question emerged. What incentives currently existed or needed to be developed to attract and maintain highly qualified employees and new populations of emerging talent to remain in Illinois?[2]

Industry was not alone in its concerns about the shift in economies. In addition to the "brain drain" of qualified employees, the National Science Foundation was qualifying what most individuals in the fields of science and mathematics had intuitively known for years. High school science and math education in the United States was shockingly below world standards and threatened the nation's competitive position in the world's economy.[3] The findings of the National Science Foundation and other sources of assessment which followed forced educational institutions to become conscious of the

direct link between educational curriculum and its effect on the readiness of the workforce. There was a growing critical need to meet the "shift" in employment trends from industry to high tech business.

High schools and universities throughout the nation began a crucial self-evaluation. A pivotal question was posed. Were schools adequately preparing students to fit the rapidly changing profile of the high-tech work force? Corporations were beginning to take a closer look at the quality of schools and the direct relationship between a student's academic achievement and his or her ability to be a productive employee in a high-tech working environment. To the high-tech workforce, the presence of quality community schools was becoming an important factor in their selection of a new "homestead."

The format and environment of three unique public schools founded during the previous decade began to draw the nation's attention: the Bronx High School of Science in New York (1972); the North Carolina School for Science and Mathematics (1978); and the Louisiana School for Mathematics, Science and the Arts (1982).

Each of these schools had their own unique environment. Each was successful in custom designing their own distinct, practical, yet creative, combination of courses for study.

Although each of these schools had its own unique attributes, they all shared common characteristics. They were all public schools. They were all funded by their respective states. They emphasized the study of math and science. Most of their students were within the high school age group. They all served the unmet needs of gifted students.

The Unmet Needs of Gifted Students

> We are concerned with the extraordinarily gifted person--the upper few tenths of one percent of the secondary-school population of Illinois. It is our conviction that, in spite of the existence of many excellent schools in this state, this special breed of student is too often insufficiently challenged, with a consequent loss of potential to the individual and to the society that he or she might have served.[4]

The connection between the natural, untapped resources inherent in the talents of gifted students and the needs of the high-tech workforce were just beginning to be recognized. Dr. Leon M. Lederman, a Nobel Prize winning scientist and Director of the Fermi National Accelerator Laboratory (Fermilab), played an instrumental role in fueling the movement to create a learning environment for gifted students in Illinois. He recognized that their talents, left unnurtured, often "died" in the existing, more traditional educational institutions. Dr. Lederman believed that the establishment of an Illinois Mathematics and Science Academy for the gifted would "have dramatic effects on the recruit[ment] of industry [to Illinois], especially those industries dealing in advanced technology."[5] Cultivating the talents of gifted students as a natural resource would benefit the student, the community, industry, and the future high-tech workforce.

"The creative child is a rare blessing and, at the same time, represents a tremendous responsibility. Our system of education over the past decade has seriously neglected this group of students,"[6] Dr. Lederman said. When asked if he could identify the exact moment he first became committed to the creation of the Illinois Mathematics and Science Academy, he recalled having been deeply affected by a short story, "Young Archimedes," by Aldous Huxley, which he had read years ago.

The story by Huxley revolves around the teacher/pupil relationship of a very young, brilliant, but impoverished child and an accomplished scientist. While strolling along a beach, the vacationing scientist notices a child scribbling diligently in the sand with a stick. Coming closer, the scientist is amazed to discover that the child is manipulating complex mathematical equations. Fascinated by what he sees, the scientist returns daily to tutor the boy, who subsequently reveals inherent brilliance in math, science and music. The scientist approaches the boy's father and offers to pay for the boy's education. The father refuses the offer. It was, according to the father, the boy's duty to remain with the family. After a temporary separation from the boy, the scientist returns to the town to find that the life of the brilliant child has ended in tragedy.

The child had died. He had been forced to exist in an environment that tortured his soul, an environment which opposed his nature, where he did not feel he would ever belong, where he could not be nurtured. ". . . And this beautiful small being was dead; and the spirit that inhabited this form, the amazing spirit, that too, had been destroyed almost before it had begun to exist."[7]

Dr. Lederman believed that the story tragically illustrated how the resource of talented, gifted students, like a young Archimedes, can be lost if not properly nurtured in a challenging learning environment.

Gifted students risk becoming misfits. They may evolve into troublemakers in their classes because they are bored. They may be isolated as "geeks" by their peers because their natural propensity for higher thinking is considered "unattractive." The reaction of

their teachers and fellow students to some questions they raise in class may cause them to retreat into a submissive or even shameful silence. Said Dr. Lederman:

> If asked about their own high school experiences, many of the successful scientists at Fermilab will tell you that they did not fit in. But then, the Fermilab scientists are the survivors who matured into their professions. What becomes of the unknown number of students who do not survive the system? This will never happen to a student at the Illinois Mathematics and Science Academy. They will always know where they belong.[8]

Forest Etheredge, Republican Senator from Aurora, Illinois was one of the major legislative proponents of the Academy. He believed:

> Many gifted students dislike standing out above their classmates. They just want to be one of the group. They won't have this worry at the Academy. Not all high school dropouts are students who can't make it. Many high school dropouts are actually gifted students who should be encouraged to continue in school. We always felt that the gifted could fend for themselves, but it is not true. They are the most underserved group in our schools. There is little done for the gifted student who needs help as much as those at the other end of the spectrum. They are being taken for granted, which means we are losing a large resource in this country. IMSA will help gifted students.[9]

F. Borden Mace, founder of the North Carolina School of Science and Mathematics (NCSSM) and IMSA's Interim Director further explained:

> Part of the IMSA goal is to develop future leaders for our technological society, men and women of character, with a sense of service, as well as scholars in mathematics, science, humanities and the arts. It also has, as stated over and over, a second and equally important mission of raising educational standards throughout the state. [10]

> In the US, we have guaranteed that education will never be very poor, but we have also guaranteed that it will never be very great . . . we built in a minimum, but not a maximum . . . [IMSA] is a great opportunity to break away from that.[11]

The first phase of IMSA's development had taken place. Its unique purpose had been defined: to tap the unbridled resource of gifted students in order to meet the needs of an emerging high-tech society.

The importance of "cultivating" the natural talents of gifted students in Illinois gradually became more apparent as resourceful groups of individuals in the Fox River Valley began to accelerate their investigations into educational practices in their community. The activity of these high energy particles began to emit rising levels of energy.

The Fox River Valley: Cultivating the Purpose of the Academy

> The Illinois [Mathematics and] Science Academy will set standards that other states and schools will be forced to emulate. Proceeding by example is perhaps the best way to face the grave national issue of science education. The resultant enhancement of scientific leadership will help move this state to the forefront of technological leadership and help the nation endure and prosper in the new technological age where the full dimensions are yet to be clearly discerned . . .[12]

While the nation's economic landscapes were being altered by the frontier-style[13] seduction of the "Silicon Valleys," another form of frontier expansion was looming on the horizon of the Fox River Valley of Illinois. In the early 1980's, a pending federal contract for the location of a Superconducting Supercollider (SSC) heightened the significance of the Fox River Valley and its ability to bring jobs to Illinois. "To physicists, accelerated particles are among the necessary tools for exploring their scientific frontiers."[14] The proposed SSC would offer physicists an opportunity to explore uncharted scientific frontiers. The competition for acquiring the federal moneys for the project was narrowing to two potential sites: Fermi National Accelerator Laboratory (Fermilab), in a Fox River Valley community called Batavia, near Aurora, Illinois, home of the world's highest energy particle accelerator, or a development site in Texas.

If the contract was awarded to Fermilab, the SSC would not only expand the research capabilities of the existing facility, but it would create new jobs and attract more renowned scientists and their families to the Batavia community. A concern became apparent to the entire community. Would the quality of existing educational facilities in the community attract, sustain, and match the expectations of this new population of scientists and their families?

Community groups in the Fox Valley began formulating different methods of assessing the quality of the existing educational resources. A powerful momentum fueled by the passion of these community based relationships would be one of the most influential forces in the birth of the Academy. The findings of their studies would reflect the need for a statewide emphasis on gifted education in Illinois.

Local volunteer groups began expanding their community service missions to include education. Business and industrial leaders began shifting their focus from productivity to effective methods of cultivating new employees. Legislators, knowledgeable about educational issues, began preparing to embark on an adventure of a lifetime. Specific individuals began making career decisions, not knowing that in the very near future, their lives would be completely intertwined in the passionate determination to create the Academy. How did the energies and expertise of each of these interest groups contribute to the development of the Academy?

Community Involvement

In 1979, Dr. Leon M. Lederman, a renowned physicist from Columbia University became the director of Fermilab. Given the unique resources of Fermilab and the plethora of experienced scientists, Dr. Lederman set about the task of coordinating the talents and the facilities of the lab to benefit high school students from the neighboring communities. He genuinely missed the classroom environment of a university. He explained:

> When I came to Fermilab, I had withdrawal symptoms from teaching. You twitch. You grab somebody in the hall and teach him something. . .the great joy in life is to see how science really gets done, to beat your head against a hard problem that doesn't involve budgets.[15]

His desire to extend the resources of Fermilab to local high school students resulted in the first of Dr. Lederman's many "Saturday Morning Physics Programs." During each ten-week span of Saturdays, prominent scientists, including Dr. Lederman, volunteered their time to lecture and provide tours of the Fermilab to high school students. Fermilab scientists began "commuting" between roles of researcher and teacher, engaging young and intellectually thirsty high school math and science students in their passage from the "temperate plains" of their more traditional high school science classes to awe-inspiring, state-of-the-art, laboratory science education.

While the students engaged in mind-expanding activities, the participating scientists became alarmingly aware of the prevailing sub-standard preparation afforded these gifted students in their traditional high school science curriculum.[16] These experiences furthered their concerns about the quality of education in the community

surrounding Fermilab. Would the quality be sufficient to support the educational expectations of the families migrating to the community if Fermilab was awarded the SSC?

Local Volunteer Involvement

While the scientists worked with the high school students, a group of wives and relations of Fermilab employees recognized more and more opportunities to create a link between the resources of Fermilab and the needs of the surrounding community. In order to forge the connection, the group needed to establish an organizational "arm" that would enable the services of Fermilab to expand beyond its federally funded mission of research. With the support of Dr. Lederman, the group formed a not-for-profit organization called "Friends of Fermilab" (FFL):

> . . . for the purpose of providing a vehicle for the regional, national and world community to extend support to the efforts to utilize Fermilab's capabilities and social responsibilities beyond it's principle task of research.[17]

Some proposed projects included programs that would affect the quality of local education.[18]

In the summer of 1983, FFL launched their first "pilot" project. It was a science teacher education program that would evolve into an annual workshop. Forty-five area science teachers updated their knowledge and enhanced their teaching methodologies by spending several weeks working with scientists throughout the Fermilab facilities. The success of the program established the credibility of the FFL as a viable resource for raising funds.[19]

In December of the same year, fueled by the influence of Dr. Lederman and aided by funds from Brooks McCormick and the Department of Commerce and Community Affairs, Friends of Fermilab sponsored what would become the definitive step toward the establishment of IMSA. Thirty-five invitees, including high school teachers, college professors, scientists, and others attended a two-day curriculum workshop "to produce a curriculum for a new kind of 'magnet' school"[20] to serve as a realistic blueprint of what should be taught at a school dedicated to the mission of serving gifted students in the areas of math and science. The document produced from this conference was used as "the calling card" to convince skeptics, affirm believers, and rally support for the creation of the Academy.

Local Business Involvement

In addition to the FFL, another established group in the Fox River Valley was the influential Valley Industrial Association (VIA). Through VIA, local manufacturers, aware of the economic shifts, formed networks to maintain and enhance economic and educational opportunities throughout the Fox River Valley and the State of Illinois. They investigated the connections between education and community resources, searching for methods to cultivate an environment that would attract more industry and more qualified employees to the Fox River Valley.

While experiencing and attempting to creatively respond to the shifting economies characteristic of the 1980's, the VIA commissioned Northern Illinois University (NIU) to conduct a telephone survey to determine the quality of math and science education in the

counties in and around the Fox River Valley. The results of the survey simply confirmed what they had already suspected. The supply and demand for quality education in the area of math and science was grossly disproportionate.[21]

Legislator and Lobbyist Involvement

The proposed Academy was to be a public high school funded by the state. To acquire state funding, legislation had to be drafted and ushered through the complex bill-passing process. The Fox River Valley was well positioned in the state legislature, especially in the advocacy of educational issues. The residents of the valley had elected the former President of Waubonsee Community College, Dr. Forest Etheredge, to the State Senate, and Dennis Hastert, a local high school teacher, to the State House of Representatives. In addition, Marylou Cowlishaw and Suzanne Deuchler, both veteran State Representatives, added their influential experience to the legislative team. Together, with other local legislators, the team embodied first-hand knowledge about educational issues and expertise in legislative maneuvering. These skills would be essential to rally the forces that would support the Academy and counter the forces vehemently opposed. The Fox River Valley had also played an influential role in the re-election of Illinois Governor James Thompson, another benefit that would oil the mechanisms necessary to negotiate the funding for the Academy.

As not-for-profit organizations, the VIA and FFL could not engage in the legislative lobbying necessary to influence legislators who were not well-versed in educational issues. With the collaboration of NIU, the education committee of VIA

spawned the Corridor Partnership for Excellence in Education (CPEE), a tax exempt not-for profit corporation, eligible to be an effective lobbyist group for the IMSA legislation.[22]

The purpose of the Illinois Mathematics and Science Academy was clearly becoming a 'rallying point' for businesses, scientists, community organizations, local universities. The momentum that developed would escalate the importance of the mission the school had in relation to the community. The benefits of defining the purpose of a school were clearly demonstrated (see figure 2). Schools produce far more than just education. Each group would derive a benefit from the development of the school while cultivating the growth of gifted students and revitalizing the quality of a high-tech workforce.

IMSA's influence extended far beyond its primary purpose of providing education. Companies seeking productive opportunities to influence educators would benefit from IMSA. Sources of funding would benefit from the enriched employee pool produced by the Academy. Local individuals would find opportunities to expand their careers. Local community organizations aligned with the school would diversify their services. The unmet needs of local and statewide students would be serviced by the Academy. Teachers with skills not challenged by existing educational institutions would be attracted to IMSA. Legislators and local government representatives through their work to develop IMSA would activate links between education and community development. Once a manageable site would be identified, its renovation would represent economic redevelopment for the surrounding areas. All of these outcomes represent the "spin-offs" of the purpose of creating a school.

THE BENEFITS OF DEFINING THE PURPOSE OF A SCHOOL

Figure 2.

When the purpose of a school is clearly defined, a variety of interest groups, in addition to the students, may become aware of how the establishment of a new school could benefit them. These combined "beneficiaries" can become an exceptionally strong force in supporting the establishment of the school.

The Artists Emerge

> Never doubt that a small group of people can change the world; indeed it is the only thing that ever has.
>
> Margaret Meade

By the early 1980's, local scientists, volunteer organizations, business leaders and legislators had begun to "prepare the soil" of the Fox River Valley for the events that would lead to "planting" the Academy. At the same time, a series of coincidences would merge the talents of a number of individuals into the administrative teams that would nurture the Academy into existence. Unknown to one another, several of these individuals made career decisions that would catapult them into the increasing momentum that would lead to the creation of the Academy. How could the influence of individual career choices benefit the establishment of the Academy?

Stephanie Pace Marshall, with an M.A. from the University of Chicago, a Ph.D. from Loyola University, and first-hand experience in gifted education, had accepted the position of Associate Superintendent of Curriculum and Instruction for the Batavia Schools. Dr. Marshall would eventually become the Superintendent of Batavia Schools, and soon after, leave that position to become the Executive Director of IMSA.

F. Borden Mace, an experienced educator in the field of gifted education, had founded and served as the principal of the North Carolina School of Science and Mathematics (NCSSM). His anticipated retirement would position him to be summoned by the energies created by IMSA's organizing committee. He would become the Interim Director for six months prior to the opening of the Academy.

Connie Jo Hatcher, a home economics teacher living in Nebraska, had begun preparations for her family's relocation to the Fox River Valley in Illinois because of her husband's new job. She subscribed to the local Aurora daily paper, the "Beacon News," to look for employment. Articles about the initial development stages of IMSA intrigued her. Upon her arrival in Illinois, her interest in IMSA would quickly engage her as an essential component in the school's early stages of development.

Other unforeseen developments involving relocation were to unpredictably affect the establishment of the Academy. Student demographics would unexpectedly shift in Aurora, resulting in the abandonment of a local high school facility built only four years before. The building, having fallen into disrepair, would eventually become the learning and living quarters for the charter class of IMSA.

Seventeen teachers, employed in schools throughout the Chicago metropolitan area, unacquainted with one another, and in some cases tenured, began to individually dabble with the limitations of their current employment situations. They did not know that within the next two years they would make decisions that would merge their careers, their talents, and their visions of education. They would become the charter faculty of the Illinois Mathematics and Science Academy.

While all of these circumstances were "percolating" energy throughout the Fox River Valley, two hundred and ten gifted math and science students throughout the State of Illinois continued to attend their local schools, not realizing that, as high school students, they would pioneer the first charter class of the Illinois Mathematics and Science Academy.

The Creative Catalyst: Dr. Leon M. Lederman

When the learners are ready, a teacher appears . . .

Albert Einstein

It was essential that a "catalyst" emerge to provide all of the potent resources with a common motivating source of energy. The connected communities in the Fox River Valley and the prairies that stretched from its banks were probably unaware of it at the time, but they were already positioned to link the existing scientific research facilities, industry, education and government alliances into the motivation and the substructure necessary for the creation of IMSA. What source of energy or vision would accelerate the motion and bring about a unification of the various "particles?" When asked if they could recall the specific moment when they each had become attracted to the concept of the Academy, the following individuals all referred to one common catalyst, Dr. Leon Lederman.

James Pearson, later the President of the IMSA Board of Trustees:

> I was chairman of the Valley Industrial Association. In September of 1983, Dr. Leon Lederman spoke to us about establishing a high school science academy. The VIA was looking for a way to improve math and science education, locally, and throughout Illinois. We were interested.[23]

Marjorie Bardeen, a founding member of Friends of Fermilab:

> Leon approached Stanka Jovanovic at a social gathering to discuss the benefits of creating a not-for-profit organization that would enable Fermilab to expand its mission beyond research. Friends of Fermilab was later founded by a group of us. Our first event involved a summer educational training program for science teachers.[24]

Dr. Stephanie Pace Marshall, later the Executive Director of IMSA:

> At the time I was the Associate Superintendent for Curriculum and Instruction in Batavia. My Superintendent, (Dr. Jim Clarke) informed me about a luncheon he had

attended where Dr. Leon Lederman had spoken about the concept of establishing a math and science academy in Illinois. I wrote to Dr. Lederman and later called him and essentially offered myself as a partner in his efforts.[25]

F. Borden Mace, founder of NCSSM, later the Interim Director of IMSA:

I probably met Dr. Leon Lederman and Dr. Walter Massey for the first time when they came to North Carolina to look at the North Carolina School of Science and Mathematics (NCSSM) in late 1983. Leon invited me to speak at Fermilab for a meeting sponsored by "Friends of Fermilab" a year later.[26]

Sheila Griffin, Motorola Executive, charter member of IMSA's Board of Trustees:

At the time, my son was four years old. He was attending a program for gifted students held on Saturdays at Northwestern University. I read an article in the local paper about a conference that was held by Leon Lederman, to create a curriculum for an Illinois Science Academy, a school for gifted high school students. The article mentioned that 15% of gifted students drop out of school because they are not challenged or don't fit in. I was very concerned about that 15%. Senator Etheredge's name was mentioned in the article. I called him and expressed my personal interest in becoming involved in the efforts to establish the Academy.[27]

Senator Forest Etheredge, a legislator responsible for the bill that funded IMSA:

In the fall of 1983 or early 1984, I traveled to Fermilab to speak with Dr. Leon Lederman. I had been a senator since 1981. Assisted by Senator John Gotberg and the Corridor Partnership, I became a legislative leader. In a formal discussion with Dr. Lederman we agreed we would need the Governor's support if we were to seriously pursue the possibility of a school for the gifted.[28]

The resources and energies of the movement to establish the Illinois Mathematics and Science Academy had merged. Educators, scientists, businessmen, community organizations, and students had, in one way or another, been summoned to collectively support and eventually create the Illinois Mathematics and Science Academy.

CHAPTER II

NOTES

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[19] Marjorie Bardeen, interview by author, 3 March 1996, notes, Fermilab Archives, Batavia, Illinois, Illinois Mathematics and Science Academy Archives, Aurora, Illinois.

[20] Leon M. Lederman, letter to Marjorie Bardeen, 31 October 1983, Illinois Mathematics and Science Academy Archives, Aurora, Illinois.

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[24] Marjorie Bardeen, interview by author, 3 March 1996, notes, Fermilab Archives, Batavia, Illinois, Illinois Mathematics and Science Academy Archives, Aurora, Illinois.

[25] Stephanie Pace Marshall, interview by author, 23 August 1996 transcript, Illinois Mathematics and Science Academy,

[26] F. Borden Mace, interview by author, 25 January 1997, transcript by phone, Fearrington, North Carolina, Illinois Mathematics and Science Academy Archives, Aurora, Illinois.

[27] Sheila Griffin, interview by author, 29 April 1997, transcript by phone, Motorola Corporation, Illinois Mathematics and Science Academy Archives, Aurora, Illinois.

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CHAPTER III

LEGISLATIVE STRATEGIES FOR FUNDING 1984-85

> If we do what we know and feel is right, it is bound to happen that among our graduates there will be numbered scientists, engineers, and those who go on to earn degrees in law and letters. There are likely to be those few who create new intellectual worlds, cure a dreaded human ailment or in some other way significantly influence life on our planet. Our philosophy will be to treat our charges as if each one is capable of this extraordinary achievement. Only one such product will make the effort and expense of the school for its entire duration worthwhile.[1]
>
> Dr. Leon Lederman
> March, 1986
> Adapted as IMSA Philosophy

The process of acquiring the funds to establish the Illinois Mathematics and Science Academy, and positioning it to be financially supported "for its entire duration," involved the expertise of legislators, the tenacity of businessmen, the creative commitment of a community and the unrelenting persistence of an organizing committee that would not take "No" for an answer.

The Academy was not conceived in a vacuum. During its first and second phase of development, it had defined a clearly unique purpose for its existence (see appendix 2). The Academy had cultivated a support system of influential individuals and groups which would continue to expand. These groups synchronized their actions in a campaign to win over the Illinois legislature. They rallied the prevailing 'creative' energies to fuel the

establishment of the Academy, and to effectively contend with the more resistant energies of 'conventional' educators throughout the State of Illinois.

Activating Community Support

The proposed Academy, which could be located anywhere in the state of Illinois, would require special legislation. As a public residential school supported by contributions from high-tech industries and the federal government as well as by taxes, no tuition would have to be paid by the Academy's students.[2] These attributes would enable any gifted student from any socio-economic level, and from any geographic region in the State of Illinois to have access to the Academy. To make this vision a reality, legislation needed to be passed by the General Assembly, then signed into law by the Governor.

A variety of influences and motivations drove the vacillating "roller coaster" of legislative maneuvers. Five different times proposals for establishing the Academy made their way toward legislative approval. Only one of the proposals eventually arrived on the Governor's desk for his signature. The legislative history of each of the proposals, as well as the chronology and the individuals involved in the process, comprise an important episode in the pre-history of IMSA and a poignant lesson in "The Art of Creating a School."

Prior to approaching the legislators with a proposal for the Academy, local businessmen, educators, scientists and community organizations worked together to identify the unmet need to be met by the educational services provided by the Academy - to foster the talents of gifted students. They created links between the unmet need and the

potential for economic recovery and expansion. In addition, they identified other states where similar proposals resulted in the establishment of successful schools. Most importantly, they cultivated grass roots organizations to support their proposal.

As early as March of 1982, Dr. Leon Lederman of Fermilab and Dr. Walter Massey of Argonne National Laboratory engaged the interest of the influential Valley Industrial Association (VIA), an organization of business owners in the Fox Valley. The well-known scientists made presentations regarding the shortage of qualified math and science teachers, the relationship between education and a properly trained high-tech workforce, and the benefits of a residential science academy. The VIA responded by expressing an interest in supporting the Academy. They made a commitment to investigate the issues.

A few months later, in July, 1982, James Johnson, then VIA President and a regional business leader, approached Governor James Thompson with the concept of the Academy. Within the next month, the Governor delivered a speech to the VIA and formally mentioned the potential establishment of a "super science" high school. Soon afterwards, Thompson formed the "Governor's Task Force on the Quality of Math and Science Education."[3]

Throughout 1983, local, regional, national and economic influences seemed to naturally position the proposal for the Academy to be "in sync" with the politically relevant issues of the time. The VIA formed the Corridor Partnership for Excellence in Education (CPEE), and, together with Northern Illinois University, surveyed math and

science teachers in a four county region to determine trends in teacher qualifications and curriculum development.[4]

Friends of Fermilab (FFL), with the support of Dr. Lederman and in response to the outcomes of the "Saturday Morning Physics Programs," sponsored a 1983 summer training institute for forty-five science teachers. Later in 1983, with the support of Brooks McCormick and the Department of Commerce and Community Affairs, FFL hosted the two-day workshop that developed the recommended curriculum, "The Illinois Science Academy,"[5] for the proposed Academy.

Coincidentally, during the same year, the federal government released its infamous report, "Nation at Risk" and the National Science Foundation published its influential research, "Educating Americans for the 21st Century,"[6] exposing the below-average performance of American students and schools in the areas of math, science, and technology.

Rallying Legislative Support

Senator Forest Etheredge, R-Aurora, would lead the legislative drive for Illinois Governor James Thompson, to build the proposed Academy. Senator Etheredge recalled the first meeting with the Governor regarding the Academy:

> In the Fall of 1983, Leon Lederman, Senator John Grotberg and I presented the proposal to Governor James Thompson, Kurt Dillard, the Governor's Aid, and the head of the Education Committee. The Governor pledged his support. After informing the Governor of our intentions, we informed the Senate Republican Staff for the Education Committee and the Legislative Reference Bureau. We also began to involve our colleagues in the House. Dennis Hastert, an influential member of the legislature, agreed to be the House sponsor.[7]

The momentum accelerated in 1984 when, in February, the Governor's Task Force on Math and Science presented its findings and proposed to improve math and science education statewide.[8] In that same month, Governor Thompson, in his "State of the State" message, publicly voiced support of, and linked together, the importance of two Fox Valley projects; an "Illinois Math and Science Academy" and the construction of a Superconducting Supercollider (SSC) at Fermilab. In his remarks, the Governor asked for state support to expand the research capabilities at Fermilab to attract highly qualified scientists. He committed $500,000 for the study and investigation of the geographical issues involved in the possible construction of the SSC.[9]

It is important to note that by linking the two projects together, the Academy and the SSC, an important point was made. The SSC would necessitate attracting and hiring scientists away from already existing research facilities in California, other parts of the United States, and the world. Dr. Lederman expressed it most concisely when he said, "We get scientists from California and the first thing they ask about are our schools. They don't ask about our climate, for some reason."[10]

Obviously, a math and science high school such as the one proposed could play a persuasive role in attracting new families to Illinois. In addition, the Academy would have access to Fermilab in Batavia, Illinois, and Argonne National Laboratory in Lemont, Illinois. Illinois State Representative Suzanne Duechler, a member of the Academy's legislative team headed by Senator Etheredge, believed the Academy could help many of the high-tech industries already located in the Fox Valley. Illinois State Representative Dennis Hastert, another member of the legislative team and sponsor of the House bills that

supported the Academy said, "The development of a math and science academy is a step in leadership in the fields of curriculum and ideas." [11]

As a follow-up to his "State-of-the-State" endorsement of the Academy, the Governor's annual budget message in March, 1984, called for $150,000 to study sites and establish an academic program for the proposed Academy. Both existing sites and vacant sites would be studied. The governor's task force suggested funding would be provided by state contributions with additional funds coming from private sources including the scientific and industrial communities.[12]

It was unmistakable. The Academy had the Governor's support. Senator Etheredge, Dr. Lederman and Senator Art Berman wasted no time. They launched a campaign to promote the Academy and to educate the more conventional, adversarial factions. Soon after the Governor's endorsement, they "breakfasted" with members of the Illinois Education Association, the Illinois Committee on Elementary and Secondary Education and Chicago Democratic legislators.[13]

Later, in March, Dr. Lederman would inform colleagues interested in the Academy that the "State Board of Education Committee on the Feasibility of A Science High School" would support IMSA, and the "Report on the Quality of Science and Mathematics Education in Illinois" would also recommend the establishment of the Academy.[14] Despite the campaign to promote the Academy, however, the soon-to-be-proposed legislation continued to suffer from the misperception that it would be "Republican" and that it would take money away from conventional high schools.

The Denial and the Stalemate: 1984 General Assembly

The 1984 General Assembly hosted the first formal legislation recommending the establishment of the Academy. During the Spring and Fall Sessions, the Academy's legislative team, led by Senator Forest Etheredge, encountered some significant resistance. The Academy's legislative strategy failed to produce results, but the lessons learned in the process created the substructure for the more successful strategies the team would use in the immediate future (see figure 3).

The 1984 Spring Session

On April 13, 1984, the start-up costs for the Academy were introduced as part of a House Appropriations Bill for the operations of the Bureau of the Budget.[15] The funds in the amount of $150,000 were recommended to be used for the creation of a statewide board of trustees and the salary of a chief administrator who would have to begin the work of hiring the faculty. The statewide board would have the responsibility of making the decision about the site for the Academy. Senator Etheredge said:

> There are a lot of people who like this idea and who think this school ought to be in their backyards, too. There are already people in Champaign who think it ought to be in Champaign. Right now, my first priority is convincing my colleagues that they ought to pass this bill, so I have down-played the question of site.[16]

In an unexpected motion claiming "the Bureau should not be involved in education matters,"[17] the House Appropriations Committee "chopped off" the $150,000 for the proposed Academy. Speculating on what had influenced the negative reaction of the committee, Representative Suzanne Deuchler R-Aurora said:

> There is opposition to putting it (in the Bureau of the Budget) on the Democratic side of the aisle, since the topic is unrelated to the bureau. We've had assurances

1984 GENERAL ASSEMBLY: A FLOWCHART OF LEGISLATION

Session	House of Representatives	Vote		Vote	Senate
Spring	Appropriations bill for $150,000 submitted to the Bureau of the Budget	No			
					Etheredge tacks on Academy amendment to the Hoffman bill.
		↙←←←	←←←←←←←←←←←←←←←	Yes	Vote by Committee
	Hoffman Fails to call bill to the floor	→→→	Conference Committee	Yes	Hoffman bill voted by Senate
					↓
					Stalled
Fall	Hastert tacks Academy amendment to Senate bill. Committee votes.	Yes			Etheredge negotiates with conference committee on Hoffman bill to re-instate $150,000 for start up funds
	↙	↙			
	House Speaker Madigan allows Hastert's amended bill to be heard but not acted on.				↓
	↓				↓
	Stalled				↓
					Stalled

Figure 3.

During the 1984 Illinois General Assembly, a complex series of legislative strategies were carried out by proponents of the Academy in an attempt to acquire financial support for its establishment. In both the House and the Senate, their efforts were stalled.

> from those who oppose it . . . that they will not oppose it if is in another appropriation bill. I'm confident the money will be restored.[18]

"This cut does not surprise me," said Senator Etheredge. "There will be plenty of time to restore the cut when it gets over to the Senate." At the time, the Senator's own proposed legislation, which provided for the statutory provisions to go ahead with the school, had not yet been introduced in the General Assembly because it was being drafted in the Legislative Reference Bureau. Senator Etheredge planned to introduce it on 'second reading' as an amendment to a vehicle bill pending in the Senate. "I'm lobbying my colleagues now for their support," Etheredge explained.[19] Meanwhile, Aurora Mayor Jack Hill, a former House member, continued to revive his previous affiliations in Springfield to lobby for restoration of the $150,000 for the Academy.[20]

As planned, in late June, 1984, Senator Etheredge reintroduced the proposal to authorize the establishment of the Academy. This time he "tacked-it-on" as an amendment to a "vehicle bill," which originated and was previously passed by the House. If the bill was passed by the Senate, it would have to be returned to the House to be approved again in its new form.

The amendment received thirty-three positive Senate votes, with only thirty needed for approval. However, nineteen of the thirty opposing votes were cast by Democratic senators. This "block" of Democratic senators, under the leadership of the Senate President, Phil Rock, would continue to be a "force to be dealt with" throughout the Academy's legislative struggle.

Although the Democrats claimed to support the Academy, in light of the projected deficit funding of public schools, the "block" did not support the appropriation of money needed to establish it.[21] Criticism of the proposal to establish the Academy included the timing of the request in the face of escalating school finance problems and later shifted to controversy related to the proposed location of the school for the gifted.[22]

Legislative procedure required the House bill amended by Senator Etheredge to be approved by the entire Senate and then to be sent back to the House for approval. [23] The Senate passed the bill by a vote of thirty-three to twenty-two, again, mostly along party lines. However, in a maneuver to stall the legislation, the Democrats filed a motion to reconsider the vote. This parliamentary move temporarily prevented the bill from being sent to the House for concurrence. Since the motion was not called for action by the Senate within the prescribed twenty-four hour period, the bill was allowed to cross the floor to the House. The Democrats had not been successful in blocking the bill, but they had set a precedent. They had sent a message.

The House bill to which Etheredge had attached the Academy amendment had originally been introduced by Representative Gene Hoffman, R-Elmhurst. When the bill arrived back in the House with the new amendment, Hoffman surprised his Republican colleagues. He stalled the bill by purposely failing to "call the bill" or schedule it on the House calendar. Said Representative Hoffman:

> I have a philosophical problem with that proposal. I have looked at the experience of other states and I am not impressed. The issue was never debated in a legislative committee and it is at variance with studies by the Illinois Office of Education. Something may be resolved. . .[24]

It was June 27, 1984, and the General Assembly was "winding down." The summer recess was slated to begin within six days. It was rapidly becoming apparent that the opposition to the Academy had the "upper hand."

Bills not "called" by the House are sent to the House/Senate Conference Committee, where they are hammered into a more acceptable form before being "brought to the floor." So it was within the negotiating environment of the House/Senate Conference Committee that Senator Etheredge once again picked up the Academy's cause. Through the weekend, he negotiated with his committee members to enable the funding to be added to the proposed amendment. "The bill, as it was sent to the House does not have the $150,000 needed for the feasibility study. We will apparently have to work through a conference committee for the $150,000 planning and start up money."[25] said Senator Etheredge.

Despite all of his efforts, he could not beat the race with time. Time ran out. The proposed legislation was put on hold until November when the Fall Session of the General Assembly would resume.[26]

When asked whether he was disappointed that the proposal had been stalled, Governor Thompson said, "I made a late personal plea to (Senate President Philip) Rock. He promised to get it passed in November, and I took him up on the offer."[27] "We will hold the bill until the fall session at which time I'm assured that all the people who need to be on board will be there," said Senator Etheredge.[28] The legislators had set the stage for a struggle that would be repeated several times over the next two years. The Spring Session of the 1984 General Assembly adjourned.

The forces behind the Academy did not take a summer recess while the General Assembly was adjourned during July through October, 1984. The resistance created by the opposition in the legislature created an even stronger level of determination in the "grassroots" Fox Valley organizations supporting the establishment of the Academy. Dr. Lederman and Senator Etheredge used the legislative summer recess to rally the efforts of the Corridor Partnership for Excellence in Education (CPEE). Under the leadership of CPEE President John Swalec, the organization set up an office in the Aurora West Shopping Center to solicit endorsements from educational, industrial and union organizations interested in supporting the establishment of the Academy. Members of CPEE set up speaking engagements with local citizen groups and at area business meetings to promote the Academy. Fueling their determination was the desire to have the legislature approve the Academy in the upcoming Fall Session so it would not get lost in the "morass" of educational reform legislation to be considered by the Eighty-fourth General Assembly in 1985-86 Session.[29]

By the end of the summer of 1984, the efforts of CPEE had attracted the support of influential organizations such as the Illinois Manufacturers Association and the Associated Employers of Illinois. CPEE had successfully cultivated a support base and was positioned to launch a well-designed lobbying effort for the Academy when the legislative session resumed in the Fall.

After analyzing the legislators' reaction to the Academy proposal during the previous spring session, CPEE recommended that any legislation introduced to the Assembly in the fall should seek to establish an Academy but not fund it. They promoted

the concept that funding should not be pursued until the following year. The unsuccessful efforts of the legislators during the last session, CPEE believed, had also been affected by the Governor's earlier suggestion to locate the Academy in the Fox Valley. CPEE recommended that the Fall Session legislative strategy should focus on what the Academy would do and who it would serve rather than where it would be located.

It was also essential to generate accurate information to dispel some of the "myths" generated by the opposition and skewing the public understanding of the Academy. Shortly before the General Assembly reconvened in November, Dr. Leon Lederman wrote an editorial, published by the Chicago Tribune, explaining the rationale behind the proposed Academy. In conclusion, Dr. Lederman stated:

> If we are satisfied to be average in national ACT and SAT scores, if we are comfortable with the general state of our economy and its projections, if being No. 46 in ratio of returns on federal grants to taxes paid is no skin off your back, then the only ones who need the Academy are the children, and they don't even vote yet.[30]

The 1984 Fall Session

The six day, post-election, end-of-the-year "veto session" of the 1984 General Assembly convened in late November. The original proposal for the Academy, introduced by Senator Etheredge the previous spring, remained stalled in the conference committee and had become a "watered-down" conference committee report that called for a group to study the feasibility of the Academy proposal and report to the Governor and the legislature by March 15, 1985."[31] The conference committee continued to hold Senator Etheredge's Academy proposal "hostage." In the Fall Session, Senator Etheredge

assumed the "wrestling" position which he had had when the committee adjourned for summer recess.

Representative Dennis Hastert, Senator Etheredge's colleague in the House, launched a new proposal using Senator Etheredge's original strategy. Representative Hastert took the original Academy proposal and tacked it on a 'vehicle bill' currently in the House, having to do with physical education courses. Collaborating House members joined Representative Hastert in backing the amendment. This time, the 'vehicle bill' had originated in the Senate. If Representative Hastert succeeded, and the amended bill passed in the House, it would have to be returned to the Senate to be voted on, once again, in its new form.

House Speaker Michael Madigan allowed Hastert's bill to be heard on the House floor, but the legislation was not acted upon.[32] At the same time, the first attempt to establish the Academy, Senator Etheredge's amendment, came out of the Senate Conference Committee. Although it included the establishment of the Academy, it did not include funding for the Academy. Further maneuvers to insure the success of the legislation by either Representative Hastert or Senator Etheredge would require more time. The time available in the legislative session was running out.

For the second time during the 1984 General Assembly, the legislation introducing the Academy had been "stalled" in midstream. The Legislature "got bogged down with pay raise legislation and legislation to give public schools additional state aid, which cut down on time to work on other bills."[33] Time ran out. The 1984 General Assembly came to a close.

The Academy proposal had been introduced three different times as an: (1) appropriations bill; (2) amendment to a "vehicle bill," in the Senate; (3) amendment to a "vehicle bill" in the House. Each attempt was diluted and then stalled. The proposals ran up against opposition having to do with partisan politics and controversies surrounding funding and the site location. The Academy proponents would regroup and come up with an entirely new approach for their 1985 strategy. However, they would be faced with new challenges they could not have predicted.

"I spoke to the Governor about holding up the legislation and he assured me that all of the legislative leaders will support the plan in the spring session," said Senator Etheredge. "He [Governor Thompson] will give the plan a strong initiative in his State of the State address next year." [34]

The Creative Strategy: 1985 General Assembly

The 1985 General Assembly convened on January 9. The Academy supporters had designed a more straightforward 1985 offensive strategy. Both arms of the General Assembly would be confronted with identical bills at the same time. Senator Etheredge, Representative Hastert and the Academy supporters believed this approach would have more of a chance than the 'vehicle bill' strategy used by the Academy proponents in 1984. Before they had a chance to launch their plan, they experienced their first unexpected set-back.

In early February, 1985, the Governor delivered his "State of the State" address. His remarks the previous year had strongly supported the Academy. His remarks had

served as a primary influence in the lobbying efforts for the Academy throughout the 1984 legislative sessions. In an unexpected turn of events, and to the disappointment of the Academy's supporters, the Governor's 1985 address made no mention of the Academy.

Within days of the Governor's speech, despite what appeared to be a lost endorsement, Senator Forest Etheredge, along with Senator Doris Karpiel and Senator Beverly Fawell, introduced a bill in the Senate calling for $1 million to establish an engineering school at Northern Illinois University and a state run residential math and science academy in the Fox Valley for especially talented high school students. Simultaneously, Representative Dennis Hastert, Representative Suzanne Deuchler, and Representative Mary Lou Cowlishaw sponsored an identical bill in the House.[35] Appropriations in each bill for the Academy would be introduced later as amendments (see figure 4).

While there appeared to be no action on the Senate bill, the House bill, which had been assigned to the House Elementary and Secondary Committee, was sent on to a subcommittee. Representative Deuchler believed the bill had more of a chance because Democrats would support committee-based legislation rather than an individually introduced bill. Representative Hastert, concerned about the bill's move to a subcommittee, began to build alliances to "present a well-balanced group in support of the proposal when the subcommittee begins work."[36] He also began to consider a 'fall-back' position: "The potential need to present the bill in the future as a school reform bill. . ."[37]

1985 GENERAL ASSEMBLY: A FLOWCHART OF LEGISLATION

Session	House of Representatives	Vote		Vote	Senate
Spring	Hastert Introduces Academy Bill. Bill assigned to Elementary & Secondary Education Committee				Etheredge Introduces Academy Bill
					No Action Taken
	Bill reassigned to subcommittee for further study. Sub-committee puts bill on hold			Yes	Senate Education Committee Votes
	↓		↙↙←←←←←←↙	Yes	Senate Votes
	Stalled		↙		Stalled
	Senate bill arrives and is assigned to Elementary and Secondary Education Committee.	←←←↙			
	↓				
	Amendment added to bill: two more academies-House votes	Yes	→→→→→→→→→	NO	Amended bill arrives. Senate Votes
	Bill returned from Senate	←←←←	←←←←←←←←↙		
	Stalled			Yes	Senate Votes Comprehensive Illinois Educational Reform package
	House votes on Comprehensive Illinois Educational Reform package and includes Academy $500,000.	←←←←	←←←←←←←←↙		
		→→→→	→→→→→→→→→	→→→	Senate approves amendment and Votes on Reform package including $500,000 Academy
	GOVERNOR SIGNS BILL INTO LAW				

Figure 4.

During the 1985 Illinois General Assembly, a series of legislative strategies initiated in both the House and the Senate eventually resulted in "start-up" funding to support the establishment of the Illinois Mathematics and Science Academy.

In a mid-March, 1985 joint session of the legislature, Governor Thompson presented his fiscal plans for 1986. In yet another surprising turn of events, Governor Thompson repeated his call for a math and science academy recommending that $500,000 of the 1986 fiscal budget be set aside as start-up funding. He also added that the Academy would be supported by contributions from private and industrial sources.[38]

Although the public 'call' for financial support was an unexpected boost for the Academy supporters, the enthusiasm was soon sobered by remarks made by the Governor the next month. In April, 1985, during a presentation to the VIA, the Governor predicted the Academy would encounter some "rough roads" in the legislature. For political and educational reasons, he encouraged the supporters of the Academy to consider expanding their concept of a Fox Valley academy to include the establishment of a similar science academy in Chicago and a third academy for agri-business in downstate Illinois. It was more than apparent that the political issues of location raised during the 1984 session were once again going to have an influence on the legislative process in 1985. The Governor's 'suggestion' was, in reality, a foreshadowing of the events that followed.

There was no doubt that the legislators needed to be convinced about the statewide influence the Academy would have, no matter where it would eventually be located. While the bills "simmered" in the House subcommittee and the Senate Education Committee, the CPEE "clarified" the mixture of issues by consistent lobbying efforts in support of the Academy. Dr. John Johansen, Professor of Education at NIU and a member of CPEE, addressed both the House Elementary and Secondary Education Committee and the Senate Education Committee. In addition to referring to the Academy

as a "flagship" for all schools, he clarified that the recruitment of students would take place from all schools, public as well as private, in large cities as well as small communities, throughout the state of Illinois.[39]

Meanwhile, Dr. Leon Lederman and Dr. Stephanie Pace Marshall continued to stir up local community interest by giving presentations in the Fox Valley about both the Academy and the pending federal contract for the Fermilab Superconducting Supercollider (SSC). Local businesses and organizations, such as Batavia Bank and Waubonsee Community College, sponsored the presentations and pledged their support for both projects. Senator Etheredge explained:

> At the time the legislation for the Academy was being pursued, there was also the anticipation of acquiring the contract for the Supercollider at Fermilab. The government contract would have infused the area with a volume of jobs as well as an influx of high-tech employees. This was another incentive to establish the Academy as a location for educating the children of employees moving into the area.[40]

James Pearson, an influential local businessman, former chairman of the VIA, and a founding member of CPEE, explained that the community was determined to respond to the Governor's budget proposal, which called for private and industrial support for the Academy.

> The IMSA Foundation was founded with the intention of creating additional funding sources to demonstrate to the State that the Academy was also supported by local business and finance in the community. Three local banks, Merchants Bank, Old Second Bank, and Aurora National Bank each made a financial commitment of approximately $10,000 to the initial fund before there was an "IMSA" presence in the legislature. It was their way of saying, "Yes, we think the State should support IMSA." This show of financial support was a tremendous boost, and proved that the private sector was very much interested in this new institution.[41]

As the grass roots organizations "flexed their political muscles," the legislators continued to digest the bills which had been introduced in the House and the Senate. In late April, 1985, the House Committee put the Academy proposal "on interim study" for further consideration. However, the Senate Education Committee put their version of the bill to a vote. The Academy proposal was approved twelve to one, and moved to the "amendment stage."[42]

Lawmakers sponsoring the House bill could not explain the weak House support in contrast with the strong Senate support, but said that one way or another the Academy would become a reality. They hoped the measure would pass onto the House floor where it could at least be debated, if not passed. It was believed that the original committee was "bogged down with education reform bills and could not give the bill the attention it deserved."[43] If the latest maneuver did not prove to be successful, the House bill could be tacked on to an education package later in the legislative session.[44]

Meanwhile, the Academy legislation continued to experience success in the Senate. The bill was brought to the Senate floor for a vote and received approval by a fifty to two margin.[45] Procedure required the Senate bill to be passed on to the House for approval. It was initially assigned to the House Elementary and Secondary Education Committee, the same committee which had already placed the identical House bill on "interim study." House sponsors quickly arranged to have the Senate bill reassigned to the House Higher Education Committee, where it would have the support from Northern Illinois University and Waubonsee Community College proponents.

Representative Hastert, chief House sponsor of the measure said, "We think the higher ed assignment is a good assignment. Certainly some of the things we're trying to achieve there really are higher ed accomplishments."[46]

The House Higher Education Committee approved the bill, but not before they made some major changes - changes which had been predicted by the Governor in his speech to the VIA in early spring. The Committee added the establishment of two more schools to the Senate bill.

> Under the provisions of the amendment, the three academies, which eventually will be called Illinois Educational Excellence Academies, will be governed by separate boards. The memberships of the three boards will have a cross-section of virtually all facets of public education as well as the general public. Appointments of the membership will be made by the Governor as well as various governing agencies of the different levels of public education. It would be up to the three boards to determine the type of school to be located at the sites. It is presently assumed the Chicago facility will deal with the arts, Champaign with agriculture, and Fox Valley with mathematics and science.[47]

The amended Senate bill was then sent back to the Senate to be approved.

The Senate received the amended bill on June 29, 1985, only days before the General Assembly adjourned for summer recess. The Senate voted to return it to the House with the hope the representatives would remove the two additional academies. As a result, the House, once again, was in possession of both Academy bills, the one that originated in the House and the Senate bill. Senator Etheredge hoped that if the House would restore the Senate bill to its original form, and then amend the House bill, it would become a decision the Governor would have to make. Governor Thompson would have to choose between the Senate bill without the two additional academies, and the House bill which included the two academies.[48]

In the meantime, another strategy unfolded. The Comprehensive Illinois Educational Reform Package contained six educational bills aimed at "across the board reforms" in elementary and secondary education throughout the state. It also contained the legislation that would allot $500,000 to establish the Academy. Senator Etheredge believed that by keeping "alive both the original Senate bill (if restored to its original form), the House bill and the bill inside the reform package, one would eventually be sent to the Governor for approval."[49]

Senator Etheredge's strategy paid off. The reform package was passed by the House late Sunday night, July 1, 1985, and was sent to the Senate for approval. The following Tuesday, the last day of the legislative session, the Senate approved the Educational Reform Plan (fifty-six to two). The plan included six educational bills aimed at across-the-board reforms in elementary and secondary education in the state. It appropriated $2.6 billion for fiscal 1986 including $99.3 million for reform programs and $500,000 start up funding for the mathematics and science academy (see appendix 3).

> Funding would be derived from an eight cent tax levied on each pack of cigarettes sold in the State after a federal cigarette tax drops by the same amount, and a five percent tax on interstate long distance telephone calls.[50]

The Senate sent it on to the Governor for his signature. The future of the Academy was now entirely in the hands of Governor James Thompson.

On July 18, 1985, Representative Marylou Cowlishaw, R-Naperville, and Senator Forest Etheredge, R-Aurora, participated in a ceremony during which Governor James Thompson signed the Educational Reform Plan, Senate Bill 730[51] into law. The $500,000 included in the new law would enable the Academy to take its first steps toward being

established. The start up funding would cover the appointment of a board of trustees, the research and selection of a site for the Academy, the identification and hiring of an interim director who would be responsible for designing and implementing admissions, staff hiring, and site development, and the search and hiring of a permanent director.

While these tasks were being accomplished, the General Assembly would reconvene in October. Once again, the legislators would struggle with the appropriation of funding to secure the future of the Academy. The next round of the struggle would involve higher stakes. The tug-of-war between the support and the opposition would involve anywhere between six to thirteen million dollars.

CHAPTER III

NOTES

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[4]"Results of the High School Math and Science Teacher Telephone Survey," School of Education of Northern Illinois University, September 1983, Illinois Mathematics and Science Academy Archives, Aurora, Illinois.

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[9]Ray Serati, "Thompson Boosts High-Tech Corridor," Copley News (Springfield) Service, 9 February 1984, p. A1.

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[17]Ray Serati, "Academy Funds Will Be In Legislation," Copley News (Springfield) Service, 11 May 1984.

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[19]Ray Serati & Lyle Rolfe, "Fox Valley Academy Funds Cut," The Beacon (Aurora) News, 4 May 1986.

[20]"Hill to Lobby for Funds," The Beacon(Aurora) News, 9 May 1984.

[21]Mary Deuschler, "Senate Oks Science Academy Funds," Copley News (Springfield) Service, 26 June 1984.

[22]Mary Doetsch, "Democrats Block Funds For Academy," Copley News (Springfield) Service, 27 June 1984

[23]"Science Academy Funding Restored," Copley News (Springfield) Service, 23 June 1984.

[24]Ray Serati, "Academy Fund Bill Blocked," Copley News (Springfield) Service, 29 June 1984.

[25]Ray Serati, "Science Academy Bill Goes to House," Copley News (Springfield) Service, 27 June 1984.

[26]Ray Serati, "Math, Science Academy Fails Spring Test," Copley News (Springfield) Service, 2 July 1984.

[27]Ibid.

[28] Ibid.

[29] Paul M. Krawzak, "Corridor Group Campaigns for Science Academy Site," The Beacon (Aurora) News, 6 November 1984, p. A1.

[30] Leon M. Lederman, "An Illinois Science Academy?" Chicago Tribune, 12 November 1984.

[31] "Create Illinois High Tech High," an editorial, The Beacon News, 25 November 1984.

[32] "Legislators Hopeful Academy On Course," Copley News (Springfield) Service, 29 November 1984, p. A1.

[33] Ray Serati, "Math, Science Academy Legislation Stalls in House," Copley News (Springfield) Service, 13 December 1984.

[34] Ibid.

[35] Ray Serati, "Math Science School Legislation Introduced," Copley News (Springfield) Service, 6 February 1985.

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[41] James Pearson, interview by author, 10 March 1997, transcript by phone, Montgomery, Illinois, Illinois Mathematics and Science Academy Archives, Aurora, Illinois.

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[50] Ray Serati, "Legislature Okays Math Academy, Copley News (Springfield) Service, 3 July 1985.

[51] The excerpt of Senate Bill 730 establishing the Illinois Mathematics and Science Academy can be found in Appendix 3.

CHAPTER IV

THE ENERGY OF FRICTION: CREATIVISTS vs CONVENTIONALISTS

> Schools are perhaps the only institutions in our society that are about the same today as they were 100 years ago. But schools must change to reflect the availability of new technology, and make the best use of a highly educated, professional teaching force. Nothing less will enable us to educate all children and not just a few, and nothing less will enable us to meet the challenge of the world's other advanced, industrial nations.[1]
>
> Albert Shanker
> President, American Federation of Teachers
> New York Times, 1985

Friction creates energy. The energy generated by the debates between the conventional educators and the 'artists' who created the Academy simply reinforced the purpose for establishing the Illinois Mathematics and Science Academy. The surging energy from the friction catapulted the expansion of support factions from business, educators, scientists and the community. This "rallying of support" marked the next phase of the Academy's evolution.

The concept behind the residential Academy which planned to eventually enroll more than 500 of the most gifted high school sophomores, juniors, and seniors from across the state, was that it would permeate the walls of conventional education by providing a quality of advanced instruction generally lacking in existing schools. It did.

The Academy proposed creative solutions to issues facing modern-day educational institutions. However, the proponents of the Academy would face a struggle.

The challenge of the struggle would be to bridge the gap between the conventional realities of education as currently practiced and the creative vision of education as proposed by the "creativists" of the Academy. The struggle was personified in the lobbying interest groups that affected the legislators' ability to provide funding for the new Academy. The debate played itself out publicly in the media. The confrontations experienced by the legislators clearly defined the differences between conventional educators and the creative educators according to their reactions to the proposal of the Academy.

The bastion of "conventionalist" educators opposed the Academy and defended the existing educational "delivery systems." The "creativist" educators responded to the concept of the Academy with excitement and encouragement.

What educational concepts embodied in the plan for the Academy would fuel the friction between the "conventionalists" and the "creativists"? The Academy proposed to: (1) recruit the best and the brightest high school students from throughout the state of Illinois; (2) cultivate their growth and learning in the areas of math, science and an integrated humanities curriculum; (3) prepare a new generation of analytical thinkers who would "seed" the new high-tech workforce; (4) generate innovative teaching methodologies to educate and challenge a concentrated live-in population of highly gifted students while influencing educational initiatives throughout the state; (5) depend on State funds to financially support its existence.

The "creativists" who supported the concepts and rallied around these outcomes included: scientific research organizations, businesses looking to invest and sow the seeds for a new "High-Tech Corridor" in Illinois, educational reformers anxious to experiment with alternative learning systems that might unlock the "strangle-hold" of the predominant "assembly line" educational practices and politics, gifted high school students, parents of gifted students, local residents who could showcase the Academy as a means of attracting families of high-tech workers to their community, and legislators.

The "conventionalists" who opposed these concepts and "circled the wagons" against the outcomes included educational associations, teachers unions, school administrators, proponents of special education interest groups, parent teacher associations, and legislators (see figure 5).

"Creativists:" Support Energy

The "creativists" rallied support for the many ways the proposed Academy would benefit the students, improve the quality of education throughout Illinois, and stimulate the community's economy by attracting new businesses and families.

Before 1986, the population of gifted students in the State of Illinois was viewed as an untapped resource by the "creativists." Schools for the gifted in Louisiana, New York, and North Carolina presented successful models for educating gifted populations in environments that challenged and developed their unique talents. Michael Matros, School Communications Officer of the North Carolina School of Science and Mathematics (NCSSM) at the time, indicated:

SAMPLE LISTING
"CREATIVISTS" AND "CONVENTIONALISTS"

Listed below are examples of organizations that supported the creation of the Illinois Mathematics and Science Academy, ("creativists") and organizations that expressed an interest in maintaining conventional educational standards ("conventionalists") not embraced by the Academy.

CREATIVISTS	CONVENTIONALISTS
Science & Research	**Science & Research**
Fermi National Accelerator Laboratory	(none)
Argonne National Laboratory	
Business / Industry/Organizations	**Business / Industry/Organizations**
Illinois Manufacturers Association	(none)
Associated Employers of Illinois	
Valley Industrial Association (VIA)	
Corridor Partnership for Educational Excellence (CPEE)	
Friends of Fermilab (FFL)	
Educational Organizations	**Educational Organizations**
Aurora Public Schools	Educational Research Consortium
Aurora University	Illinois Association of School Administrators
Batavia Public Schools	Illinois Education Association
DuKane Valley Council	Illinois Parent Teacher Association
Geneva Public Schools	Illinois Teacher's Union
Illinois Assoc of Chemistry Teachers	
Illinois Council of Mathematics	
Illinois Institute of Technology	
University of Illinois at Champaign	
University of Illinois at Chicago	
University of Chicago	
Waubonsee Junior College	
Western Illinois University	
Chicago State University	
Legislators	**Legislators**
Forest Etheredge R-Aurora	President Phil Rock D-Oak Park
Doris Karpiel, R-Roselle	George Ray Hudson
Beverly Fawell, R-Glen Ellyn	19 Democratic Chicago Senators
Dennis Hastert, R-Yorkville	Gene Hoffman R-Elmhurst
Suzanne Deuchler, R-Aurora	Chicago area Representatives
Mary Lou Cowlishaw, R-Naperville	

Figure 5

> By concentrating resources in a school like this you can present curriculum, laboratories and other facilities superior to what any other public school in the area can offer. Other states considering similar programs included the Boston Museum of Science which draft[ed] a feasibility study on the possibility of designing a science school; New Jersey, which forced a commission to make proposals on a delegation to study how the Durham, [North Carolina] school work[ed]; Jordan's Queen Noor visited the school (NCSSM). . .to see the facilities and programs and indicated that she would like to send people to study it. Having schools such as a school for science and math is not only important for the State, but also for students.[2]

Dr. Leon Lederman, concurred:

> Our really gifted kids don't get the stimulation and challenge they need in science and math in existing public schools.[3] If only one kid breaks through to solve some terrible social problem, like the greenhouse effect or acid rain, the school would have paid for itself one thousand times over.[4]

F. Borden Mace, founder and former principal of NCSSM explained:

> We are looking for a flare, for a sparkle, in our students, a special quality that leads to success. You don't define it, but you know it when you see it. These students will possess a very rare gift. When you bring these kids here, something synergistic happens. Watch the explosion.[5]

Strong lobbying groups like the Illinois Manufacturing Association supported the concept of the Academy, as did the locally influential Valley Industrial Association (VIA). Business and manufacturing saw the Academy having a contagious effect on the quality of education throughout the State of Illinois.

James Pearson, an influential business leader in the Fox Valley, former VIA President and founding member of the Corridor Partnership for Excellence in Education, (CPEE) explained:

> We believed in the concept of assisting the 'best and the brightest' of students. However, we also were very interested in assisting the other 95%. We agreed to support the Academy only if the IMSA mission included a second and equally important mission - to assist the State to improve math and science education. The business leaders were very enthused, but their support was conditioned on this other

> factor, the outreach program. The belief was that the establishment of the Academy would raise the visibility of math and science education for gifted students and begin to set in motion the leverage needed to update resources in math and science, throughout the state, for all students.[6]

Marylou Cowlishaw, an Illinois State Representative, supported the role the Academy would play as a "flagship" for curriculum development and inservice training for all teachers throughout the state and felt that these functions needed to be strongly emphasized.[7] The Academy curriculum would be available to regular schools and the Academy would sponsor programs and summer institutes to enrich regular high school teachers.[8] The proposed curriculum of the Academy would reflect a blend of disciplines, centering on, but not wholly focusing on, math and science. "You would want the students to communicate, be literate and understand the society in which they are functioning. The school should also teach humanities, foreign languages and community service,"[9] said Senator Forest Etheredge.

Locally, interest was focused on how the Academy may influence the attractiveness of the Fox River Valley community to new families and business. Dr. Leon Lederman explained:

> The community will benefit not only from [the Academy] but also from the faculty families locating here, the capital development on campus and the jobs it brings and the students' leisure dollars. The Academy will reap the benefit of its relationship with the city and with the High-Tech Corridor. Even more important, is the spirit the academy will bring to the community. A public boarding school for students in the upper one tenth of one percent of their classes would 'put us on the map' nationally in scientific circles. Such a school would also attract scientists concerned with their children's education.[10]

Dr. Lederman also concluded that more technical firms would also locate nearby because most of the Academy's students would be available for employment.[11] Supporters also

claimed the Academy would make Illinois more competitive as it tried to get the proposed Superconducting Supercollider (SSC) atom smasher, a $4 billion federal project currently being competed for by several other states.[12]

Republican State Representative Dennis Hastert, a legislative force supporting the Academy, believed it would establish a very important relationship between educators and private industry that could attract businesses to the state.

> Those businesses could offer high technology jobs to a pool of Illinois students. It is the first step in bringing Illinois together to be productive and to meet the needs of the third and fourth generations down the road.[13]

Dr. Stephanie Marshall, Superintendent of the Batavia Schools and the future Executive Director of the Academy, reported:

> The Provost and Academic Vice President of Chicago University found the Academy concept most attractive, especially its bridging function with higher education. The President of Western Illinois University seemed positive about the concept and its liaison function with Illinois Universities.[14]

In summary, the "creativists" had cultivated a remarkably substantial energy force of support for the creation of the Academy. Similar schools for the gifted provided models of success in other states. Businesses and manufacturing organizations believed the Academy's influence would positively affect the quality of statewide educational practices. Local communities saw the potential for economic revitalization. Universities believed the Academy would provide much needed "bridges" between secondary and university curriculum. How would the opposing "conventionalists" counter these supportive energies?

"Conventionalists:" Opposition Energy

While the "creativists" cultivated growing support by marketing the benefits of the Academy, the "conventionalists" generated energy by focusing on issues that cultivated skepticism about the Academy. There were public factions that associated the Academy with "elitism," contested the use of funding for gifted education, and believed that the residential aspect of the proposed Academy was not appropriate for high school aged students.

A concise summary of the "conventionalist" position can be found in a letter to Dr. Stephanie Marshall from a University of Illinois professor of educational administration. In the lette,r he relays his experience as a member of a panel of educators who discussed the Academy.

> A downstate board member launched a harsh attack on the Academy. Though some of his information was wrong, the message was clear: the 'Fermi School' is seen as creaming off existing funds as an institution for the elite, and one which is likely to exploit kids by separating them from their families, etc. Furthermore, the school represents an issue which all representatives of public schools and ISBE can agree.[15]

His observations were more than accurate. Misperceptions, political turf "struggles," and partisanship fueled an organized front of conventional educators opposed to the Academy, including the Illinois Education Association, the Illinois Association of School Boards, the Illinois Association of School Administrators, the Illinois State Board of Education, and many more.

Criticism regarding the Academy's proposed funding was rampant. When the issues of funding were raised, each of the opposing energies recommended the funding be used to support already existing efforts. For example, the State's powerful teachers'

lobby, the Illinois Education Association, protested the Academy funding. They claimed the funds would "come off the top of the general fund appropriations to already severely strapped public schools." [16] Berenice Bloom, representative of the Educational Research and Development Consortium, said funds that would be needed to operate the Academy should go to local schools to help similar programs at the local level.[17] She maintained the state should fully fund current gifted children in programs now in operation.[18] Dan Burkholder of the Illinois Educational Association suggested that the state might want to take a look at bills now in the legislature seeking to establish regional gifted children's centers.[19]

An influential member of the Illinois Association of School Boards was not in favor of the proposal. She felt that it was important for the state to spend money on all schools:

> We [are] already preparing the upper one percent of our students in several summer programs such as the one offered at the University of Chicago; we need[ed] to put State money into teacher training; the Academy would not address the science and math needs of the students and other efforts needed to be developed to improve science and mathematics education; that our top scientists were already the best in the world and that they were not actually "missing" any of these people.[20]

In a report to Dr. Lederman from Dr. Stephanie Marshall, the following was noted:

> The President of the Northern Illinois Planning Commission on Gifted Education was not in favor of the proposal if dollars were going to be reduced from the State appropriation for gifted or the general education appropriation. He would support the concept only it was 'new' money. He also felt that there was a concern among teachers and public school administrators that there will be competition for public schools to 'produce' Academy students and that high schools will be evaluated on how many students they send to the Academy.[21]

Correspondence from Friends of Fermilab to Dr. Lederman revealed:

> At a regular monthly meeting of the DuPage County School Superintendents, the Naperville Superintendent asked for a 'show of hands' in support of a Magnet High Tech High School [Academy]. Only 50% of the attendees raised their hands.[22]

Jack McEachern, another influential business Fox Valley business leader, member of the VIA and CPEE recalled:

> Educators seemed concerned with losing the high level students in their schools to the Academy. They believed, somehow, that 'losing' these gifted students would unfairly skew the results of achievement tests which annually ranked and compared Illinois schools to one another using the test scores.[23]

Legislators were also receiving feedback from their constituencies and were developing opinions of their own. Republican State Representative Marylou Cowlishaw, a staunch supporter of the Academy, raised several concerns that she had heard from her constituency about the Academy: 1) it would really be a gifted academy for boys; girls would be in the minority due to poor science and math preparation; 2) it would focus strictly on science and math to the exclusion of outstanding programs in all subject areas; 3) the residential aspect was perceived as highly negative and appeared to be the biggest problem - a child of fifteen needs to be home with his family, attend church, and be under the influence of the home.

Gretchen McDonald of the Illinois Parent-Teacher Association said members attending an organization's convention last year felt the Academy was not the best way for students to approach the two study areas.[24] "Teachers' unions claimed it would take funds away from general education and it would be 'elitist'."[25]

Republican State Representative Gene Hoffman said:

> We have not 'tooted our horns' enough for all schools in Illinois. Several states have attempted to develop Academies and they have not been successful. High school programs in the four-county area are providing for the high-talented. It

> would make much more sense to have students from Southern Illinois pay tuition to attend outstanding high schools in the Western suburbs; then they could live at home with other families rather than live in a dormitory with all the social problems that could result. This approach would relieve the state from any financial responsibilities and charge the families of gifted students to seek out and pay for education more suited to their child's needs.[26]

The "conventionalists" had identified the issues that would challenge the attempts of the "creativists" to establish the Academy: sources of funding, the threat of 'skimming the cream' from local student populations, and the issue of 'elitism.' The "creativists" had to strategically design their next steps and begin to respond to the issues raised by the "conventionalists."

Enlightening the "Conventionalists"

Most of the opposing issues of the conventionalists had been predicted. Senator Forest Etheredge explained:

> We knew that the predominant unions would oppose the concept of the Academy. Their opposition was a "knee-jerk reaction." They saw it as drawing money out of the school funding formula. We knew that the Democrats would be opposed to the legislation, as would be a handful of Republicans. Although the PTA appeared to be neutral, their neutrality was, in itself, opposition.[27]

The "creativists" were faced with the chore of enlightening the "conventionalists" so they would better understand the benefits of the Academy. Dr. Stephanie Marshall, explained:

> Generally, I found that people were not familiar with the entire proposal and were, therefore, reacting solely to the "elite" and residential components; it is important to disseminate the proposal or the Executive Summary to as many people in the school and legislative community as possible. The "flagship" roles of curriculum development and teacher training need to be strongly emphasized. We need someone speaking with a common voice to talk about the Academy and address critical decision-making groups. Also, the proposal is seen as a political effort to

put a "feather in "Fermi's cap" and enhance the Western suburbs; some see it as an attempt to help Aurora West because they have a vacant building.[28]

The energy forces on both sides of the issue had organized themselves and had converged in the form of interest groups that would attempt to influence the legislative process. Ten years later, Dr. Stephanie Marshall, the Executive Director of the Academy, reflected on the obstacles that prevailed during the developmental phases of IMSA.

> From our view, the significance of most obstacles was placed within a political context. The concept of the Academy presented a stunning and visionary idea of explicitly creating conditions that cultivate, nurture, and sustain the development of talent, but political context has been and continues to be part of the Academy's life.
>
> From the very beginning our "position" was to present ourselves with clarity and integrity and to partner ourselves with key legislative leaders on 'both sides of the aisle.' Our role was not to maneuver or to cajole, rather we honestly believed, and still do, that the General Assembly wanted and wants to do its best to support the educational needs of our children in Illinois. Given the belief, we strive to build personal relationships with legislators based on integrity and trust. Therefore, we reframed our view and viewed obstacles not as obstacles but as temporary detours and as challenges. We embraced the notion that 'where you stumble, there the treasure lies.'[29]

The "creativists" responded to the funding issues by explaining that it would be highly unlikely if the $150,000 of annual state aid the Academy would require would be earmarked for education if it didn't exist.

> When, if it was [earmarked for education], bright Illinois students still would get extensive training not now available, and research done in their education will help upgrade instruction at all public schools. Also, part of the budget as proposed will come from the private sector, which we think ought to be willing to chip in even bigger bites as budding new scientists and mathematicians begin assuming productive roles in Illinois economic futures.[30]

In response to the concern of 'skimming the cream' from the individual student populations of each school, the "creativists" responded:

> Placing one or two of their best students at IMSA for a greater challenge should become routine as well as a source of pride. To the extent that IMSA serves the schools, it reduces the perception of threat of loss. We at IMSA are merely catalysts that compliment, provide and contribute to our fellow educators as we work with them professionally in common cause.[31]

In response to the concerns regarding 'elitism,' a parallel was drawn to the benefit derived from other elitist organizations. In the words of Dr. Lederman:

> . . . although no one objects to the Lyric Opera or the Chicago Cubs being elitist as they can possibly be. Elitism of intellect and creativity is a gift to human kind, too rare and too valuable to put at risk, especially as our modern world faces the promise but also the uncertainties and hazards of the 21st Century.[32]

Dr. Leon Lederman explained that the friction created by the resistance to a new idea can create an energy, an 'inner fire':

> Most of the remaining resistance is, I'm afraid to say, the kind that appears with any new idea, threatening conventional styles and conventional turfs. . .the question is whether Illinois has the inner fire to recognize the road to a future it would like to have even if it appears, at times, narrow, rocky and steep.[33]

Illinois demonstrated the "inner fire" generated by the friction between the "conventionalists" and "creativists" who debated the issues surrounding the creation of the Illinois Math and Science Academy. After the General Assembly approved Senate Bill 730, establishing the start-up funds for the Academy, many of the "creativists" who fueled the passionate "fire" took their places in the leadership teams that would nurture the Illinois Mathematics and Science Academy into existence.

CHAPTER IV

NOTES

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[2] Jennifer Jendrasik, "Illinois to Copy Math School," The Durham (North Carolina) Sun, 16 August 1985.

[3] Eleanor Nelson, "High-Tech School for Gifted Asked," Chicago Tribune, 11 January 1984.

[4] Ibid.

[5] Kay Severinson, "Boosters Needed for New Academy: Superintendent," Beacon (Aurora) News, 14 February 1986.

[6] James Pearson, interview by author, 10 March 1997, transcript by phone, Montgomery, Illinois, Illinois Mathematics and Science Academy Archives, Aurora, Illinois.

[7] Stephanie Pace Marshall, "Feelings About the Proposed Academy From Talking With Many People at Speaker Madigan's Conference," 2-3 March 1984, Illinois Mathematics and Science Academy Archives, Aurora, Illinois.

[8] Paul Krawzak, "Businessmen Hear Pitch for Science," The Beacon (Aurora) News, 10 May 1985.

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[12] "House Approval Bodes Well For Math Science Academy," Copley News (Springfield) Service, 25 June 1985.

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[14] Stephanie Pace Marshall, "Feelings About the Proposed Academy From Talking With Many People at Speaker Madigan's Conference," 2-3 March 1984, Illinois Mathematics and Science Academy Archives, Aurora, Illinois.

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[16] "Create Illinois High Tech High," no newspaper, 25 November 1984, Illinois Mathematics and Science Academy Archives, Aurora, Illinois.

[17] Ray Serati, "Fox Valley Group Lobbies For Academy," Copley News (Springfield) Service, 11 April 1985.

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[20] Stephanie Pace Marshall, "Feelings About the Proposed Academy From Talking With Many People at Speaker Madigan's Conference," 2-3 March 1984, Illinois Mathematics and Science Academy Archives, Aurora, Illinois.

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[22] Stanka Jovanovic, memo to Leon Lederman, 18 February 1983, "High Tech Science High School," Fermilab Archives, Batavia, Illinois.

[23] Jack McEachern, interview by author, 20 March, transcript by phone, Yorkville, Illinois, Illinois Mathematics and Science Academy Archives, Aurora, Illinois.

[24] Ray Serati, "Fox Valley Group Lobbies For Academy," Copley News (Springfield) Service, 11 April 1985.

[25] Paul Krawzak, "Thompson: Illinois Must Be Bullish On Future," Beacon (Aurora) News, 5 April 1985.

[26] Stephanie Pace Marshall, "Feelings About the Proposed Academy From Talking With Many People at Speaker Madigan's Conference," 2-3 March 1984, Illinois Mathematics Science Academy Archives, Illinois Mathematics and Science Academy Archives, Aurora, Illinois.

[27] Forest D. Etheredge, interview by author, 23 August 1996, transcript, Aurora University, Illinois Mathematics and Science Academy Archives, Aurora, Illinois.

[28] Stephanie Pace Marshall, "Feelings About the Proposed Academy From Talking With Many People at Speaker Madigan's Conference," 2- 3 March 1984, Illinois Mathematics and Science Academy Archives, Aurora, Illinois.

[29] Stephanie Pace Marshall, interview by author, 23 August 1996 transcript, Illinois Mathematics and Science Academy, Illinois Mathematics and Science Academy Archives, Aurora, Illinois.

[30] "Create Illinois High Tech High," no newspaper, 25 November 1984, Illinois Mathematics and Science Academy Archives, Aurora, Illinois.

[31] F. Borden Mace, "Report to Board of Trustees and Stephanie Marshall," 4 July 1986, Illinois Mathematics and Science Academy Archives, Aurora, Illinois.

[32] Leon M. Lederman, "An Illinois Science Academy?" Chicago Tribune, 12 November 1984.

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CHAPTER V

FIVE ADMINISTRATIVE TEAMS: A COLLECTIVE PASSION

> We worked very hard on a conceptional design, but I hope that does not bind this group. We are starting with a clean white piece of paper, our hands poised and waiting to write. We have an enormous chore here. We must think in enormously bold terms.[1]
>
> Dr. Leon M. Lederman
> First IMSA Board Meeting, 1985

Beginning in its earliest stages of development, the Academy was driven forward by a combination of five passionate, energetic and talented administrative teams: (1) the Board of Trustees, many of whom were the "creativists" involved in the Academy since its conception; (2) the Interim Director and his operations staff; (3) the Executive Director; (4) the National Advisory Board; (5) the Foundation made up of corporate and private contributors.

Board of Trustees

"I'd like to welcome you to what the future will look back on as a very historic moment,"[2] said Ted Sanders, Illinois State Superintendent of Education and IMSA interim Board President, as he greeted an assembly of twenty-one people at the Saratoga Inn in North Aurora.

"This is an important day because this is the first meeting of the legally authorized people who are either going to do it or 'fall on their face'," [3] added Dr. Leon Lederman. It was November 5, 1985. It was the first official meeting of the Illinois Mathematics and Science Academy Board of Trustees. In the ten short months ahead of them, the Board would be responsible for interviewing and hiring an interim director and an executive director, building dormitories, recruiting students, developing a curriculum, renovating a building, selecting teachers, and securing the future funding for the Academy.

F. Borden Mace, at the time a consultant to the IMSA Board and former principal of the North Carolina School of Science and Mathematics, recalled:

> Assembling a team to develop the school involved a combination of things. We had to make sure we worked with the leaders of the state, mixed with some experience from outside, and with some of the best minds in the world. We called on people we knew best. Dr. Lederman and Dr. Massey had no problem assembling a team . . . .
>
> . . . Leaven it with practicality; mix scientists and scholars with experienced teachers, school officials, businessmen and community leaders. The combination was invaluable so that we didn't do foolish things, so we met the reasonably expressed concerns and needs of students and parents - as well as the nation.[4]

Referring to the unique attributes of the first IMSA Board, James Pearson, influential Fox Valley business leader and first elected IMSA Board President, stated emphatically:

> The formula for the selection of the first appointed Board of Trustees was very important. It represented the conceptual blending of representatives from the fields of science, business, and education, (K-12, community colleges, and higher education).[5]

The recently passed state legislation dictated that eight members of IMSA's Board be appointed by Governor Thompson three by Ted Sanders, State Superintendent of Education, and two by Richard Wagner, the Executive Director of the Illinois Board of

Higher Education. Ted Sanders and Richard Wagner would also serve as two of the four non-voting members on the Board. The other two non-voting members would be the superintendent of the school district which housed the Academy, Gary Jewel of North Aurora, and David L. Pierce, Executive Director of the Illinois Community College Board[6] (see figure 6).

Senator Forest Etheredge, Dr. Leon Lederman, Jim Johnson (VIA President), and Governor James Thompson had lists of recommended individuals they believed should be on the IMSA Board. Other lists were submitted from legislators throughout the State of Illinois. Consistent with the issues that surfaced during the legislative struggle, it was important that the IMSA Board members constitute an evenly designed representation of all three political regions of Illinois, Chicago, the "collar counties," and the downstate regions.

Within the first three official meetings, the new Board elected its officers and divided up the pressing responsibilities which faced them. James Pearson was elected Board President; Dr. Stephanie Pace Marshall, Vice President; Sheila Griffin, Secretary; Jack McEachern, Treasurer. Lots were drawn to determine each member's length of service: Gooler, Marion, McEachern, Schmulbach, and Dr. Lederman would serve two terms; Sosa, Griffin, Dr. Sadowski, and Dr. Massey would serve four year terms. Dr. Marshall, Scott and Pearson would serve six year terms. Subsequent IMSA Board members would serve six year terms.[7]

Board member Sheila Griffin recalled:

> The Board was passionately active. Each member had a very personal commitment to what we were trying to accomplish. Since there were no staff members during the

IMSA BOARD OF TRUSTEES 1986

Appointed by James Thompson, Governor of Illinois

Sheila Griffin Marketing Executive Motorola Corporation	John McEachern, Jr. President Wayne Circuits, Inc
Dr. Leon Lederman, Director, Fermi National Accelerator Laboratory	James Pearson President Aurora Industries
John Marion, Business Manager Director of Apprentice Training International Brotherhood of Electrical Workers Local 461	Dr. Anthony Sadowski Vice President of Research Nalco Chemicals
Dr. Walter Massey Vice President of Research Argonne National Laboratory	Barbara Schmulbach Mathematics Teacher Carbondale Community H.S.

Appointed by Dr. Ted Sanders, Superintendent, Board of Education

Dr. Stephanie Pace Marshall Superintendent Batavia Public Schools	Elsie Scott Science Teacher Matoon H.S.	Jesus (Manny) Sosa Principal, Roberto Clemente H.S.

Appointed by Dr. Richard Wagner, Executive Director, Board of Higher Education

Dr. Martin Abegg President Bradley University	Dr. Dennis Gooler Dean College of Education Northern Illinois University

Four Non-Voting Members

Dr. Gary Jewel Superintendent North Aurora School District	Dr. Ted Sanders Superintendent, Illinois State Board of Education
Dr. David L. Pierce Director Illinois Community Colleges	Dr. Richard Wagner Executive Director, State Board of Higher Education

Figure 6

earlier stages of development, the Board really acted as the staff. Each Board member had specific duties. We organized the tasks as if we were running a business, always keeping in mind the academic and personal needs of the students. There were many meetings that lasted until three in the morning.[8]

Board member Dr. Stephanie Marshall recalled:

Everything that was developed, designed and implemented was made possible through the growth of trusting relationships and people that shared a common vision and a sense of possibility for our state.[9]

F. Borden Mace, soon-to-be IMSA's interim director, explained:

It was a process that was far more effective in Illinois than in other states where I have worked. The Board members of Illinois knew how to respond to their legislators. Their vision was clear. They wanted the Academy and knew it was necessary.[10]

Prior to dividing the pressing responsibilities which faced them, the newly appointed Board would have to make one of its first most important decisions. Technically, the three-year residential Academy had been legally created, but the legislature had allotted only $500,000 to allow the governing board to begin planning for the school. The board members were very aware that the school had not yet been funded. There was no assurance that the funding would be passed by the legislature in 1986.

"The Board will need to decide on an opening date by late January 1986," said Ted Sanders, "so that funding can be approved by the legislature."[11] Should the IMSA Board plan to open the Academy in the fall of 1986 or wait another year until the fall of 1987?

"I am going to do everything I can to encourage them to open next fall," said Senator Forest Etheredge, who had moved the bill through the Senate, and would continue his campaign during the upcoming General Assembly.[12]

Dr. Leon Lederman suggested that by aiming for 1986, ". . . the Board would be certain to have everything in place to open by the Fall of 1987."[13]

Borden Mace told the trustees to be creative, not to play it safe. "Don't worry about dotting every 'i'. I applaud the decision to open in 1986. You can do it! Don't be afraid to take chances. The world will be watching you."[14]

Other Board members believed that opening IMSA too soon might injure the reputation and make it harder to get state funding. "I'm very concerned about marketing," said Dr. Stephanie Marshall. "Right now there's a lot of skepticism out there. A lot of people see this as a political football."[15]

Jesus "Manny" Sosa, IMSA Board Member and Principal of Clemente High School in Chicago, said:

> My gut reaction is 'let's open it tomorrow.' But the worst thing we could do is to do it wrong, just to open it sooner. This should be a long process of interviews, and tests. How about opening it during the second semester next year as a compromise? [16]

Elise Scott, an IMSA Board Member and a science teacher from Matoon, was equally cautious:

> We are going to be scrutinized by many people who think this is a stupid idea. We must not do something in a hurry that is designed to fail. If this is in anyway a sleazy operation, we will not get appropriations for the next year. If the housing is unsatisfactory, if the curriculum is not the best, these things will cause us to fail.[17]

Dr. Dennis Gooler, IMSA Board Member and Dean of the College of Education at Northern Illinois University, suggested:

> Let's explore this sense of urgency. There seems to be an idea that this window of opportunity may be open only so long and that there is a risk of the legislature moving on to other things in the interim. That might encourage us to get something going in the fall of '86.[18]

"I am getting feedback from all over the State that the Academy should open next Fall," said Jack McEachern, Jr., IMSA Board Treasurer and President of Wayne Circuits in Yorkville.[19]

F. Borden Mace reflected:

> My best advice was to begin immediately. It might have been seen as ridiculous at the time, but it was good advice. The school is something organic. Get it started and it will grow. Get as many people as you can from within the system who know and understand the people of Illinois involved as soon as possible, and the school will grow with strong roots.[20]

The IMSA Board made the decision to open the Academy in September of 1986. Dr. Stephanie Marshall summed up the Board's decision:

> Because the gubernatorial election was to be held in November of 1985 and because we were not sure of the outcome of the election, the Board of Trustees decided that they would open the Academy in September of 1986 rather than September of 1987. For that reason, (because the timeline of opening was moved ahead one year), each one of the Board members began to assume direct, strategic and operational accountability for several dimensions of the Academy's program.[21]

In order to meet the fall 1986 deadline, the IMSA Board would have to tackle a number of critical decisions. A committee was formed to deal with each issue. The Curriculum and Student Services Committees would address the issues of program development and would attend to the overall needs of the students. Jesus (Manny) Sosa and Dr. Stephanie Marshall would chair, respectively. The Committee on Staffing was charged initially with finding an executive director and then determining how highly qualified teachers could be recruited to teach the Illinois' most promising students; Dr. Dennis Gooler would chair. The Student Selection Committee would address the sensitive issue of how the students, 200-300 for the first year, would be chosen. Dr.

Anthony Sadowski would chair. Jack McEachern and Sheila Griffin would chair the Legislation and Strategy Committee to market the Academy and get funding for its first year of operation. The Building Committee would study how to house students and how the Academy site in Aurora, the North Campus of West Aurora High School, would be set up for academics; James Pearson would chair. [22] Dr. Ted Sanders would lead the efforts of the Fund Raising and Private Support Committee.[23]

Dr. Ted Sanders, State Superintendent of Schools, made an observation about the dedication of the IMSA Board of Trustees:

> I have never witnessed people roll up their sleeves and work on something so hard. Some of them have hardly worked on anything else but the Academy for the past couple of months and we have not made it easy for them by setting a goal of opening in the fall of 1986.[24]

The Curriculum Committee

Dr. Stephanie Marshall, Curriculum Committee Chair, recalled:

> I was asked to assume leadership for curriculum and instruction, because of my direct involvement with working with educators around the State. The December 1983 proposal was a framework created by a large group of constituencies in our state, mathematics and science educators, scientists, corporate leaders, legislators, etc. Once the Academy was actually established, the Curriculum Committee's framework was given to the IMSA faculty and with their imagination, inventiveness, and their understanding of the needs of gifted and talented children, they actually created the curriculum that we use.[25]

In January, 1986, Dr. Marshall's committee hosted a conference of twenty-two educators from throughout the state to build the initial curriculum for the first brochure. The brochure needed to provide enough information for the students without narrowing the ability of the IMSA faculty to design their own approaches once they were hired.[26]

Dr. Dennis Gooler, Staffing Committee Chair explained:

> I see substantial experimentation with curriculum here. We will explore new ways of teaching and help revitalize how we train new teachers. We ought to take advantage of every emerging technology and ways to integrate them with teaching and learning. This should be a demonstration center for schools throughout the state. What constitutes quality education for gifted students will be good for all students.[27]

Dr. Leon Lederman and Dr. Walter Massey wrote:

> A curriculum has been designed and a philosophy adopted to make the most of this unusual opportunity in gifted education. Although we will attract students leaning towards mathematics and science, the school will follow the liberal arts tradition with very strong offerings in social studies and the humanities. Close ties were established and will be maintained with the universities in Illinois. This will lead to shared resources and a thorough monitoring of our college-level curriculum.[28]

The Staffing Committee

The staffing committee was responsible for recruiting and hiring faculty and staff for IMSA. Dr. Stephanie Marshall explained:

> Our intention in hiring faculty was that we hired those who had a sense of exploration and adventure. We knew that we wanted to be an environment that honored integrative ways of knowing and hence we needed to employ faculty who would be able to move out of their discipline specific boundaries and connect with multiple disciplines.[29]

Dr. Anthony Sadowski commented:

> I would like this school to open based solely on intellect. I would like to see the students not pay any extra tuition. I would like to see the faculty not tenured, but they should be the highest paid in the state and I think that merit pay should be talked about.[30]

Borden Mace also suggested that the IMSA Board seriously consider one year contracts for the teachers.

The Student Service Committee

In addition to the academic curriculum, IMSA created and implemented a balanced program of extra curricular activities including sports, field trips, work with local scientists, and community related services. Dances, student government, a school newspaper, chess club, drama club, audio-visual club, a jazz band, and a school yearbook were just a few of the many programs students became involved in during the first year of the Academy.

IMSA Board Member, Elise Scott commented:

> I want to make sure we don't turn out maladjusted creatures. I am concerned about the quality of education and life of students who come here. They should have a good range of activities.[31]

Dr. Stephanie Marshall explained:

> Gifted programs can isolate students from real-world experience. I am concerned about what that can do to a student's psyche and if we are training the brightest and the best, we need a strong ethical underpinning. We must teach the ethics of peace here.[32]

Borden Mace added:

> Students have to be able to develop other intellectual skills and use the mind in a way that you don't use it when you are laboriously testing something. These things [student council, sports, debate club, etc.] develop hard earned self-confidence and are a part of the maturing process.[33]

Advice From Experts

In addition to discussions among committee members regarding policies, procedures and philosophies, the IMSA Board would frequently invite experts from across the country to make presentations and offer advice to their committees about how to

create a quality school. These presentations proved to be invaluable in helping the IMSA Board avoid pitfalls and focus on cultivating strong, quality-based programs which would become the underpinnings of the Academy.

Dr. Cliff Wing, a tenured Professor of Psychology at Duke University, provided valuable information about admissions policies and procedures.[34] Dr. Raymond Neff, Vice Chancellor for Information Services at the University of Illinois, helped the curriculum committee investigate guidelines for establishing a library computer center. Kathy Bonzaquin, NCSSM Dean of Students, offered insights regarding student health, security and services. Dr. Julian Stanley, Co-director of the Study for Mathematically Precocious Youth at John Hopkins University, itemized special precautions to be taken when starting a math/science academy.[35] Local community members also provided services. Members of the Aurora Chamber of Commerce met with the IMSA Board to offer their assistance in creating Host Family programs.[36]

Interim Director and Operations Staff

To select the best candidate for the position of Executive Director was a priority. However, with the opening of the Academy scheduled to take place in the upcoming fall of 1986, the Board was faced with a critical dilemma. How could they manage a quality recruitment campaign for an executive director while at the same time continuing to manage the day-to-day development of the Academy? Their solution was masterfully designed. The IMSA Board decided to hire an interim director while the search for a permanent executive director was conducted.

The Interim Director

The interim director would have to be someone with experience in the start-up operations of a school. The interim director, under the direction of the IMSA Board, would have to be able to lay out the organizational structure of the Academy and then, ultimately, hand over the "keys" to the permanent executive director shortly before the Academy would open.

F. Borden Mace, founder and former principal of the North Carolina School of Science and Mathematics, was the perfect candidate. He had previous experience at NCSSM. He did the first feasibility study for the creation of NCSSM, served as that school's Dean of Operations and institution advancement for four years, Principal for one year and Executive Officer for Strategic Planning for one year before retiring in 1985.[37] He already possessed intimate knowledge of the current status of the Academy's development and a clear understanding of the Board's expectations for its future. His familiarity with all of the IMSA Board Committees would enable him to step into his new role. Later, when the executive director was selected, he would participate in a seamless transition of authority.

Mace accepted the position:

> If the enthusiasm shown by the Board is any indication of how the rest of the state feels, then there should be no problem. Not only is the site chosen by the Board superior to NCSSM, but IMSA has the support of the Illinois State Superintendent of Schools, a luxury [I] did not enjoy when [I] began the school in North Carolina.[38] I am very pleased and looking forward to it. With all the talent that exists in that area, the quality of trustees, and the physical facilities, I see no reason why we can not have the finest school in the country.[39]

F. Borden Mace was hired to be the Interim Director of the Illinois Math and Science Academy as an independent contractor for six months, to begin February 1, 1986, and to conclude August 31, 1986. [40]

IMSA Board President, James Pearson, commented:

> I am very pleased that the new interim director is Mace. He brings with him the experience of the problems and the successes that North Carolina has had. We can build on those successes and hopefully eliminate the problems. That is a tremendous leg up on opening the school.[41]

One of Borden Mace's first tasks as IMSA's Interim Director was to assemble an operations team to work in close cooperation with the IMSA Board and carry through on the work being accomplished by the Board's committees. A variety of tasks needing immediate attention had already begun to surface

The Operations Staff

The first staff member Borden Mace hired was Connie Jo Hatcher formerly a teacher at Kearney State College in Nebraska. She and her family had just recently moved to the Aurora, Illinois community. She quickly became an indispensable contributor to the development of the Illinois Mathematics and Science Academy. Dr. Hatcher, recalled her early experiences at IMSA:

> They hired Borden on January 29, 1986. I met with Borden in the lobby. He asked me, "Can you write?" I said, "Yes." He said, "See you Monday!"[42] By February 3, 1986, the temporary offices of IMSA opened for the first time at North Island Center [in downtown Aurora]. I had been doing a lot of coordinating and helping with correspondence and things like secretarial tasks, promotional admissions and some public relations work. With the small staff that we had, we were just all working together.[43]

Jerry Foster was hired as a liaison to the Illinois State Board of Education to work on promotions and applications for admissions. Joe Meyer, a physics teacher at Oak Park-River Forest High School, with over twenty years of experience,[44] became the Program Coordinator. At the time, both Foster and Meyer were contracted as IMSA consultants.

Joe Meyer eventually became the first acting "principal" and the Associate Director of Outreach for the Academy.[45] The term "principal" was specifically selected as the job's title instead of "headmaster" at Mace's recommendation. "You will be called sexist, and the word [headmaster] carries the aura of a prep school," advised Mace. The IMSA Board immediately amended its language.[46]

Jonathan Smith was hired as the Interim Business Manager, and later passed along his responsibilities to Gregg Worrell, IMSA's first Fiscal Officer. Dr. William Anthony, a field representative for the College Board from John Hopkins University and William Stepien, Director of the Dundee School District's gifted students program, were both hired to work on curriculum and the student selection process.[47]

John Bauer, Athletic Director of West Aurora High School, arranged the establishment of basketball, volleyball, and soccer games schedules with local leagues for IMSA, even though administrators at the time did not know if there would be enough talented students to fill the teams.[48]

Newspaper ads were designed and circulated nationwide to recruit a director of admissions. Dr. LuAnn Smith, former Assistant Director at University High in Urbana, Illinois, was eventually hired. Also hired by Mace with the Board's approval was the first

IMSA faculty member, Dr. David Workman, previously a Physics Professor at George Williams College in Downers Grove, Illinois.

By mid-August, 1986, the permanent staff included seven teachers, three residential counselors, a dean of students, a superintendent of security, three secretaries, a bookkeeper, a business manager, a communications officer, two custodians, and Borden Mace's successor, IMSA's first executive director.

"The single most important decision the board will make," Mace said, "will be the selection of the executive director. The director will set the ethos, the style, and the climate of the school."[49]

The Executive Director

Hiring Borden Mace as IMSA's Interim Director was just one example of a valuable and frequently repeated practice by the Board. A variety of consultants with diverse areas of expertise were enlisted by the Board to assist in viewing different perspectives of important issues. Dr. Walter Massey and Dr. Leon Lederman wrote:.

> The Board has made extensive use of nationally recognized consultants and in particular has benefited from the presence of Borden Mace, the first principal of the North Carolina School of Science and Mathematics.[50]

The Board once again sought advice from experts when confronted with the task of constructing a job description profile for the IMSA executive director position. Dr. Howard Gardner, Harvard University Professor of Psychology, was among the prominent speakers called upon to provide guidance to the IMSA Board as they prepared to launch a search for IMSA's Executive Director. As an expert on the subject of multiple

intelligences and the qualities of leadership, Dr. Gardner assisted the Board in the development of a list of characteristics they could refer to as they recruited and interviewed candidates for the position.[51]

Also called upon for advice regarding the search for the executive director was Dr. Bobby Alost, Director of the Louisiana School of Mathematics, Science and the Performing Arts. Dr. Alost believed that "the new 'High Tech High' should find a director with an irreverence for the bureaucracy of education."[52] Dr. Alost explained:

> The Academy will not work if it is run by someone bogged down in rules of education. Look for a person who can deal with all aspects of your state, private industry, the governor's office and legislators. The director should be watched carefully to make sure that he/she does not bring in staff members who all think the same way. You want to bring in a variety of views. Our administrative meetings get pretty heated but we are a stronger school because of it. The director and staff should be a group of risk takers. You need people who are not afraid to fall on their face and dust themselves off. Don't build a kill factor into your school. If you have to go through four or five people to approve an idea, somebody will kill it. Too many school people have been taught to protect themselves.[53]

Based on the recommendations of experts, the job description and candidate profile was designed and the search was launched in May, 1986. Advertisements for the position were circulated throughout the United States. The application deadline was late May. By July 1, 1986, the Board had finished interviewing the four finalists and had made their decision.

Dr. Stephanie Pace Marshall, Superintendent of the Batavia Schools and long time supporter of the Academy, was offered the position of Executive Director. Dr. Marshall had resigned from the IMSA Board the previous May in order to apply for the position.

On August 1, 1986, Dr. Stephanie Pace Marshall became the first Executive Director of the Illinois Mathematics and Science Academy. Dr. Marshall recalled:

> It was clear to me at that time that the IMSA idea and promise was an opportunity to create an institution that was unparalleled in public education. I decided that the position of Executive Director was one that matched my talents and interest. My background was also part of the context for my tremendous interest in this idea. I attended elementary, junior high and high school in New York during the time when the Soviets launched Sputnik and the country became very concerned that we were no longer mathematically and scientifically competitive. It was during that time that the National Defense Education Act was authorized. A significant amount of federal money was to be allocated for the improvement of mathematics and science education at the elementary and secondary levels as well as for the education of gifted children. I was placed in a very innovative program that identified talented students in grade three and created distinctive opportunities for them through grade twelve. Later as an undergraduate (Queens College in New York City) and as a graduate student (University of Chicago), I formally studied gifted and talented education." [54]

Dr. Marshall was well prepared to assume her role as Executive Director. During the years to come, her expertise would lead the Academy and the state of Illinois to levels of success no one could have ever predicted.

The IMSA Foundation

Since the inception of IMSA, along with other Academy proponents, Dr. Leon Lederman had made presentations to local organizations throughout Illinois appealing for financial assistance.

> We do need your help. Yes, we are a public school funded by the State as an independent state agency. But we are newborn and fragile - under constant threat of being forced to live under a state education code that would stifle innovation - harassed by powerful constituencies such as the teachers unions and others who object to us as : "elitist," "too innovative," a "threat to the existing establishment." We need your financial help to indicate to the legislators that you understand our value and are willing to help in a substantial way. Ultimately, we believe we'll need

10% from the private sector - $1.5 million per year. But now, before November, we need a response to this threshold campaign.[55]

James Pearson, IMSA Board President, explained further:

The IMSA Foundation was founded with the intention of creating additional funding sources to demonstrate to the state that the Academy was also supported by local business and finance in the community.[56] Three local banks made a commitment before there was an IMSA presence in the legislature. It was their way of saying, 'Yes, we think the State should support IMSA.' This show of financial support was a tremendous boost, and proved that the private sector was very much interested in this new institution.[57]

In June of 1986, the IMSA Board voted to formally establish the IMSA Foundation.[58] Donations from private industry and from individuals became even more essential for the Academy's survival after $2 million dollars was cut by the state from the proposed budget in July of 1986, six weeks before the Academy was scheduled to officially open.

As one of the founders and the former principal of the North Carolina School of Science and Mathematics, Borden Mace had been involved in the collection of more than $8 million from private donors over a four year period. He was no stranger to seeking corporate contributions. After his contract as IMSA's Interim Director expired, Borden Mace agreed to be a liaison for the IMSA Foundation, meeting with executives of local companies to cultivate interest in making donations to the Academy.

Among the first corporate contributors was Lester B. Knight and Associates.[59] The Furnas Electric Company Foundation of Batavia donated $300,000 to become a founding partner in America's first completely merged library and computer system. The IMSA Library was officially named for Leto Furnas.[60]

Other "firsts" in donations included Motorola, McDonnell-Douglas, Nalco Chemical, Amoco, Bell Labs, and the Pritzker Foundation. Centel made a committment to IMSA and Aurora University by donating a TV studio, editing equipment. and approximately $20,000 annually for a technician, all to be located at IMSA.[61]

IMSA National Advisory Board

In May of 1986, invitations to become members of The National Advisory Board of IMSA were extended to and accepted by an astronaut, scientists, university presidents, artists, businessmen and even the Catholic Archbishop of Chicago, (see appendix 4). Dr. Leon Lederman welcomed the members of the National Advisory Board to their new affiliation with IMSA:

> The Board of Directors of IMSA has worked hard and fast to initiate what we hope will be the pre-eminent institution of its kind in the nation. There are many ideas and tasks still unattended. We must plan to reach out to the schools in Illinois. We need a steady stream of artists and scientists, scholars and poets to visit the Academy and speak or sing to our charges. At this writing, we are still in awe of the responsibility being entrusted to us. We welcome the advice and support of our very distinguished National Advisory Board.[62]

By assembling prominent leaders from throughout the United States and asking them for their advice and assistance, IMSA expanded its circle of influence and enriched the resources available to the Academy's students. According to IMSA's Acting Principal, Joe Meyer:

> The members will advise the Academy staff on curriculum and how the Academy should grow. Any school like this needs an advisory committee. The IMSA Advisory Board will not raise funds. Raising funds is the responsibility of the IMSA Foundation.[63]

Challenges of Administering a Unique Educational Environment

The goals and objectives of IMSA had been clearly defined, in the form of proposals, speeches, and, finally, legislation. Based on the activities, decisions and documents, and future plans created by IMSA, one fact became very clear. Nothing like the Illinois Mathematics and Science Academy had ever existed in the state of Illinois. As a result, virtually every decision made by the IMSA Board blazed a new trail. The methodologies proposed by IMSA were among the "first of its kind."

No public high school in the state of Illinois ever existed without belonging to a school district. IMSA would.

No public "high school" in the state of Illinois ever provided housing for its students on its campus. IMSA would.

No public "high school" in the state of Illinois ever hired a faculty made up of distinguished scholars, scientists and experts as non-certified teachers. IMSA would.

The uniqueness of the Academy lent itself to creating its own identity and its own affiliations. However, IMSA was funded by the state, and therefore, was considered a state agency. Its remarkable future would rest in the Board's ability to hurdle the challenges of a bureaucratic system that had controlled educational institutions throughout the state for several decades. IMSA Board President, James Pearson, explained:

> The Academy should have an impact throughout the state. I see the Academy as setting a standard for education, that is, of the highest repute. How we get there, I do not know. But what we do have to give management is the freedom to exercise that standard of excellence.[64]

"We were under the strong opinion that we weren't bound by the state," said Dr. Stephanie Marshall. "We are an independent Board not bound by traditional educational restraints."[65]

In mid December, 1985, Julia Dempsey, Attorney for the Illinois State Board of Education, explained to the Board that the Academy would not be exempt from state regulations. In addition to following state requirements, including observance of state holidays, non-discriminatory employment practice, requirements for teachers to reside in the general area, duty-free lunch periods, and maintaining discipline to guard against liability, IMSA would be bound by the state teacher certification requirements. Dempsey spelled out several legal aspects of organizing the school, handling the state seed money of $500,000 for the project, and hiring faculty and staff.[66]

What would have appeared to any other school to be simple dictates by the state, were actually severe restrictions for the Academy, with the rules temporarily inhibiting the Academy from pursuing innovative approaches to education.

Three examples of innovative concepts and how the concepts clashed with state regulations included: (1) hiring prominent experts in science and engineering to teach IMSA students. The state would oppose this because the experts did not have state teaching certificates; (2) establishing a library/laboratory/learning resource center in conjunction with the University of Illinois, capable of accessing valuable research via computers. Such a high school/university relationship had never before existed; the state was not opposed to it but there was no precedent upon which to validate it; (3) the funding made available through the legislature could not be directly accessed by IMSA.

According to the state, the funds would have to be allocated through a complex bureaucratic system because IMSA did not belong to a district.

The IMSA Board found temporary methods of working within the dictates of the State Board of Education. However, in order to more efficiently pursue the innovative plans that would become characteristic of IMSA, legislation enabling IMSA to be governed by the Illinois State Board of Higher Education was submitted and passed by the state legislature. This change in authority enabled the fledgling Academy to shed the preconceived notions of the Illinois State Board of Education, which was more familiar with managing traditional high schools and work within the more flexible perceptions of the Board of Higher Education.

CHAPTER V

NOTES

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CHAPTER VI

ACQUIRING AN APPROPRIATE SITE

> If you want to start a school, look for a "white elephant" building. Illinois had a dandy in Aurora. When I look back on the schools I have worked with, each one of them (North Carolina, Louisiana, and Illinois) started out with abandoned real estate. It gives politicians added incentive to move on the legislation because it has an economic advantage to a community.[1]
>
> F. Borden Mace
> Founder and Principal of NCSSM
> IMSA Interim Director

The "creativists" of the Academy had defined the unique purpose of IMSA and had rallied the support of businesses, community leaders, educators, and politicians. They had successfully acquired "start-up" funding, and had organized and implemented a passionate management team. They were now ready to "put down roots" by connecting the identity of the Academy with a specific location.

The Site

Among the sites considered for the Academy were an abandoned jail, a courthouse, vacant real estate adjacent to an airport available for construction, and an abandoned high school building.

The state legislation specifically mandated that the Academy's location be near a federal scientific research facility. In Illinois, only two such federal research facilities

existed, the Fermi National Accelerator Laboratory (Fermilab) in Batavia and Argonne National Laboratory in Lemont.[2] The former North Campus of West Aurora High School met both requirements. Proximity to Northern Illinois University in DeKalb and to the businesses and educational institutions for the entire Chicago metropolitan area was a strong selling point for locating the Academy at the Fox Valley site.[3] James Pearson, President of IMSA's new Board of Trustees, explained:

> Once the concept of IMSA was accepted by the legislature we began to investigate possible sites. The current site of IMSA was considered along with many others. How the site would appeal to high school students and to their parents was very important. The North Campus of West Aurora High School offered what was needed and it was decided that IMSA would occupy that site.[4]

The building met all apparent legislative requirements and much more. Located on a ninety-five acre site, the 300,000 square foot building had fourteen science laboratories, a green house, and a lecture theater. It was built to accommodate 2,200 students.[5] It had an Olympic pool, two gyms, a library area, and offices all under one roof.[6]

In 1997, ten years after the Academy was established, charter staff members still employed at IMSA were anonymously surveyed (see appendix 5) and asked to look back and describe their first reaction to the North Campus of West Aurora High School, the site that would house the Illinois Mathematics and Science Academy. The following descriptions are some of their recollections:

> It reminded me of a squatting mushroom with the insides of a shopping mall. The second story begged to have paper airplanes thrown from it.

> I was impressed by the physical structures externally and the open feeling inside the structure. I was also aware of the "blahness," lack of color, lack of fixtures, etc.

> Inside I was amazed at the size - vast. It was a great concern that I felt one could be lost.
>
> It was an awesome building. It seemed to be different in a way I wanted it to be. It seemed to challenge us to be different, too.[7]

The current Illinois Mathematics and Science Academy campus had been built in 1978 as the North Campus of West Aurora High School. It was closed in 1982, only five years after the campus had opened. The modern 330,000 square foot building had been for sale since its closing, but at $12,975,000 there had been no takers.[8] The design and construction of the building reflected the energy conservation concepts popular during the energy crisis of the late 70's. Consistent with the concept of "earth homes," the school's architecture gave the visual illusion that the first floor of the windowless structure was submerged, and the sloping angles of the roof appeared to almost meet the ground on all sides. The heating and ventilation systems were electrically operated. The school had been trying to sell or rent the site with no success for over four years.[9]

The following are more reflections of the IMSA Charter Staff on their first impression of the building that would eventually evolve into IMSA's new home.

> It looked like an underground ammunition "dump" like the ones in Nebraska. Inside, I was amazed at the size.
>
> I was overwhelmed at the amount of work that needed to done to make it ready in a few weeks.
>
> How horrible - the condition of the building was atrocious.
>
> It was a weird building and the carpet smelled moldy and musty.
>
> It looked OK from the outside, but it was clear it had not been in use for a while like real estate that had been on the market for a long time, barren and modern.

> There was nothing at all inside except dust bunnies. No books, no chairs, shelves, tables, or desks. [10]

How did such a new building meet with such a fate? F. Borden Mace, IMSA's Interim Director, explained:

> The population movements of Aurora changed and the enrollment in the western section declined. The school population moved to East Aurora, and the building was not needed. The building became outdated. It was frightfully expensive to heat even when it was not being used. After it was abandoned it still needed to be heated. The economics of maintenance didn't make sense. To use the building for the Academy was a lot cheaper than building a new building. [11]

What had been identified as the future sight of the Illinois Mathematics and Science Academy had many advantages. It was formerly a high school, so it was well equipped to meet the needs of high school students. It had a significant amount of public land to accommodate the construction of residence facilities. It was located in an area that had access to scientific facilities, high-tech businesses, a university, and a welcoming community. But the building played yet another "adhesive" role. It served to unite and strengthen the already "jelling" community factions that would be necessary to create a liveable, learnable, and comfortable environment for the approximately 210 students that would occupy its space only ten months later.

The use of the building by the Academy would benefit the community. "While some modifications may be needed,"[12] West Aurora School District Superintendent Gary Jewel said, "We feel we can offer a facility that would suit the needs of the Science Academy very well." The total project could be completed for substantially less than what the state would have to pay to build a new school or to renovate the older building. "This

project could create approximately 300 jobs," according to William Glenn, Task Force Chairman and President of the Olsson Roofing Company in Aurora.[13] "I think we owe it to the taxpayers to find a creative use for the facility,"[14] said David Pierce, Mayor of Aurora.

Several issues regarding the building had to be resolved: a lawsuit was pending against the original contractor for flaws in the structure of the building; a significant number of costly repairs were necessary because the building had been unoccupied and suffered from structural flaws; and the building had an outstanding debt. All of these financial issues needed to be weighed while another question was considered: whether the State should lease or purchase the property from the West Aurora School District. Finally, there was the issue of residential quarters for the students. Where would the students live? Each issue involved finances. Each issue needed to be resolved.

Law Suit

A law suit was filed by the West Aurora School District and the State of Illinois against several contractors, architects, and engineers. It demanded compensation for construction flaws at the North Campus facility. Along with the allegations in the law suit, were claims that numerous water leaks and heating malfunctions were the result of negligence by the defendants. The law suit was settled in favor of the West Aurora School District and the State of Illinois. It meant that the school district would receive $408,762 and the state would get $169,238. The pay-outs would eventually be approved by the state but the payment would be held up because the school district and the Illinois

Capital Development Board could not agree on a couple of points. The Development Board was the co-plaintiff in the law suit.

After months of negotiations, the Development Board finally agreed to grant the West Aurora School District the $17,000 in interest the money had accrued in the last year. The State Board also agreed to support the school district in any additional action made necessary in the future by faulty construction in the school. Gary Jewel, West Aurora District Superintendent, said that the district would spend $264,262 on building repairs and $144,500 on repairs to the energy related devices.[15]

Costly Repairs

There was a "struggle" involved in securing the repairs to the Academy's building. Some of the roof leaks were repaired, but Alvin (Gus) Kennedy, then West Aurora School District Assistant Superintendent for Business explained:

> But even after that work is completed, before winter, the roof will continue to leak in some areas. Since those leaks may require a slight redesign of the building since the State apparently will be buying the building, maybe they should have a say in it.[16]

Another reason for not doing their share of the work was offered by Michael Phelan, Director of Business Services:

> Asphalt shingles of that type should be repaired in warm weather, so that they seal properly. The leaks were over the pool, the school gym, and the industrial arts area. Alleged construction flaws which led to roof leaks and heating system inadequacies in the building will not pose a problem for the academy. The district will repair most of the defects, and the school board plans to solicit bids for the rest of the work soon.[17]

However, by the summer of 1986, only weeks before the Academy was to open, there were still problems. Marti Guarin, IMSA Charter Librarian, recalled the extensive repairs still needed to secure the usefulness of the building's interior. She had been familiar with the condition of the building before it had lapsed into disrepair:

> I had "subbed" in the original school library (when the North Campus of West Aurora High School was still in use). By the summer of 1986, the building had not been used in several years, with the exception of some classes sponsored by Waubonsee Community College. The first thing we did was to open all the doors to air out the building. When we came back the next morning, there was mildew over everything. We used to cover everything in plastic every night because the roof leaked. The building was built on a flood plain.[18]

When other members of IMSA's Charter Staff were asked ten years later, (in 1997), to reflect on the most memorable challenge they faced between the time they were hired to work at the Academy and the first day of classes, they recalled, ". . .trying to keep it from raining inside the building when it rained outside," and ". . . hurrying to get the building clean when everything was so rushed."[19]

In addition to the need to secure the interior of the building from the weather outside, renovations were also needed to make the interior environment conducive to teaching and learning.

> The North Campus was built using the open classroom concept. At the time it was built it used what was thought to be the cutting age wisdom of our educational establishment. It had some practical points against it. The open classroom concept did not consider the sound level, so there was a considerable amount of noise coming over to each classroom.[20]

The floor plan configuration and solutions for the acoustical issues would evolve over a number of years. The ventilation and heating issues would also be resolved, but the roof would continue to be a challenge!

The Debt

The West Aurora School District owed a balance of $6,090,000 not including interest for the building. The District had paid for the $14 million dollar building through a twenty-year general obligation bond issue which had to be paid off completely by 1994. The Illinois Capital Development Board had invested about $4 million in the school's construction. The $4 million was an outright grant, and the district was not required to pay it back. The West Aurora School District had also been spending $150,000 a month to heat and maintain the closed building.[21]

Considering the debt and other financial issues, would it be more economical for the state of Illinois to buy or to lease the building from the West Aurora School District?

There were two options. The State of Illinois could purchase the building, or it could negotiate a lease purchase agreement which meant assuming responsibility for the payment of the principal and interest still due. The "Proposal for the Establishment of the Illinois Math and Science Academy in Aurora Illinois,"[22] an exhaustive document authored by the Math and Science Academy Task Force, strongly recommended selling the North Campus of West Aurora High School to the state of Illinois for use by IMSA.

The IMSA Board approved the purchase of the North Campus of the West Aurora High School for almost $8 million. The West Aurora School District wanted $12 million.

The state of Illinois had already invested $4 million in the school. The purchase price acknowledged the prior investment by the state."[23] said Margaret Truax, West Aurora School Board President. "Transfer of ownership still has to be negotiated, but I don't anticipate any problem there," said Gary Jewel, District Superintendent. "Working out a transfer agreement will be up to the new Board." IMSA entered into an inter-governmental agreement with the West Aurora School District #129, on April 21, 1986. December 14, 1987 was the closing date of the purchase.[24]

Student Living Accommodations

The projected student enrollment for the Academy over a three year period was estimated to reach almost 800. The first class was expected to be made up of approximately 250 students. All of these students would need living accommodations. Governor James Thompson commented:

> "Dorms will have to be constructed and the Board will have to decide how that will be done. It might be that they will want the private sector to get involved to do this. I assume that parents may want to contribute." The Governor skirted questions as to whether funding for the school would be tied to state tax increases. . .[25]

James Pearson, IMSA Board President and Chair of the IMSA Committee on Housing, requested bids in February, 1986, and estimated a four month construction schedule for the dorms to be ready by September, 1986. Financial assistance was secured from the Illinois Capital Development Board. In addition, there was a $460,000 settlement from the lawsuit which belonged to the West Aurora School District. ". . . but,

we cannot count on that money,"[26] said Jack McEachern, IMSA Board Member and Chair of the IMSA Legislation and Finance Committee.

The Board decided to hire the architectural firm of Philip Swager-Kleb Associates of Aurora to design the dormitory residences. Kleb Associates would also oversee the renovations of the existing building. "Things are moving so fast even though we have not gotten a contract yet," Kleb said, "but we have already scheduled the entire phasing of the project."[27] "Kleb's firm was chosen," Pearson said, "because of its excellent knowledge in its area of schools and residential units."[28] One of the advantages of the firm was that it had a complete in-house engineering supplement for mechanical, electrical, and other services. This arrangement eliminated the need to subcontract, often a time-consuming process. James Pearson explained:

> They did an outstanding job in their presentation to the committee. The architects conducted a complete site survey and test borings, and had a construction program outlined and ready to present to the Academy Board and the public on January 30, 1986. Preliminary designs were ready by February 3, 1986, and construction documents were half completed for a 50% review by the Capital Development Board by March 3, 1986. Kleb proposed that each dormitory have four living units that house twenty students each . . . They'll be like four little homes with twenty rooms and a central gathering area. They are planning to feed them and everything in that unit. They are very sensitive to keeping a home-type atmosphere.' Kleb proposed building four more 80-unit dormitories by the Fall of 1987, and another four by the Fall of 1988.[29]

The price tag for the dormitories was estimated at about $14 million. Because the dorms would be owned by the state of Illinois, their design and construction would be subject to the approval of the Capital Development Board. The Capital Development Board's approval depended on the site meeting state of Illinois guidelines. Since no state

owned dorms for high school students had ever been constructed in Illinois, plans used for university dorms were considered as prototypes.

The strong beliefs and commitment of the IMSA Board to put the needs of the students first far outweighed the convenience of settling for the status quo. Sheila Griffin, IMSA Board Member, recalled:

> I recall Dr. Stephanie Marshall and I being responsible for the design of the dormitory floor plan. We believed very strongly that the dormitories should provide as much privacy as possible. For students in this age group, the assumptions about common showering areas and bathroom facilities were not appropriate, so we had to convince the Capital Development Board that each room needed its own facilities. In addition, we believed maximizing natural light was also very important. You would not believe how much we had to argue to convince everyone. But as a result, our students have private accommodations, and the dormitories are built on a forty-five degree angle, southeast and northwest, for the brightest light.[30]

Although the initial stages of planning and development proceeded at a very efficient pace, the bureaucracy of state construction processes slowed down the progress and effected the successful completion of the dorms. Because of the paperwork needed from the Capital Development Board, the construction could not begin until July, six weeks before the Academy was scheduled to open.[31] The highly motivated members of the IMSA Board were not discouraged nor were they surprised. They had tried to beat a clock that had been set to a different time. "All the firms that submitted bids on the project (last February) indicated that it would be difficult to complete the construction by September when officials hoped to welcome the Academy's first class,"[32] IMSA Board President, James Pearson said.

The IMSA Board of Trustees set about investigating optional living quarters for the students while the dormitories would be under construction. Student comfort had to be balanced with economic feasibility. The investigation boiled down to three options.

The first option was to use the gymnasium as temporary dormitories because of the easy access to showers and bathroom facilities. According to Jack McEachern, this option was ruled out when the cost of wiring it for electricity and installing temporary walls was estimated at least $600,000.

The Hilton Inn in North Aurora was considered as a second option. It would provide the students with a comfortable environment. Daily transportation may cause some inconveniences, but it would not be impossible to organize. However, this second option was rejected after learning it would cost $100,000 and the students would have to leave by December 31.[33]

The third option was the possibility of having the students stay with "host families" throughout the neighboring communities. This option was also ruled out by the IMSA Trustees.

The trustees ultimately decided to house the students in the middle school area of the North Campus building. Girls would be housed in the former home economics area and the boys would be housed in the former science laboratory. The cost of housing the students in the middle school area was estimated to be around $4,000, with the expectation that the expenses may increase to anywhere between $20-25,000 before the renovation of the areas were completed. Fourteen to twenty-six students would be

housed in each of the classrooms. Each unit would be supervised by an adult residential counselor. Borden Mace, IMSA Interim Director commented:

> These kids will have an excellent espirit de corps that none of the other students will have because it will be a challenge. Ideally, students could anticipate moving to their new dormitories rooms over winter break. Housing them in the classrooms will be easier on the school's 200 students than the other three options. . .[34]

Cathy Veal, IMSA's first Dean of Students, recalled:

> Between August 7 and September 7, 1986, we were completely involved in the preparation of the Academy for the students. The dormitories would not be completed, so we created 'army barracks' for 210 students set up in the laboratory space in the main building. There was something very exciting about not having anything 'status quo' because we were building something "from scratch."[35]

James Pearson, IMSA Board President explained:

> During the first year, the students lived in the temporary quarters set up in the main building. The process of completing the newly constructed dormitories was greatly influenced by the tremendous liaison between IMSA and my partner, George B. Peters, who, at the time, was Chairman of the Capital Development Board. This liaison was an example of many relationships that assisted in the development of IMSA. The community support and the cooperation of individuals working together."[36]

When asked ten years later, in 1997, to respond to a question on an anonymous survey regarding the most memorable challenges they faced between the day they were hired and the first day of classes, members of the IMSA Charter Staff commented:

> Working toward the completion of the first two dorms.
>
> Helping get rooms ready for students and making living arrangements for them in the building.
>
> Figuring out how students and resident counselors were going to cope in less than desirable living conditions (temporary barracks).
>
> Getting the residential setting in shape and making a 'home.'

> The biggest challenge was living and working with the students before classes began.
>
> The first tour I had of the building, I thought, 'We'll never get the girls to class on time. . .' There was only one small mirror and only two plugs in the girls locker room!
>
> Supporting them in their initial transition away from home.
>
> Developing medical emergency plans and getting things in place with emergency rooms. . .and thank goodness we did because the first night a student hit his head on the diving board at the pool party![37]

Student Safety and Security

Safety and security were among the foremost concerns of the IMSA Board and the IMSA charter staff. Jesus (Manny) Sosa, IMSA Board Member and Chair of the Student Support Services Committee, coordinated a survey of boarding schools around the country to acquire information about student security and management. He recommended that the IMSA Dean of Students have "clout" and that a total security plan for the campus be adopted as soon as possible. "Security is one of the key issues raised by parents interested in sending their children to the Academy. The plan should included 24 hour security guards and perhaps electronic surveillance,"[38] said Sosa. The Board voted to accept Sosa's recommendations.

The arrangement to house the IMSA's Charter Class in the middle school enabled the staff to create an excellent security plan. IMSA Fiscal Officer Gregg Worrell, and Connie Jo Hatcher, Assistant to the IMSA Interim Director, reminisced about adapting to the security process during the first months of the school:

> There was a night alarm system that required all of the inner and outer doors of the entire building to be closed before it would activate. If it didn't activate, it wouldn't

> tell you which of the hundreds of doors in the school wasn't secured! You would have to walk all over the building trying to find the door that was open. Sometimes this would take an hour. So, if you were finally done with a fifteen hour work day, and it was ten o'clock at night, and all the kids were in bed and the lights were out, and you were finally ready to call it a day, there you'd be desperately searching for the one door in the building that may be ajar! You couldn't lock the building until you found it!! We were definitely secure!!"[39]

In addition to the alarm system, James Bondi, the IMSA Director of Security, implemented a temporary pager system of communication between staff and security personnel during the first months students were on campus. Later, a radio pager security system was installed along with a video camera security system and a electronic entry system.[40]

The Leto M. Furnas Information Resource Center

Innovative thinking with an eye for the future was a trademark of the "creativists" involved in designing the Illinois Mathematics and Science Academy. A remarkable example of this "no holds barred" approach to the design of educational systems was the evolution of the Leto M. Furnas Information Resource Center, the IMSA library.

Borden Mace reflected:

> A school such as IMSA should be centered around its library, laboratories and master computers. . .It is a recognized fact that motivation for learning diminishes if your access to information is delayed. If you have a question, and you do not get an answer within twenty minutes, much less twenty-four hours, your interest in acquiring the answer will diminish. That is why access to information must be convenient, and as close to instantaneous as possible. . .Librarians are creating the learning environments for scholars. Anything that inhibits free access to information, inhibits learning.[41]

The concept pursued by the Academy was unique; to create a "libraetory" a word that was "coined" to explain the merge between the "library" and the computer center

"laboratory" by linking IMSA students electronically via computers to sources of information nationwide, and perhaps world wide.

In June, 1986, representatives from the University of Illinois, the University of California at Berkeley, the Illinois Institute of Technology, Syracuse University School of Information, and Columbia University in New York met to "brainstorm" the concept of IMSA's "libraetory" and investigate the possibilities of creating a learning system unlike any other existing system of information. In an eloquent description of the potential benefits of such information alliances, Patricia Battin, the Vice-president and Librarian of Columbia University wrote to Borden Mace:

> The primary objective at Columbia is to provide the organizational support to permit the scholarly activities of the institution to drive the use of technology rather than vice versa. One of the questions we are continually posing as our students and scholars experiment with the technology is whether and how the technology improves the productivity and quality of instruction, research and information services. . . .The key is to link the formats and systems of access into convenient information infrastructure."[42]

Business organizations such as IBM also expressed an interest in the concept. Dennis Kapral, IBM's Illinois State Educational Advisor wrote:

> ". . .I am in contact with my Educational Systems resources in our Atlanta Headquarters regarding the Academy's plans for technology. There is much interest in your plans and I will be having preliminary meetings to discuss what we recommend to be our next step in assisting the Academy.[43]

The concept of computer-based education was "before its time," and represented yet another pioneering effort in curriculum, teaching and learning methodologies generated by the "creativists" of IMSA. Borden Mace recalled:

> We had a conference on the format for the library at the Illinois Academy. Stephanie Marshall was wonderful about getting the first grant. David Barr was an expert on

> Library Science and he helped us from afar and later was recruited. We envisioned students accessing information twenty-four hours a day via stacks, computer, and laboratories. They would be able to communicate with top scholars. They would have access to scientists and equipment that would enable them to analyze and evaluate information as well as conduct their own experiments and research. From personal computers in each room, students would be truly linked and connected to the world through modern networking.[44]

One of the earliest contributors to the concept of the "libraetory" was the Furnas Foundation of Batavia, Illinois. The donation of $300,000 was given over a period of three years to the Academy for the purpose of developing electronic resources. The funds were used for state-of-the-art computers Academy-wide, a circulation system for the Information Resource Center (IRC) and for audio visual equipment. The IRC was named for Leto M. Furnas, wife of the founder of Furnas Electric. The Furnas Foundation envisioned the Academy experimenting with new technologies and becoming the lighthouse for the State of Illinois in the field of education.

Thanks primarily to Dr. Leon Lederman's intercession, IMSA acquired the intellectual commitment,[45] of the University of Illinois Chancellor, Director of the Supercomputing Network, Dean of the Graduate School of Library Science and Information Services, the Dean of the School of Education, University Librarian, Directors of the Computer-based Education Research Laboratory, Director of the Honors Program, and the Director of the University High School. Dr. Larry Smarr, Director of the National Center for Supercomputing Applications, was able to offer IMSA students ten hours access time to the Cray Supercomputer.[46]

In addition, steps were being taken to transform an empty room into the "library" portion of the "libraetory." There was a lot to get ready. Marti Guarin, IMSA's Charter Librarian recalled, "There was just an empty space that was suppose to be the IMSA library. There were *no* shelves, *no* tables, *no* books, *no* stools. . ."[47] Relationships throughout the community reached out and into IMSA, creating the necessary bridges between the library's needs and the supplies that were eventually delivered. Marti Guarin recalled:

> I began contacting people I knew, and making calls to publishers. I would explain what we were trying to do and I would ask them if they would help us. Groliers donated Americana and all of their other encyclopedias. Personal credibility and the desire on the part of others to want to help made things begin to happen. The power of the "belief" worked so strongly. We created a library out of an empty room.[48]

Because of the budget cuts passed by the legislators, a more conservative approach had to be taken in making decisions about the services and resources the "libraetory" would be able to provide the students. IMSA far exceeded attempts being made by any other independent schools in terms of technology. Marti Guarin, explained:

> We ordered technology and education videos. We were looking at a variety of materials. We were getting on world standards. We joined OCLC, the world wide bibliographic database. IMSA later became the only independent school on ILLINET Online, part of the University of Illinois computer network. We had access to worldwide information. We were being challenged to meet or exceed top standards. We were investigating ways to deliver the most "bang for the buck" We were looking at CD ROM data bases and committed to the first CD ROM in 1986, years before other libraries even considered it. You don't come to an Information Resource Center (IRC) to get information the way you used to come to a library. A 'librarian' has become an information broker and a travel agent for the web.[49]

The IMSA "libraetory" evolved despite the restrictions imposed by the budget cuts during the summer of 1986. The spirit of inquiry and investigation driven by the IMSA

students' thirst for knowledge created intellectual needs and the IMSA IRC continues to evolve to meet those needs. Borden Mace explains:

> For IMSA students as apprentice investigators, reporters, and communicators, the major learning experiences may well be centered around this integrated system with its world wide electronic connections on both an institutional as well as personal basis. Faculty and staff as serious researchers/scholars will find the system invaluable. It has the potential to revolutionize education not only in schools but also in life long learners.[50]

The 1986 IMSA "libraetory," was a state-of-the-art concept. Educational institutions today, embrace the idea of computer-generated resources that provide students with instantaneous information. The IMSA vision of a "libraetory" is just one example of the forward, innovative thinking that punctuated all levels of the "creativists" team.

Outward Signs of an Emerging Identity

Prior to becoming the "home" of IMSA, the site which had been the North Campus of West Aurora High School had come to be known throughout the local community as 'abandoned real estate.' It had to be made overtly apparent that the building was no longer the campus of an abandoned high school. It was essential that it be transformed. The building's new identity needed to emerge and outwardly reflect the mission pursued by the Illinois Mathematics and Science Academy.

To this end, the outward appearance of the building had to be changed. Easily recognized symbols representing IMSA had to be designed and prominently displayed. The general public had to be welcomed to use the building and become reacquainted with it as the new home of the Illinois Mathematics and Science Academy.

IMSA's Outward Identity

The North Campus of West Aurora High School building had been vacant for almost four years. Outside, the grounds "cried out" for attention. The "creativists" responded. Garbe Iron Works donated two huge steel sculptures to grace the entrance courtyard of the building. The construction of the two steel sculptures, "Yare" and "Shipshape" donated by Garbe Iron Works and designed by Scott M. Wallace, began in May, 1986.[51] The structures, each standing over ten feet tall, were forged in the entrance courtyard of the building. In June, Governor James Thompson dedicated the sculptures.[52]

In addition to the sculptures, a dramatic landscaping project was designed and planted by the Aurora Park District in the entrance courtyard in May.[53] "Labels have a way of sticking," explained Borden Mace, "when you give a pond or a building a new name, a new logo, it changes the perception of the pond or the building."[54]

Borden Mace, IMSA's Interim Director explained:

> Jim Pearson made all of this happen. The purpose for creating and installing the steel sculptures, the landscaping in the front courtyard, the prominent new sign, was to announce the new school. It changed the identity of the building. It made it a 'new school of real promise."[55]

IMSA's Logo

Beyond the outward identity of the building, IMSA also needed a "symbol" identity that would enable it to be easily recognized. The IMSA Board decided that a logo representing the characteristics of IMSA (see figure 7) would be necessary and would play an important role in marketing the purpose and the spirit of the Academy.

IMSA's FORMAL LOGO

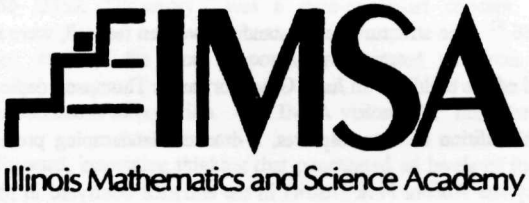

Figure 7

Sheila Griffin, IMSA Board Member explained:

> One of the many marketing tasks I was responsible for included managing the design and selection of the IMSA logo. An artist who worked with Dr. Leon Lederman at Fermilab created an earlier design, a variation on a Grecian vase, (see appendix 1) that incorporated symbols representing the sciences and the arts. We used this first symbol on our initial proposal and with several other documents. The first lapel pin designed for the school was a replica of the vase design.
>
> It became apparent from visiting other schools and conferring with Jack Levy and Associates, our design consultant, that the selection of an appropriately designed logo with a combination of significant colors would strongly affect our ability to formulate and market IMSA's identity. The selection of the logo was driven by our desire to identify a symbol that would represent progress, movement forward, and growth upward.
>
> We chose the logo because it gave us all three. Some people look at the IMSA logo and see ascending steps. We selected the colors blue, gray, and yellow, any of which could be used separately or together. We designed consistent, well-executed guidelines on how, when, and where to use the logo and the colors. Blue seemed to be the color used most predominantly. The logo and the colors have successfully created and secured the identity we had in mind.[56]

Marketing IMSA's Site to the Community

F. Borden Mace, the Interim Director, suggested the Board use the Academy site as a major selling point and initiate a public relations campaign to gain more funding and to set the right tone for IMSA. He said he was overwhelmed by the attractiveness of the site's playing fields, gymnasiums, auditorium, and amenities that the North Carolina School of Science and Mathematics in Durham, a school which had been created in an abandoned hospital, lacked at first. "It is better than what we have (in Durham) after five years."[57] Said Mace, "The extensive land lent itself for dormitories, playing fields and the heating ponds which could become biological research lakes"[58]

Mace believed that the more frequently different organizations used the site as "IMSA" rather than the "North Campus of West Aurora High School," the more quickly the building's new identity would be acknowledged by the public.

As early as March, 1986, the Aurora Chamber of Commerce attended a meeting led by Governor Thompson at IMSA and toured the campus to the music of marching bands and jazz ensembles from four local high schools.[59] In April, 1986, the IMSA staff moved their offices into the Academy. During the same month, a conference of prominent educators and experts in the fields of computer technology and library science was held in IMSA's auditorium. On April 20, 1986, IMSA held its first open house for potential students, at which time prospective students and their parents could see the red flags marking off the site of the proposed dormitories to be built east of the school building[60]

In May, 1986, the Illinois Council for Economic Education designated IMSA a "Developmental Economic Education Project," adding to the notoriety of the building. In June, the Illinois Department of Commerce and Community Affairs hosted the "Corridors of Opportunity" conference at IMSA.[61] The Academy began to host weekly tours of the campus to the public[62] and hosted an official tour for the students and parents of the charter class. In July, the El-Centro Pan-American organization hosted a concert in the IMSA auditorium. In August, a month before the scheduled opening of IMSA, the following activities took place on the new site: the Greater Aurora Chamber of Commerce held a meeting at IMSA for forty-five families who volunteered to host IMSA students;

groundbreaking ceremonies were held for the dormitories scheduled to be completed in April, 1987.

As a result of these public functions, IMSA began developing a reputation for being a site for uniting organizations in joint educational efforts. One of the most monumental events held in early June was the Illinois Council of Teachers of Mathematics and the Illinois State Board of Education 1986 ICTM/ISBE Planning and Leadership Conference. In a letter written after the conference, the ICTM President wrote to Borden Mace:

> We have often discussed the importance of a coalition of math and science organizations in Illinois. IMSA may provide the needed stimulus. Our Board of Directors is firmly convinced that we need to bring our various organizations together in a coherent program promoting public and legislative action for improvement of math and science education...The hospitality of you and your staff made our meetings most productive. We were most impressed with the incredible progress you have made in moving the Academy from dream to reality.[63]

In addition to being a "meeting place," the building would soon become a "home" for the students while the dormitories were being built.

The transformation of the building had taken place. The newly established Illinois Mathematics and Science Academy on Sullivan Road in Aurora awaited occupation by its charter class, their teachers, staff and administrators.

CHAPTER VI

NOTES

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[3] Robert Hallwachs, "West High North Campus Eyed For High Tech School," The Beacon (Aurora) News, 15 April 1984.

[4] James Pearson, interview by author, 10 March 1997 transcript by phone, Montgomery, Illinois, Illinois Mathematics and Science Academy Archives, Aurora, Illinois.

[5] Steve Lord, "Aurora Pushing North Campus as Academy Site," The Beacon (Aurora) News, 7 August 1985.

[6] F. Borden Mace, interview by author, 25 January 1997, transcript by phone, Fearrington, North Carolina, Illinois Mathematics and Science Academy Archives, Aurora, Illinois.

[7] IMSA Charter Staff Tenth-Year Survey, 3 February 1997, Illinois Math and Science Academy Archives, Aurora, Illinois.

[8] Steve Lord, "Aurora Pushing North Campus as Academy Site," The Beacon (Aurora) News, 7 August 1985.

[9] Ibid.

[10] IMSA Charter Staff Tenth-Year Survey, 3 February 1997, Illinois Math and Science Academy Archives, Aurora, Illinois.

[11] F. Borden Mace, interview by author, 25 January 1997, transcript by phone, Fearrington, North Carolina, Illinois Mathematics and Science Academy Archives, Aurora, Illinois.

[12] Steve Lord, "Aurora Pushing North Campus as Academy Site," The Beacon (Aurora) News, 7 August 1985.

[13] "North Campus Site Backed For Math-Science Academy," no newspaper, 10 October 1985, Illinois Mathematics and Science Academy Archives, Aurora, Illinois.

[14] Steve Lord, "Aurora Pushing North Campus as Academy Site," The Beacon (Aurora) News, 7 August 1985.

[15] Ron Logsdon, "West Slated To Open Bids For Roof Repair," The Beacon (Aurora) News, 5 November 1985.

[16] Ibid.

[17] Ibid.

[18] Marti Guarin, interview by author, 23 January 1996, transcript, Illinois Mathematics and Science Academy, Illinois Mathematics and Science Academy Archives, Aurora, Illinois.

[19] IMSA Charter Staff Tenth-Year Survey, 3 February 1997, Illinois Math and Science Academy Archives, Aurora, Illinois.

[20] F. Borden Mace, interview by author, 25 January 1997, transcript by phone, Fearrington, North Carolina, Illinois Mathematics and Science Academy Archives, Aurora, Illinois.

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[22] Mayor's Math/Science Academy Task Force: A Proposal for the Establishment of the Illinois Mathematics and Science Academy in Aurora, Illinois, by William Glenn, Chairman, Illinois Mathematics and Science Academy Archives, Aurora, Illinois, 1985.

[23] Tom Schuleter, "Academy Board Selected: Site Purchase Is Approved," St. Charles (Illinois) Chronicle, 15 January 1986.

[24] James Pearson, letter to Gary Skoien, Capital Development Board, 3 December 1987, Illinois Mathematics and Science Academy Archives, Aurora, Illinois.

[25] "Board Includes Area Residents," no newspaper, 16 October 1985, Illinois Math and Science Academy Archives, Aurora, Illinois.

[26] Charles S. Ward, "Academy Director Search to Start," The Beacon (Aurora) News, 7 December 1985.

[27] Kay Severinsen, "Aurora Architecture Firm To Design Academy Dorms," The Beacon (Aurora) News, January 1986.

[28] Ibid.

[29] Ibid.

[30] Sheila Griffin, interview by author, 29 April 1997, transcript by phone, Motorola Corporation, Illinois Mathematics and Science Academy Archives, Aurora, Illinois.

[31] Kay Severinsen, "Academy Dorms Going Up in July," The Beacon (Aurora) News, 6 June 1986.

[32] Tom Schuleter, "Academy Board Selected: Site Purchase Is Approved," St. Charles (Illinois) Chronicle, 15 January 1986.

[33] Kay Severinsen, "School To Be Used As Dormitory," The Beacon (Aurora) News, 15 April 1986.

[34] Kay Severinsen, "Academy Sports Schedule Shapes Up," The Beacon (Aurora) News, 15 April 1986.

[35] Cathy Veal, interview with author, 23 August 1996, notes, Illinois Math and Science Academy Archives, Aurora, Illinois.

[36] James Pearson, interview by author, 10 March 1997, transcript by phone, Montgomery, Illinois, Illinois Mathematics and Science Academy Archives, Aurora, Illinois.

[37] IMSA Charter Staff Tenth-Year Survey, 3 February 1997, Illinois Math and Science Academy Archives, Aurora, Illinois.

[38] Kay Severinsen, "Dorms Won't Be Ready For Opening," The Beacon (Aurora) News, 11 March 1986.

[39] Connie Jo Hatcher, Gregg Worrell, interview by author, 3 February 1997, IMSA Charter Staff Tenth-Year Survey, Illinois Mathematics and Science Academy Archives, Aurora, Illinois.

[40] James Bondi, Memo to All Staff, 28 August 1986, Illinois Math and Science Academy Archives, Aurora, Illinois.

[41] F. Borden Mace, interview by author, 25 January 1997, transcript by phone, Fearrington, North Carolina, Illinois Mathematics and Science Academy Archives, Aurora, Illinois.

[42] Patricia Battin, Columbia University, letter to Borden Mace, 19 May 1986, Illinois Math and Science Academy Archives, Aurora, Illinois.

[43] Dennis H. Kapral, letter to Borden Mace, re: IBM's interest in IMSA, 10 June 1986, Illinois Math and Science Academy Archives, Aurora, Illinois.

[44] F. Borden Mace, interview by author, 25 January 1997, transcript by phone, Fearrington, North Carolina, Illinois Mathematics and Science Academy Archives, Aurora, Illinois.

[45] F. Borden Mace, "Report to the IMSA Board of Directors and Stephanie Marshall," 4 July 1986, Illinois Mathematics and Science Academy Archives, Aurora, Illinois.

[46] F. Borden Mace, Memo to the Board of Trustees, 17 June 1986 re: IMSA Seminar at the University of Illinois on June 12, 1997.

[47] Marti Guarin, interview by author, 23 January 1996, transcript, Illinois Mathematics and Science Academy, Illinois Mathematics and Science Academy Archives, Aurora, Illinois.

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[49] Ibid.

[50] F. Borden Mace, "Report to the IMSA Board of Directors and Stephanie Marshall," 4 July 1986, Illinois Mathematics and Science Academy Archives, Aurora, Illinois.

[51] Connie Jo Hatcher, "IMSA Daily Journal and Log, 3 February - 22 July 1986," Illinois Mathematics and Science Academy Archives, p. 33.

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[53] Connie Jo Hatcher, "IMSA Daily Journal and Log, 3 February- 22 July, 1986," Illinois Math and Science Academy Archives, p 30.

[54] F. Borden Mace, interview by author, 25 January 1997, transcript by phone, Fearrington, North Carolina, Illinois Mathematics and Science Academy Archives, Aurora, Illinois.

[55] Ibid.

[56] Sheila Griffin, interview by author, 19 April 1997, transcript by phone, Motorola Corporation, Illinois Mathematics and Science Academy Archives, Aurora, Illinois..

[57] George Papajohn, School For Gifted Gets Gift of Time," The Chicago Tribune, 26 November 1985, Sec 2, p 4A.

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[59] Kay Severinsen, "Thompson Tour Filled with Good News For Aurora," The Beacon (Aurora) News, 14 March 1986.

[60] Steve Freeman, "Academy's Visitors Like What They See," The Beacon (Aurora) News, 20 April 1986.

[61] Agenda for the Illinois Department of Commerce and Community Affairs "Corridors of Opportunity" Conference, 3 June 1986, Illinois Mathematics and Science Academy Archives, Aurora, Illinois.

[62] Connie Jo Hatcher, "IMSA Daily Journal and Log, 3 February - 22 July 1986," Illinois Mathematics and Science Academy Archives, Aurora, Illinois, p 39.

[63] John W. McConnell, Letter to F. Borden Mace, 9 June 1986, Illinois Mathematics and Science Academy Archives, Aurora, Illinois.

CHAPTER VII

RECRUITING STUDENTS, FACULTY AND STAFF

> The plan is simply stated: to scour the state - from Carbondale to Highland Park to the Chicago ghetto - among the wealthy and among the poorest - male and female, black and white, even Democrats and Republicans - to find the one thing we need - the spark of exceptional creativity - to provide that rare child with like-minded fellows and the best possible learning environment. To blow on those embers - however faint, however suppressed by the shame of differentness - until, in three years, we have a mature, confident young scholar to send on to the university. To create a national recommitment to the simple idea that the creative child is God's gift, too often lying unopened, put away in the closet. We see this as a challenge that public education must successfully respond to . . .[1]
>
> Dr. Leon M. Lederman
> IMSA Founder and Board Member

The site had been identified. The administrative energy forces had been engaged. The next step was to magnetically attract gifted students in search of a learning environment tailored to their special talents, and to collectively muster uniquely creative, enthusiastic teachers, with the ability to mix, blend and ignite the imagination and the investigative minds, hearts, and spirits of the students.

What would motivate veteran teachers to relinquish tenured positions and accept positions at a fledgling school, with no guarantee of long-term employment? What would motivate parents and students to abandon the familiar security of their local high schools

and gamble on a brand new, residential Academy located, in some instances, hours away from their own communities?

Searching for 'Embryonic Scientists'[2]

The students being sought by IMSA, according to the fledgling institution's official statement of philosophy, "are those who some day may significantly influence life on our planet . . ." (see appendix 2). The responsibility of selecting the most eligible student candidates was an overwhelming challenge, fraught with deadlines and pressures to assemble a mix of students representative of the state of Illinois' social, racial, gender, and geographic profile. As a result, the students being considered for admission were not the only ones who experienced a roller coaster of excitement and apprehension. The IMSA Board's admissions committee, selection committee, and the IMSA staff also had moments of elation and serious concern.

Within a four month period of time, an incredible amount of work needed to be accomplished. IMSA needed to be marketed throughout the state of Illinois. Admission packets needed to be designed, approved, circulated, and collected and evaluated. Students needed to be selected, and their families needed to be informed and oriented. Yet, there was still no guarantee that the pending legislation, which would allocate the necessary funds to enable the Academy to open in September, would actually be approved by July of 1986. The "creativists" decided to take the risk and proceed as if it would be approved, and to move forward with the recruitment of students and then staff.

Within the first two weeks of February, 1986, the first promotional brochure for the Academy was designed, and produced, and then distributed at an Aurora Chamber of Commerce meeting. Two days afterwards, the Board approved the admission guidelines and policies. The admissions application packet was designed and SAT test sites and schedules (part of the admission requirements), were arranged to take place all over the state of Illinois. On March 7, 1986, six thousand student application packets were mailed to all Illinois high schools along with SAT test packets.

Connie Jo Hatcher, Assistant to the IMSA Interim Director, documented her experiences during those first months at IMSA in her daily journal:

> Everyone worked on the [admissions] mailing - over 6000 pieces to high school superintendents, principals, and counselors as well as regional superintendents and gifted coordinators. The Pitney Bowes machine quit before noon and the remaining pieces (approximately 2000) had to be carried to Gary Jewel's [West Aurora School District Superintendent] office and metered. Riverstreet Press people were hired to complete the stuffing and we made it by 4:00pm. Bill Stepien, Borden Mace, Carol Keesler and I toasted with champagne the completion. . . [3]

The deadline for submission of applications was set for April 1, 1986. It was hoped that the target pool of applicants would exceed 800, "in order to give the admissions committee the flexibility in choosing the brightest and most diverse student body."[4]

Enclosed in the IMSA admissions packet was a letter to parents, written by Michael Allenson, a University of Chicago undergraduate student, who had attended NCSSM. The purpose of the letter was to assure parents, from a student's point of view, that their son or daughter would be well-cared for and to emphasize the opportunity IMSA would provide their child. Allenson wrote:

> In 1980, I was a ninth grader in an eastern North Carolina school and NCSSM was a great opportunity for me. When I decided to go to NCSSM my parents were very supportive of me. I was young, yet my parents knew I had a good head on my shoulders and they knew if I needed help I could just pick up the phone and call. I know many of you have questions about allowing your child to come to IMSA. If you are concerned about your son or daughter being too young to leave home, I assure you the environment at IMSA is structured in such a way that your child will have many activities to participate in which are well supervised. IMSA's staff will attempt to create an environment similar to the one you have in your own homes. If I had the chance to make my decision [to attend NCSSM] all over I would not even think of changing my mind.[5]

Three weeks after the IMSA application packets were mailed, seventy-seven completed applications were returned. Three days later the total increased to one hundred and thirty-seven. By April 1, the deadline date, four hundred and sixty seven had been received. Ninety more arrived the following morning, bringing the total number of applicants to five hundred and forty five, still far fewer than the target goal of eight hundred. The deadline date was extended to April 19, 1986.

Overlooked by the admissions committee was the fact that a majority of schools scheduled their spring breaks in late March and early April, narrowing the window of opportunity for interested applicants to obtain the required school records and teacher recommendations because offices were closed and teachers were out of town. When the final deadline for admissions arrived, there were seven hundred and sixty eight completed applications on file. The IMSA Board Admissions Committee would be responsible for determining how the students would be chosen and how to provide special considerations that would enable students from any socio-economic background to be treated fairly in the admissions process.

Borden Mace, IMSA Interim Director recalled the process:

> Before we hired Dr. LuAnn Smith, Acting Assistant Director at University High School in Urbana to be the IMSA Admissions Director, we had to organize and begin the admissions process. I asked Dr. Cliff Wing, a testing authority and tenured Professor of Psychology at Duke University, also experienced in the process of identifying qualified students for NCSSM, to assist us. Dr. Anthony Sadowski, the Board member overseeing the process, was also instrumental in organizing the effort and developing an admission policy in line with the state mandate to insure a fair but inclusive policy based on merit and particularly on the potential to achieve.[6]

"Students were chosen based on their grade point average, ACT or SAT college entrance exam scores, and three teacher recommendations."[7] In addition, school officials said the students were chosen "on the basis of a potential to succeed, a commitment to inquiry, and an appreciation for the joy of learning."[8]

The Admissions Selection Committee of twenty-five consisted of educators, representatives from industry, gifted program coordinators, representatives from secondary and higher education. Dr. Wing guided the committee through the first stages of selecting students from the seven hundred sixty-eight student files. The committee was trained to quantify the qualitative information submitted by the students on a 20-80 anchored scale.[9] Borden Mace continued to describe the process:

> We had very conscientious people working on admissions. We assured the legislators that we would not overlook any promising kids. We were not going to overlook rural downstate Illinois kids or urban kids from Chicago. Is the admission policy gender and color-free and free of all bias? It was designed completely on a merit basis but with a concern for the demographics of the state. . .that all Illinois counties would have somebody that all minorities and women would be fairly represented. Our questions had to be, 'Is the state reasonably well covered?' 'Are all minorities represented?'[10]

The IMSA Board had extensive discussions involving the admissions philosophy and process. Of particular concern was the desire to select a student population that would reflect the diversity of the state of Illinois.

IMSA Board Member Manny Sosa, Principal of Roberto Clemente High School:

> Minority students might not get a fair chance to compete for Academy openings. We need to be careful about our definition of gifted students, because not many minority students will qualify if they take standard tests. We need to maintain rigorous academic standards, but we need to merge the two interests.[11]

"We see a greater responsibility, to ensure that the promotional advertisements are done so that all potential applicants hear of the school and are encouraged to apply,"[12] said Dr. Anthony Sadowski, IMSA Board Member, Vice-President of Research at Nalco Chemical and Chair of the IMSA Admissions Committee.

Referring to the predicted future enrollment of 800 gifted students, Sosa said,

> Theoretically, we will have a large enough pool to choose from so there will be enough minorities scoring high enough on the test. We should give the kid at the very top a chance as well as a kid who is somewhere near the bottom of this gifted scale. . .[13]

Dr. Stephanie Marshall, IMSA Board Member, and then Superintendent of the Batavia Schools, pointed out the inherent complications of having too broad a spectrum of student aptitudes. "I think there is an interest that we maintain the demographics of the state but also that we do not build in a process that eliminates the most talented young people." She noted that there were fifteen levels of math taught at the two year NCSSM because of the different backgrounds of the students. "I'm uncomfortable with that,"[14] she said.

Dr. Anthony Sadowski also expressed a clear vision:

> Expectations should be the same for all students. The type of scholastic environment we are attempting to create is one that will challenge the imaginations and creativity of students as well as their more classic performance and mastery of skills. The bounds of where we are going are unknown.[15]

Borden Mace believed that by holding to high standards, IMSA would, in the long run, affect the standard of education throughout the state:

> IMSA is a concept for developing future leaders for our technological society, men and women of character, with a sense of service as well as scholars in mathematics, science, humanities, and the arts. It also has, as stated over and over, a second and equally important mission of raising educational standards throughout the state.[16]

Another issue that emerged during the student recruitment process was the concern that local school districts were losing their best and brightest to IMSA, and, as a result, not reaping the benefits of their better test scores in the annual assessments of their schools. Gary Jewel, non voting member of the IMSA Board and Superintendent of West Aurora School District suggested:

> We should try to get to the point where school districts regard the selection of one of their students [to IMSA] as an honor and not a loss Appointments should be treated like selections for National Merit Scholars. We should be very, very sensitive to attitudes. We don't want to be rivals with the rest of the state.[17]

When the student selection process[18] had been completed, two hundred and fourteen students received letters informing them that they had been selected to become members of IMSA's charter class; one hundred nineteen boys, and ninety-five girls.[19] The racial and representative state demographic breakdown matched the that of the State of Illinois: White - 70%, Black - 10%, Hispanic - 3%, Asian - 15%, Other - less than 2%.[20]

Students: The Chosen Ones

Bold, bright, daring, curious, excited, individualistic, motivated, risk takers.[21] Two hundred and fourteen gifted students from throughout Illinois were selected from over seven hundred and sixty-five applicants to be the Illinois Mathematics and Science

Academy's Charter Class (see appendix 6). Gabriel Demombyne, a member of the charter class, in an article published in the first issue of the IMSA student newspaper, wrote:

> For many students the decision to come to IMSA was the most serious, and potentially the most important of their lives. They had to weigh giving up old friends and moving away from home against the long-range gains of a better education. For all students the decision was a risk. Whatever their motives, all the members of IMSA's first class took a chance, and apparently the right one. Very few said that they have had second thoughts, and all said they were happy with their choice.[22]

"The work will be harder than I've ever had before, but everybody's willing to help," said Amy Courtin, a former straight-A student at West Chicago Community High school, after being a student at IMSA for one week. Asked how it felt to be in class with so many gifted students, Amy replied, "It's really nice because you can bring up common ideas. You all have a common bond, and everybody understands you. You make friends very easily. We're all in the same boat."[23]

Sean Hendricks, 14, from Quincy, Illinois, when he was accepted to IMSA said:

> It'll be a great experience. It'll be great to be working with other kids at your level instead of kids just messing around. We'll get so much more done and get so many more better ideas. We'll get to work with scientists from all over the world. . .it's going to be a great learning experience.[24]

Being accepted to IMSA for Pamela Lawhorn of Geneva ". . . was pure happiness. I feel it's going to be a great learning experience, and later in life I will have the honor of being in the first graduating class and people will hold that high."[25] At the time she was considering a career as an industrial engineer.

David Franklin, of Moline, said, "My other school couldn't half match the educational opportunities here."[26] Becoming an IMSA student meant David would no longer have to attend a public school across the border in Iowa to get advanced high

school courses. Franklin had a 3.5 grade point average and, as a ninth grader, had already taken the second year advanced course in mathematics, science and English.

"I feel like I should take every chance I could get to enhance my education. I've always wanted to be a pediatrician," said Steven Roman, an Aurora Central Catholic High School, who was also accepted to IMSA. Roman was inspired by his lifelong friend, Dr. Paul Granoff, who helped save his life when he was an infant. "I think I owe it to Granoff, my parents and God that I am alive and this is a way to pay them back. It'll be a new challenge. It'll be a great experience."[27]

Newly accepted IMSA students, Peter Gast, James Kingery, and Derek Wolfgram, were excited about the impending academic challenges. "Last year in my math class I did a grand total of three pages of homework and still got an A+," said Peter. "I hoped here [IMSA] I could get more of a challenge and pick up more concepts in a shorter amount of time."[28] "I've been more of a playful than a study person, so I guess I'm going to have to start studying more," said James, age 15. "They give you two years and if you don't come up to par, they don't invite you back for the third year," he said.

Derek Wolfgram explained, "I think I will learn a lot more there than at West Aurora High and supposedly you won't have to go to your freshman year in college, so that will be a nice bonus." Derek planned to be a psychiatrist some day and was more interested in math than science.[29]

For IMSA parents, seeing their children ranging in age from twelve to fifteen, leave home for a residential high school was in many ways a personal sacrifice, but one, many felt, which was well worth the emotional discomfort.

Marguerite Radkiewicz of East Moline never expected that her 15 year old daughter Laura would leave home before her oldest daughter, who is a senior in high school. "I wasn't expecting this at all," she said. "I really have mixed emotions. It's hard to let her go because she is so young, but we couldn't turn down an opportunity like this. From the moment she knew she was accepted, she was all for it."[30]

"There are going to be a whole bunch of doors opened for her," said Charleen Van Dekreke, of Braidwood. She had mixed feelings about seeing her daughter, Dawn, leave for IMSA. "It's going to mean that kids who might never have had the chance financially are going to be able to go. We could never have afforded to send Dawn."[31]

"I'm very proud of him, so proud I can hardly find words," said Curtis Taylor of his son, Darnell. "We're going to miss him. I can miss him, but I can also appreciate missing him. It's something special for him."[32]

Sean Hendricks admitted he would be home sick. "It's just a matter of grinding your teeth and saying you're going to go through with it." He said the free education, room and board offered at the Academy is worth $16,000. He would like to be a doctor like his grandfather, Dr. Clifford Hendricks, and follow in his footsteps..."[33]

"Leaving," said Krista Rakers, "is a little scary and a little sad, but everybody gave me stationery as a going-away present so I'm going to write to them."[34]

The concept of a boarding school was also foreign to Jody Yates, 15, of Fowler, Illinois. "I'm kind of scared about it, but I think I'll manage. We'll be back home every month, so I'll be able to see them (parents and friends). Then I'll have family up in Aurora, so that'll make it easier."[35]

Mark Shepard, 14, another member of the students selected to become IMSA's Charter Class, said:

> Making the decision to spend three years in Aurora wasn't easy. I thought about it for a while. I just think it's a good opportunity. Curriculum will include foreign languages, social sciences of the global issues, as well as math and science. But it's not all work and no play. There will be lots of sports and stuff. Enrolling in a new school means leaving friends and family behind. I'm pretty sure I'll miss them.[36]

More apprehensive parents had to be persuaded by their children. "My Mom was worried about us being "guinea pigs." I had to convince her I was ready," said John Mench of Alton.[37] John's mother, Mary Mench, explained:

> At a parents' weekend this summer all the parents kind of groaned when we looked at the temporary accommodations. We weren't real ready to push him into it. I'd love it if this was their 20th year of operation, but John just can't wait. He has wanted to go since his teachers first told him about it. He always wants a challenge.[38]

Because the dormitories would not be constructed until the spring, the students' living accommodations would be less than plush. The guys would live in a barrack-style room and the girls would live on the other side of the school. The rest of the school facilities seemed to more than make up for the living accommodations, according to Sean Hendricks. "The school is as big as the Houston Astrodome. It's a gigantic school. They have a swimming pool and three gyms, the size of Quincy High's gym, right in a row."[39]

In a letter welcoming the new students, Borden Mace wrote:

> First and foremost, you are going to add to your circle of close friends some of the most interesting and challenging people in the world, particularly boys and girls from across the state with an uncommon commitment to learning. Apart from this commonality, the rich diversity in backgrounds, culture, and experiences of students, faculty and staff will insure that IMSA becomes a place for innovation and growth.[40]

Faculty and Staff: Dreamers

In an IMSA teacher recruitment brochure, Dr. Leon Lederman articulated the expectations IMSA held for its future staff:

> If Bread is the staff of life, the life of the teaching staff at IMSA will be Time. It is our plan to assemble an outstanding staff of instructors, drawing from high schools, colleges and research laboratories. We expect to embellish the core staff with visitors on leave from other institutions and with a continuing stream of distinguished visitors. We are concerned that our instructors have time - time to be available to individual students, time to enhance their own professional standing, time to be with one another so that we generate an interdisciplinary ethic that demonstrates the unity of knowledge.[41]

Applications for the available teaching positions at IMSA arrived as a result of "word of mouth" advertising and personal referrals. Letters asking the assistance of principals in the Chicagoland area were sent out by Joe Meyer, IMSA's Program Coordinator:

> The Academy is currently reviewing applications for approximately twenty staff positions in the major subject areas. If you are interested in making recommendations, we would appreciate your contacting those people and asking them to apply at their earliest convenience. A quantity of descriptive brochures is enclosed for your information and dissemination.[42]

One week before the doors of IMSA would welcome the charter class of 210 students from across the state of Illinois, fourteen faculty members toured the futuristic residential campus and met each other for the first time (see appendix 7). "You represent the best out of two gigantic file drawers full of applicants for this job," acting IMSA principal Joe Meyer told the chemists, linguists, and one physical education instructor during their first staff orientation.[43]

At the time the staff began accepting jobs at IMSA, there was no approved budget, no building, no students, no defined benefits or job descriptions, and yet, applications for the available positions exceeded a ratio of five to one. What would cause a group of people to apply for and accept jobs that were not defined in an organization that did not yet exist?

In February, 1997, ten years after the IMSA Charter Staff members had been hired, they participated in the "IMSA Charter Staff Tenth-Year Survey" that asked questions about their decision to become a part of IMSA's future (see appendix 5). One staff member responded::

> Some higher force organized a critical mass of the right kind of people. . .We had enough of the right kind of people to catalyze . . . The people had two characteristics. They were dreamers and they were good at something they were working at before they came to IMSA." [44]

The IMSA Charter Staff had to be dreamers. Accepting a position at IMSA would involve life-affecting risks. Decisions by the legislature, not staff or student performance, would determine the future fate of IMSA.

Again, from the 1997 survey, IMSA Charter Staff Members responded to another question. "As you look back, what was the biggest risk you took by accepting a position at IMSA?" Their responses:

> There was no guarantee it [IMSA] would last more than one year. I was worried I would be looking for a job the following year even though I had left a well paid tenured position.

> I tied my star to an enterprise that could fail through no fault of my own. . .

> I was the single and soul support of my household. I would be without a job if it [IMSA] didn't make it!

> There was no job security, especially beyond the first year, because there was no guarantee that we [IMSA] would be funded beyond the first year. [45]

So why did talented and well-established professionals leave stable positions to work at IMSA? When asked in the same survey, "Why did you want to work at IMSA?" the most commonly written response given by the charter staff was "the challenge to create." "To walk into a place that had absolutely nothing and to build it from the ground up...to build on successes and to avoid the pitfalls."[46] The creative challenge attracted interested, talented teachers and staff because they thrived on "being part of a start-up operation, to become involved in the creation of something"[47] and, for some, "Because I knew I could make a difference." [48]

In addition to being lured by the opportunity of a new job in a "start-up" organization, the staff and teachers were also attracted by the challenge of working with gifted children. "I saw what gifted programs did for kids. . .saw the resource and believed in it."[49] They were "interested in the concept of IMSA from the time it was first proposed."[50] Some believed in the "power of differentiated education for gifted kids" and felt the "gifted were short-changed in public education."[51]

There were others who just needed a job. One Charter Faculty Member wrote:

> The school I had been teaching at had closed down. I had actually known IMSA was in the works while I was still working. It had crossed my mind that I had been due for a change. I don't know if I would have had the gumption to pursue it. I did have another job offer at Columbia, but I chose this place [IMSA] because it was more of a challenge.[52]

Another teacher wrote:

> I needed a change. I was going to go nuts at the place where I was. I needed a challenge and I loved the concept of this place [IMSA], a type of missionary providing a great service. . .providing a wonderful opportunity to quite a few kids![53]

There were also very soulful reasons for choosing to become a teacher or staff member at IMSA. More responses from the same survey of charter faculty and staff:

> It was an opportunity to create a learning community that attracted people and like minds and spirits - intellectual, emotional and spiritual 'soul mates' that were committed to deeply engaging students in serious inquiry.[54]

> It was an opportunity to create conditions for students whose needs are not always met so that their talents would be developed in ways that would not only free them, but give them a sense of responsibility for the whole.[55]

"I don't think you can be completely ready for this," said Charles Hamberg, an IMSA Charter Math Teacher who still commutes farthest to IMSA from Libertyville, 40 miles west of Chicago. "You find that you, as a teacher, will work much harder than walking into an average class. One question from a student will stretch your mind."[56]

"You're on the cutting edge of a new generation in Illinois. You're going to pave the way just like the astronauts did," said State Representative Jack Davis (New Lennox), a longtime supporter of the Academy. "You teachers have a challenge that I would not want," he added. "If I had to walk into a classroom and face the brightness there, I'd be terrified!"[57]

"I definitely find it more exciting than frightening," said Charles Cannon, formerly an industrial research chemist at Amoco and a Charter Physics Teacher at the Academy. These are a bunch of beautiful kids. I find it quite enlightening to work with them."[58]

In their own words, the IMSA Charter Staff pointed to their professional qualifications and unique personal characteristics as reasons for being hired as faculty and staff at IMSA. We have "unbridled passion, a sense of possibility." It was a "mobilization

of talent" of "committed and stable" individuals willing to help do anything to ensure the successful establishment of the Academy. The serendipity of the whole experience confirmed the creativists belief. The Academy, against all odds, was simply meant to be.

When asked, "When did you know without a doubt that your decision to become a part of IMSA was the right decision?" most charter staff members responding to the same survey said "immediately" or referred to a specific moment:

> It was immediate. From the start, the excitement and dedication of all the people assured me that the decision was right.
>
> When I started everyone was so friendly; they listened to what I thought about some things that helped us get started.
>
> Early on, in the first several days, the spirit and camaraderie of other charter staff 'reassured' me I had made the right decision.[59]

The conversations IMSA's Charter Fiscal Officer Gregg Worrell conducted with insurance carriers while attempting to set up an employee benefits package in the earliest stages of IMSA's existence, epitomize the spirit, humor, and dedication of the IMSA Charter Faculty and Staff:

> The insurance company reps would ask me, 'How many employees do you have?' and I would have to reply, 'I don't know!' The reps would ask me, 'What kind of age-span are we talking about?' I would laugh and respond, 'I don't know!' Everything we accomplished in the early developmental days was almost magical because everything had a purpose, but everything we did defied common sense! We never questioned it. We moved forward with blind determination. Our sense was practical, but certainly not 'common'![60]

The centrifugal energy of the Academy had created an incredibly effective attraction. Two hundred and ten students and approximately seventeen faculty and staff

members engaged in the last minute arrangements necessary to open the Academy in September.

Yet, a storm still brewed in the Fox Valley community where the Academy had found a home. The legislature was about to embark on the next "leg" of IMSA's journey toward fiscal stability.

CHAPTER VII

NOTES

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[6] F. Borden Mace, interview by author, 25 January 1997, transcript by phone, Fearrington, North Carolina, Illinois Mathematics and Science Academy Archives, Aurora, Illinois.

[7] Cindy Wojetyla, "Teens Get 'Chance of a Lifetime'," Herald (Joliet) News, 24 August 1986.

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[11] Kay Severinsen, "Academy Fever: Hopes and Fears," The Beacon (Aurora) News, 10 November 1986.

[12] Kay Severinsen, "Academy Faces Questions on Admissions," The Beacon (Aurora) News, January 1986.

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[20] Student Applicant Profile of the Illinois Math and Science Academy, 1986-87, Illinois Math and Science Academy Archives, Aurora, Illinois.

[21] IMSA Charter Staff Tenth-Year Survey, 3 February 1997, Illinois Math and Science Academy Archives, Aurora, Illinois.

[22] Gabriel Demombyne, "Students Choose IMSA," The IMSA Verbatim, January 1987, Vol. 1. No. 1., Illinois Math and Science Academy Archives, Aurora, Illinois.

[23] Elyse Bright, "Math and Science Academy Brings 'A' Students Together, Warrenville Free Press, 18 September 1986.

[24] Sue Pierman, "Math, Science Academy: 'It's Going To Be A Great Experience'," The (Quincy) Herald-Whig, 14 August 1986.

[25] Kay Severinsen, "Top Students Get Invitation to Academy," The Beacon (Aurora) News, 10 June 1986.

[26] Gabriel Demombyne, "Students Choose IMSA," The IMSA Verbatim, January 1987, Vol. 1. No. 1., Illinois Math and Science Academy Archives, Aurora, Illinois.

[27] Kay Severinsen, "Top Students Get Invitation to Academy," The Beacon (Aurora) News, 10 June 1986.

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[29] Kay Severinsen, "Top Students Get Invitation to Academy," The Beacon (Aurora) News, 10 June 1986.

[30] Kay Severinsen, "Parting Sweet Sorrow for Academy Families," The Beacon (Aurora) News, 1 September 1986.

[31] Cindy Wojetyla, "Teens Get 'Chance of a Lifetime'," Herald (Joliet) News, 24 August 1986.

[32] Cindy Wojetyla, "Teens Get 'Chance of a Lifetime'," Herald (Joliet) News, 24 August 1986.

[33] Sue Pierman, "Math, Science Academy: 'It's Going To Be A Great Experience'," The (Quincy) Herald-Whig, 14 August 1986.

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CHAPTER VIII

THE LEGISLATIVE STORM OF 1986

> The battle began in early 1984. Senator Forest Etheredge took up the cudgel and waged a General Assembly charge that lost last year and appeared after early victories to be mired in last minute add-ons this year. When the omnibus education bill emerged from the legislature Tuesday night however, there was the Math and Science Academy, in tact and with $500,000 start-up funding as part of the package.[1]
>
> The Beacon News
> July 7, 1985

In 1985, the Illinois Mathematics and Science Academy had emerged the "victor" from a complicated legislative battle. However, the Academy "creativists" had not yet won the "war." The savvy legislators, Representatives Dennis Hastert, Suzanne Deuchler, and Marylou Cowlishaw, led by Senator Forest Etheredge, had secured the start-up funding for the Academy, but had yet to acquire the estimated thirteen million dollars necessary to finance the Academy's first year. The legislative "round" that followed proved to be as complicated as the first. It took place during the spring 1986 General Assembly and ended only six weeks prior to the anticipated opening of the Illinois Mathematics and Science Academy.

In the middle of June, 1986, students were receiving acceptance letters inviting them to be members of IMSA's Charter Class. Teachers were choosing to forsake their tenured positions in exchange for the exciting challenge of building their own curriculum

at IMSA, from the ground up. At the same time the legislators of Illinois were engaged in a heated debate about whether or not to approve the appropriations essential for the Academy to open in September of 1986.

The anxiety experienced by those who gambled on the hope the Academy would begin classes in the fall of '86 was apparent in the words written by an IMSA Charter Class student in an editorial to the Chicago Tribune. After reading a Tribune article which predicted the "doom" of IMSA as a result of the legislative foibles, the student wrote:

> Last year, I was a freshman at Proviso West High School. I applied to IMSA and anxiously awaited the decision. While waiting, I had to turn down many opportunities at Proviso, such as running for band or a student council office or joining various organizations, in case I was accepted. When the long awaited letter arrived. . .my hands were shaking as I opened it . . . my anxiousness changed to almost sheer ecstasy: I had been accepted! On June 19, I received more information. . .but then [on the same day] I read the article. Almost all my happy dreams are gone. Even if the opening is only postponed for one year, it will be too late for me. Maybe it is too early to tell for sure right now. Maybe it will still open. But "maybes" are not much to build dreams on.[2]

The "maybes" were abundant. In January, 1986, the IMSA Board had approved a $13 million budget presented by Jack McEachern, IMSA Board member and Chair of the Finance Committee. The budget was sent to the Governor's office and the State Board of Education for review. The budget requested $6,348,000 for operating expenses, and $6,689,000 for capital expenses. The hope was that the proposed budget would be approved June 30, 1986 for the Academy's first fiscal year, July 1, 1986-June 30, 1987.[3] Between January and July of 1986, the proposed budget for the Academy went through radical transitions in the legislative channels, being slashed, restructured, denied and revised.

When presented to the General Assembly for the first time, approximately seven million dollars of the proposed thirteen million dollar budget was supposed to appear as a line item in the $250 million 1986 budget of the State Board of Education. It was to cover IMSA salaries, supplies, services, and equipment for the fiscal year, 1986, July 1st-June 30. Also included was funding to stock a 27,000 volume library.[4] The money for renovation of the building and campus was contained in the Capital Development Board budget.[5]

Senator Forest Etheredge said that one of the problems surrounding the Academy's funding was that there was not general agreement as to whether or not to include the Academy in the general overall budget for education. Therefore, when State Superintendent Ted Sanders proposed the $250 million budget for public school education for the coming fiscal year, money for the Academy was not included. "We would like to see it funded separately from the general education requests because that will take it out of the squabbling over general education funds and let it stand on its own merit,"[6] said Sanders.

Governor Thompson also recommended that the money "ear-marked" for IMSA be an additional educational cost for the state of Illinois and not be part of his proposed $250 million education budget. "It would be an easier thing to sell if it doesn't seem to be taking away from anything else," he said. "You might think that $5 million is a small portion of $250 million, but it is not. Every penny is calculated."[7]

In March, 1986, $5.9 million was approved by the House (89-14) and by the Senate (36-2) for the necessary capital improvements to the IMSA facilities, including

$4.5 million for construction of two dormitories and $1 million to upgrade the existing North Campus building. The money appropriated was only to be used for capital improvements, not for the operation of the Academy. The General Assembly would have to approve additional funds for the facilities' operations. That money would be contained in the budget for the Illinois State School Board and would be introduced at a later date. As a result of the approval of capital development funds, bids for building and upgrading proceeded for the September opening of the Academy.

The ratification of the capital development funds by the General Assembly gave most of the Academy supporters what would prove to be a false sense of confidence. They believed that the remaining $7 million, necessary for salaries, benefits, resources for the library, and operations, would eventually be approved. Senator Etheredge said it was important to have full Assembly backing, so the Board revisited the proposed budget and modified it. "We will probably be seeking about $5.8 million, down from the original $7 million,"[8] said James Pearson, IMSA Board President. "Our original budget was a wish list," Pearson said. "When we refined the budget, Borden Mace, IMSA Interim Director, pointed out areas we didn't really need right away. We were able to pare down a substantial portion of it."[9] Even in its new reduced stage, it would be a long wait before the legislature would come to a decision about appropriating the funding.

What was impeding the legislator's ability to approve the finances for IMSA? The roller coaster debates which peppered the legislators' indecisiveness in 1985 would be revisited on the floor of the 1986 General Assembly. Opposition for the funding by Democratic representatives once again centered around the admissions criteria and the

need to know that the state would be demographically represented in the Academy's student population.

At the apex of the argument was the belief that using so much money at one location for gifted students (IMSA) would be less efficient than if it were distributed for local gifted populations.[10] The teachers' union remained opposed, insisting that the Academy should only hire Illinois certified teachers.[11]

At one point the $6.6 million in state funds for the Academy introduced in the House by Representative Dennis Hastert was approved by House (97-15)[12] even though it was strongly opposed by traditional educators insisting that the Academy be subject to existing school codes.[13]

After the House approved the funds, Senate President Phil Rock said that $6.6 million passed by the House was more than what was being spent on statewide programs for gifted students:

> We made a commitment to get the school started, but I had mentioned to the Governor this is something we are going to have to re-think because with one House amendment, we are spending more on a school than on the entire gifted program.[14]

Another issue that complicated the approval of funds was the impending negotiations of the Chicago Teachers' Union contracts. Senator Etheredge expected the line item reduction in the State Board of Education's 1987 budget and added that he wouldn't be surprised to see IMSA's first year appropriations trimmed as a result of a commitment of $50 million for Chicago teachers' salaries. "$6.6 million appropriations for the Illinois Mathematics and Science Academy for 1987 may be reduced as a result of a state revenue shortfall that is anticipated for the current year."[15] There was also a

prevalent belief that funding the Academy would reduce funds available to public aid recipients.

The Senate Appropriations Committee slashed $6.2 million from the Academy's budget, leaving only $396,300 for its first year. State Superintendent Ted Sanders said that the priority for tightening the budget "suggested that the Academy postpone their opening date rather than cut funding for disadvantaged children."[16] In a matter of a few months, the operational funds for the Academy had been slashed from $7,000,000 to $396,300.

Countering the legislators' indecisiveness and opposition was the unwavering determination of the IMSA Board of Trustees, faculty and staff. In a reassuring presentation to the IMSA Board, Bobby Alost, from the Louisiana School of Mathematics, Science and the Performing Arts explained:

> In our state, we spend $15,000 a year for each inmate in our prisons. We spend $18,000 on each in facilities for the criminally insane. We spend $16,000-$17,000 for each mentally handicapped, but trainable, student. Why not provide for the very best, too? Our school costs $8,500 per student per year. It's hard to argue with that.[17]

Dr. Leon Lederman continued to wage a constant campaign to fuel support for IMSA in the form of funding, donated equipment, and mentor businessmen from local corporations, insisting that corporate interest would encourage legislators. Said Dr. Lederman:

> The legislature has appropriated $3.5 million for the first year's operation and $5.4 million for modifications to the Academy building and for the first section of dormitories. The Board expects the eventual operating cost to be near $12 million/year. A strong effort is being mounted to raise private and corporate funds in order to maintain the very highest quality of staff and in order to strengthen the legislators' commitment to this venture in gifted education.[18]

A number of banks, foundations and corporations generously responded (see chapter 4, "IMSA Foundation").

Over the years, the proponents of the Academy had attracted support from a variety of resources. A collective consciousness had been cultivated in the circles of scientific research, community development, secondary and higher education, and of course, the world of business development. The strength of purpose, not to mention the formidable political and economic influence yielded by these determined interest groups, eventually overcame the myriad of arguments against the establishment of the Academy.

Jack McEachern, IMSA Board Member and Chair of the Finance Committee, recalled a memorable moment.

> The daily session [of the General Assembly] had not yet reconvened. It was one of the last legislative sessions in Springfield before they adjourned in July of 1986. I was standing in the balcony overlooking the floor of the General Assembly. Standing next to me was one of the Governor's aides. From our bird's eye view we watched as legislators, spread out across the entire chamber, busily huddled together in various clusters engaged in very animated last-minute negotiations. My eyes were focused very intently on one specific discussion that was taking place. Phil Rock, President of the Senate, was deeply engrossed in an intense exchange with Governor Thompson. As I watched, they seemed to meet a moment of silence at the same time. Their eyes met. Senator Rock extended his hand. The Governor extended his. They shook. The aide standing next to me leaned over and said, "You have your school."[19]

The passionate determination, hope, planning and excitement demonstrated by the "creativists" for almost seven years had finally culminated in a precise moment of legislative action on the floor of the General Assembly. The Illinois Mathematics and Science Academy had become a reality.

The $3.5 million was approved for "maintenance costs," such as staff salaries for the first year. However, $1.5 originally appropriated for start-up expenses necessary to establish a library, purchase classroom materials, and laboratory supplies was not included in the appropriated funds. It was obvious that although the Academy had been approved, the struggle for its "permanency" had not yet ended. In the words of Senator Philip Rock:

> We've made a commitment to get the school started, but I have mentioned to the Governor this is something we are going to have to rethink because with one House amendment, we were spending more on one school than on the entire gifted program. The $3.5 million will help pay staff costs and help start an outreach program, and I strongly suggest that this dialogue is not over. . .We've made a commitment, but let's not go crazy.[20]

Since the bill amended by Senator Rock originated in the House, it would need to be approved by the House. The Academy supporters hope the House would refuse to accept the Senate action. That way the bill would be forced into a conference committee, giving Senator Etheredge and the Academy's legislative team another opportunity to tack on the additional funds. Senator Forest Etheredge expressed his concern:

> The only quarrel I have is the amendment does take care of operations but not the initial costs. I'm pleased we have established a level of funding at least for operations, but it doesn't pay for such start up costs like the library, classroom materials and laboratory equipment. I'm sure we will deal with the bill in a conference committee and we will seek additional funding.[21]

Trustee Jack McEachern agreed:

> We are really thrilled that they did pass the $3.5 million. At that level we could have a quality program for the kids. It limits us severely in some areas, though, specifically the outreach area. But the fat lady hasn't sung yet. We anticipate it to be at a higher level.[22]

Senator Philip Rock, as the Senate President, insisted the measure be spared the conference committee route. The measure was passed. Later, Senator Etheredge

attempted to restore the $1.5 million in a conference committee on the state's budget for the Department of Commerce and Community Affairs.[23] His efforts were unsuccessful.

The Academy opened and used the $3.5 million in appropriated funds to "dig in roots" that would weather the siege of legislative challenges in the years ahead. Senator Etheredge and Representative Hastert in the last days of the Spring 1986 Session made courageous attempts to restore the additional $1.5 million, but without success.[24] In order to cultivate the best foundation for the Academy and remain within the boundaries of the restricted budget, the most significant cut was realized in the area of the "outreach," or what is commonly referred to as the second legislative mandated mission.

Funding for the Academy's first two years of existence was appropriated through the Illinois State Board of Education. After the second year, amended authority for the Academy was transferred to the State Board of Higher Education.

CHAPTER VIII

NOTES

[1] "Valley Legislators Deserve Back Pat," The Beacon (Aurora) News, 7 July 1985.

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[3] Kay Severinsen, "Academy Budget is $7 Million," The Beacon (Aurora) News, 4 January, 1986.

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[6] Ray Serati, "Negotiations to Start on Academy Budget," The Beacon (Aurora) News, 22 June 1986.

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[12] Mary Gable, "The House Okays Funding For Three Area Projects," The Beacon (Aurora) News, 23 May 1986.

[13] Ray Serati, "Academy Legislation Back in State Senate," The Beacon (Aurora) News, 22 June 1986.

[14] Ray Serati, "Senate Approves Academy Money," The Beacon (Aurora) News, 25 June 1986, p. A-11.

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[17] Kay Severinsen, "'Rules' Not Part of 3R's Academy Board Told," The Beacon (Aurora) News, 11 March 1986.

[18] Leon M. Lederman and Walter Massey, Memo to the National Advisory Board, "Status Report on IMSA," 5 September 1986, Illinois Mathematics and Science Academy Archives, Aurora, Illinois.

[19] Jack McEachern, interview by author, 20 March 1997, transcript by phone, Yorkville, Illinois, Illinois Mathematics and Science Academy Archives, Aurora, Illinois.

[20] Ray Serati, "Senate Approves Academy Money," The Beacon (Aurora) News, 25 June 1986.

[21] Ray Serati, "Hastert Hoping For Start-Up Funds," The Beacon (Aurora) News, 29 June 1986.

[22] Ray Serati, "Academy Bill Back in House," The Beacon (Aurora) News, 26 June 1986.

[23] "Academy Bill to Governor," The Beacon (Aurora) News, 28 June 1986.

[24] Ray Serati, "Hastert Hoping For Start-Up Funds," The Beacon (Aurora) News, 29 June 1986.

CHAPTER IX

VIGNETTES OF 'MOVE-IN DAY'

On the morning of Sunday, September 7, 1986, the families of two-hundred and ten gifted students bade farewell to their children as they launched them on the first 'voyage' of the Illinois Mathematics and Science Academy.

It was not too unlike the first day on any typical campus when students move their belongings into their dormitories. The major difference, however, was that the high school students moving into the IMSA living quarters ranged in age from twelve to sixteen. "Bringing bedrolls, calculators and high expectations to the former north campus of Aurora West High School, the students made their home-away-from-home in makeshift quarters of converted, windowless classrooms."[1] "They forgot coat hangers and shoes and blankets and musical instruments and class schedules. They remembered their personal stereos, their Cabbage Patch dolls, and their address lists of friends and family members who insisted they write soon."[2]

In responding to a question about move-in day, many of the charter staff members commented on how surprisingly young the students appeared to be:

> I was struck by the kids. They were so young to be away from home, living the way they were living in the make-shift dorms. I remember very distinctly that during our first week of classes, there was a fire drill. We were all huddled in the pit. One of the students, a girl, started crying. Someone patted her on the back. She was really scared, and feeling all alone A real struggle for the kids . . .[3]

The courage demonstrated by the parents of the students was another striking recollection of the staff present on that first day at IMSA. A charter staff member recalled:

> I remember move-in day. It was my first major interaction with the parents. I remember being struck with the realization that all of these parents were leaving their children in the care of people they had never really met before...the total surrender, the total trust. . .[4]

"We've been trying to talk about handling money, doing laundry, how to take care of himself, all the things you thought you have had three more years to teach,"[5] chuckled Annalee Blessing, mother of 15 year-old Stephen Blessing of Carbondale.

Beverly and Barry Koss huddled near their 13-year old son Jordan to offer any last minute advice they could think of. "It's a major decision to let your son go away and trust someone else to raise him," said Barry Koss, "Especially if you like your kid." "Dad!" his embarrassed son, Jordan, responded. "Don't press your luck!"[6]

The students came from a variety of nationalities and socio-economic backgrounds, from large urban centers and small towns across Illinois. Marti Guarin, IMSA's Charter Librarian recalled:

> I came to work about two hours early the day the students arrived for the first time. Even though it was unusually early, as I pulled my car into the lot, I noticed some people in a car that was already parked. When I approached them and asked if I could be of some help, it became apparent it was a family bringing their son to the Academy. Naturally, the father seemed concerned. Within the first several minutes he explained to me in Spanish, that he was originally from Columbia, South America. How odd! Out of 210 students, what are the chances that the first parent I would encounter before I even entered the building would be from a country on another side of the world where I had once lived? Not only was I able to converse with him in his own language, but we established some common memories about his homeland. The common experiences and the foreign yet familiar language of our

> conversation established the basis of trust the father needed to be convinced his son would be genuinely cared for and be safe.[7]

Both faculty and staff took their responsibilities for the safety of the students very seriously. When the Academy opened in 1986, Cathy Veal was the Dean of Students. She took an aggressive and "preventative" approach to the development of policies and procedures for student well-being:

> My major and primary concern was for the health, security and welfare of the students. I emphasized the implementation of emergency forms and procedures. Ironically, the first night we had our first emergency. One of the students hit his head on the diving board at the pool party.[8]

Not everyone on 'move-in' day was totally absorbed in the chaos or the emotions of farewells. A local newspaper reported that:

> In one girl's dormitory room, fathers, conspicuously sporting their 'IMSA Dad' buttons, gathered around the television set with at least one eye on the Bears game. Sure their daughters were leaving home for the first time, but one does need to have priorities. Referring to their brief commute from their residence in Aurora, Kevin Cahill said of his daughter, "Actually, having Kelly close was great! We didn't have to leave home to bring her here until half-time of the Bears game."[9]
>
> In the boys' dorm, David Franklin, 15 of Moline, had the important stuff done already. On the doors and walls of his locker he had pasted three Bloom County cartoons, a computerized picture of his 12 year-old sister Caroline, and a huge poster of a red Vector automobile. Nearby, Jeffrey Young, Christopher Smith, Stephen Blessing and Kevin Schraith found a table for black jack. "No money," Jeff noted. "Just to get to know each other."[10]

Aside from the "good-bye" rituals between parents and children, and the "get to know you" rituals of students and staff, there was the typical chaos inherent in the management of the academic and residential logistics of two-hundred and ten students. Another recollection from an IMSA Charter Staff Member:

> There was lots of confusion on move-in day, long lines, etc. My office was near the nurse's office and lots of parents and students (in line related to medical forms) were

> tired, anxious, impatient, etc., with more than some complaining. However, one girl, Laura Radkiewicz, and her parents, signaled to me. When I went over to them they told me how very grateful, honored and happy they were to be here. I'll never forget the warmth of their smiles and their comments.[11]

By 4:00 p.m., most of the families had departed. Soon after, the students gathered in the cafeteria for their first meal. "I don't remember my first encounter with all the students, but I do recall a number of 'first encounters,'" replied a staff member to a survey question about experiences with students on move-in day. "One of the very first was a student asking if there were going to be truffles on the salad bar!"[12] Another staff member recalled:

> I remember the evening meal that first Sunday. The families had departed and the students and the staff were alone together for the first time. I remember the conversations at the tables, the meal trays that wouldn't fit in the racks, and afterwards, I remember watching the boys tossing a football in the "B" wing while walking through the building on the way to the opening convocation in the auditorium.[13]

An official ceremony took place later that first evening, September 7, 1986, in the school's auditorium. Faculty, staff and students swarmed through the open spaces of the building and filed into their first formal assembly as the charter members of the Illinois Math and Science Academy. Another recollection of a charter staff member:

> That very first evening, when Dr. Leon Lederman spoke to the IMSA Charter Class, I remember feeling like everything seemed so surreal. At the beginning of the convocation, all of the teachers processed into the auditorium. There we all were, all of us dressed in our appropriate academic gowns. . .I was struck by the thought...is this for real?...Here we are pretending that there is really going to be a school here...I considered the question about whether or not we were really going to pull it off...all these kids so far from home. I felt like standing up at the end of the convocation and saying, "There's no school here kids!! Let's all go home!" Yet, ten years later, here we are, more successful than we could have ever imagined![14]

In that formal convocation in the school's auditorium that first Sunday night, Dr. Leon Lederman, IMSA Board Member and Founder, and Director of nearby Fermi National Accelerator Laboratory, told the students, "You will do four years work in three. Some of you will do five years in three. You are starting on an educational binge."[15]

The "educational binge" for the Class of 1989 that began that night would last three exciting years. As the IMSA 'pioneers,' the charter staff and students paved the road for all of the students who have continued to file into the same auditorium each year for the IMSA graduation ceremonies. It has become an 'educational binge' that continues to involve everyone affiliated with the Academy in a perpetual learning curve that remains energized by the same ambition and passionate determination of the "creativists." The quest to provide the most challenging and mind-stimulating educational experience for the students of Illinois is constantly pursued.

The Illinois Math and Science Academy continues to be a "work in progress," a dynamic environment where growth and learning are a constant. One IMSA Charter Staff Member noted:

> When I was hired, there was a curriculum document that referred to 'Mathematical Inquiry.' Five years after that we rewrote it. It's now called 'Mathematical Investigation!' I didn't get it at first. That is what keeps me staying here. . . believing in the possibilities. I know I don't get them all yet. I'm learning through the learning.[16]

One charter staff member reflected on the moment she knew without a doubt that she belonged at IMSA:

> I knew early on in a general sense. But the night before the first extended weekend confirmed my belief that I belonged at IMSA, and what we were doing together with the students was among the most important things we would ever accomplish. That night, just before the parents arrived to pick up their children, vast numbers of

> ceiling tiles came loose and fell throughout the dormitory area. All of us pulled together and cleaned it all up. The kids and parents went home. Despite dire predictions by some about massive [student] withdrawals, they all came back.[17]

Faculty and staff members were not the only ones who experienced a deep sense of "connectedness" to the Academy. IMSA had been designed to be an environment where students would experience a sense of belonging. In traditional school settings, gifted students, because of their special talents, are often ostracized, ignored or voluntarily withdraw. One of the many goals made very clear throughout the developmental stages of IMSA was that the Academy must be a place where gifted students would experience acceptance and develop a sense of belonging. It happened as planned, and even sooner than hoped.

Sheila Griffin, IMSA Board Member, recalled:

> I recall the day when the first students arrived. I was standing inside the building amidst all of the confusion that characterized that first day, when all of the students were moving in to their temporary living quarters. One of the students approached me and said, "This is the first time I have ever felt like I really belong." I knew at that moment that all of the hours and work we had devoted to the school were worth it.[18]

"At the Illinois Mathematics and Science Academy," promised Dr. Leon Lederman, "they will always know where they belong."[19]

CHAPTER IX

NOTES

[1] Andrew Bagnato, "Bunk Beds, Lockers, and Computers: You're in the High-Tech Academy Now," The Chicago Tribune, 8 September 1986.

[2] Kay Severinsen, "Academy Arrival Not Much Science," The Beacon (Aurora) News, 8 September 1986.

[3] IMSA Charter Staff Tenth-Year Survey, 3 February 1997, Illinois Mathematics and Science Academy Archives, Aurora, Illinois.

[4] Ibid.

[5] Kay Severinsen, "Parting Sweet Sorrow For Academy Families," The Beacon (Aurora) News, 1 September 1986.

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[7] Marti Guarin, interview by author, 23 January 1996, transcript, Illinois Mathematics and Science Academy, Illinois Mathematics and Science Academy Archives, Aurora, Illinois.

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[12] Ibid.

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[16] IMSA Charter Staff Tenth-Year Survey, 3 February 1997, Illinois Mathematics and Science Academy Archives, Aurora, Illinois.

[17] Ibid.

[18] Ibid.

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CHAPTER X

SUMMARY AND RECOMMENDATIONS

This chapter will summarize the seven developmental phases of IMSA and the unique abilities of the IMSA "creativists." Using IMSA as a prototype, recommendations will be made to assist future creativists in the developmental phases of creating schools. The chapter will conclude by reflecting on the awesome responsibility, legacy, and value of public education to communities, businesses, teachers, and most importantly to students.

Seven Artful Phases of Creating a School

The success experienced by the Illinois Mathematics and Science Academy can serve as a prescription for creating a school. Studying the phases of its development may inspire other adventurous educators to embark on journeys to develop successful, innovative learning environments. The following seven essential phases summarize IMSA's development with recommendations for future creativists interested in creating schools. With the exception of the first and last phase, it would not appear that the phases have to occur in any specific sequence: (1) define a purpose; (2) develop community support; (3) stabilize financial options; (4) formulate collaborative administrative teams; (5) identify an appropriate site; (6) recruit students; (7) recruit faculty and staff.

1. Define A Purpose

From the very beginning, IMSA had a clear identity and purpose: to nurture the talents of gifted students, to upgrade the math and science curriculum in the state of Illinois, and to prepare a future workforce to fill the rapidly growing demand for high tech employees. IMSA's clearly defined purpose was not only unique but promised to address neglected areas and crucial needs.

Recommendation Before a new school begins its initial stages of development, creativists must have identified a specific purpose for the school's existence. The purpose must address an unmet educational need and attract support from the community.

2. Develop Community Support

IMSA was wired into its community and the state in its earliest stages of development. The benefits to the local community, high-tech industry, and the economy of Illinois were tested for validity, and then clearly communicated throughout the state of Illinois. IMSA's purpose stretched beyond the immediate benefits to its students, and, as a result, support for IMSA penetrated the entire community. The success of the new Academy was intricately meshed with the economic recovery (SSC) of the community as well as the state. Businesses, educators, and scientists joined with the community to play a crucial role in educating the legislators and influencing the approval of financial support for IMSA.

Recommendation The community must become actively involved in fostering belief and support in a new school's clearly defined purpose in the earliest possible stages

of development.. New schools risk a quick death if they fail to cultivate a healthy connection to the community in which they are born. Schools, no matter how new or old, thrive if their purpose, goals and services enhance the economic, social, political and business "health" of their community.

3. Stabilize Financial Options

From the earliest discussions, it was assumed that IMSA would exist as a publicly funded school. However, from the very beginning, the "creativists" began cultivating alternative methods of financially supporting the Academy. Until a little more than a month before the school opened, the financial support remained uncertain. Ten years later, despite some difficulty during its second year, it remains financially stable.

Recommendation A new school must be prepared to earn its own income by demonstrating and earning a reputation for the highest quality of academic performance. Promoting a new school as an investment will attract the support of businesses.

Traditionally, public education has been funded by public funds. New schools can no longer base their financial needs on the expectation that taxpayers will foot the entire bill. Gone are the days when new schools can expect "hand-outs." It is essential that "creativists" have a "back-up" financial plan. Demonstrating an ability to rally support from local businesses can further validate the credibility of a new school. A quality school can also provide a stabilizing factor for a community by attracting new residents, businesses and, as a result, economic revitalization.

4. Formulate Collaborative Administrative Teams

IMSA's collaborating administrative teams were comprised of individuals with a variety of expertise, commitment to the vision, the ability to disagree, and to negotiate compromises. They were joined together by their passion to create IMSA. The diversity of their backgrounds and their networks within the state of Illinois created an intricately woven tapestry of interest groups and supporters.

Recommendation An administrative team of creativists involved in the creation of a school must be comprised of a diverse array of professionals. The team can not be exclusively limited to individuals who are only familiar with educational institutions. Businessmen, politicians, scientists, teachers, parents, students, etc. provide the necessary checks and balances that enable the well-rounded "quality control" essential to the healthy development of a new school.

5. Identify an Appropriate Site

IMSA was fortunate to have had the opportunity to inhabit a building that was built to accommodate high school students. However, the condition of the building, and the living accommodations provided for the students in the earliest months of the Academy, proved a point. Students and parents are more attracted to the quality of the people inside the walls of the school rather than the condition of the actual walls. The creativists who engender the spirit and daily atmosphere of the school have a far more important value than the physical structure of the building itself.

Recommendation The site should never be the total focal point of a new school's existence. The emphasis should remain on the quality and credibility of the individuals who will "implement" the school. It is not the building that makes the spirit of a school. The physical or aesthetic condition of a school structure will never be as important as the relationships between the students, faculty, staff, administration and the Board.

When choosing a site, the creativists should consider the site's marketability. If a site has the potential of becoming a 'money pit,' creating a financial drain on the fledgling finances of the school, the site will negatively affect the public perception of the school's longevity and jeopardize student recruitment. Occupying an abandoned building can be beneficial. The purchase price may create economic and/or visual vitality in what had been lifeless real estate, thus almost immediately demonstrating a positive influence on the community.

6. Recruit Students

The fact that IMSA was geared toward a specific population of students helped the recruitment process and made it easier to market the school. Gifted students in Illinois were not being adequately served. According to the research conducted by the "creativists," many gifted students were not being challenged by the curriculums offered by their local schools.

Recommendation For a student, changing schools at any grade level means leaving friends, a familiar, predictable environment, and, in some cases, a deeply rooted

legacy. What attracts students to a new school is the belief that what they will gain in a new environment will far outweigh what they have left behind. If a school has a clearly articulated purpose, its purpose, combined with the credibility of its administrators and staff, will naturally attract students. Gathering extensive information, clearly defining the purpose, and marketing are essential if the recruitment process is to be successful.

7. Recruit Faculty and Staff

A very important fact: IMSA faculty and staff were recruited throughout the developmental stages of IMSA. However, most of the recruitment took place during the last few months before the Academy opened and after the students had already been accepted. The individuals attracted to the opportunity at IMSA seemed to match the same passion and adventurous disposition that the administrative teams had demonstrated throughout the developmental stages. Together, they were all embarking as "pioneers" destined for a new frontier. They were all willing to take financial and career risks.

Recommendation Faculty should be hired only after the student enrollment has been secured. If students are accepted, and a school fails to open, other schools will absorb the students. If faculty are hired and the opening of the school does not occur, the faculty become unemployed teachers.

In the past several pages, the seven phases of growth experienced by IMSA provided a prescription for future creativists. The unique abilities of the IMSA "creativists" and the risks they took throughout the seven artful phases of IMSA's evolution also provide insights about the essential energies necessary to create a school.

Unique Abilities of the IMSA "Creativists"

The IMSA "creativists" embodied a number of unique abilities that enabled them to successfully manage their level of productivity throughout the seven phases of creating IMSA, while simultaneously contending with skeptical, and sometimes controversial, public reactions to their dream.

The art of creating a school challenges deeply rooted social, political, emotional, and structural educational systems that have operated in some communities for centuries. There is an Italian saying, "Better a known devil than an unknown angel." Change for human beings is rarely a comfortable experience. If given a choice, most people tend to opt for the comfort of what is familiar, even if it is harmful, rather than risk the discomfort and uncertainty evoked by change. It follows, then, that creating a school can easily "upset" the balance of comfort and stimulate resistance, skepticism, and sometimes controversy. The extent of public reaction and the effects of the resulting ramifications on the future success of a proposed school can not be underestimated.

It is helpful, therefore, for future "creativists" to investigate how the unique abilities of the IMSA "creativists" enabled them to manage the public reactions to change, while simultaneously creating a school.

The motivating passion the IMSA creativists demonstrated was essential to their success. Among other benefits, their passion served as a strong adhesive that bound them together as a team. But their passion alone would not have been enough to convert their IMSA dream into a reality. They had to have specific abilities in order to accomplish all seven phases of IMSA's development. Important recommendations for future

"creativists" interested in creating schools can be gleaned from a summary of the abilities of the IMSA "creativists."

IMSA creativists were able to: (1) establish credibility; (2) research the market; (3) foster communication channels throughout the community, (4) anticipate opposition and acknowledge the power brokers; (5) work proficiently within the prevailing systems; (6) expect the unexpected; (7) allow the school to emerge naturally.

1. Establish Credibility

The IMSA "creativists" were "known professionals." Through their professions and their volunteer affiliations, their names and the quality of their work were recognized throughout the community. As a result, their vision of IMSA and the work it entailed elicited trust and support from a variety of sources.

Recommendation Creativists have to have, or have to be able to earn, credibility in their community.

2. Research The Market

The IMSA "creativists" were 'information magnets.' They gathered, analyzed, and generated information by sponsoring surveys, hosting discussions, inviting opinions and insights from groups that spanned the spectrum of political, economic, social, and educational opinions. They became experts, and as a result they became fluent in the language of the economic and educational needs of the state of Illinois, the local community, and most essentially, the educational needs of gifted students.

Recommendation Investigate the educational strengths and needs of the community and clearly articulate how a new school will provide the services defined by the needs of the community.

3. Foster Communication

The IMSA "creativists" were 'organizational architects.' Each and every one of the "creativists" had a working knowledge of the important links between the parents, the students, the Academy, and the community. They understood the need to maintain a high level of quality communication with and between all of these important links. They believed that the tone and essence of what would eventually take place within the walls of a school is driven by the passion and communication of its mission to the community.

They built bridges between community groups, legislators, corporations, educators, and scientists. They formed a group (CPEE) to represent the mixed interests and common goals of all aspects of the community. They identified the common links between economy, education, corporate development, and scientific research, joined them together behind the common cause of "education," and then welded them. They rallied the support of knowledgeable and publicly credible individuals.

Recommendation It is essential that a new school position itself within the context of its community by using clear, effective and expansive methods of communication.. If a school is created in an information vacuum, it will not survive.

4. Anticipate Opposition; Acknowledge the Power Brokers

The IMSA "creativists" were 'poker players.' They observed the actions and reactions of the "conventionalists" around the table and anticipated their "hands." They were able to read and label the "cards" that had to be beat: "elitism," "location," "demographics," "Democrats," "legislation," and "budget."

The "creativists" were neither naive nor timid about the arena of issues that directly affected their ability to establish the Academy. They viewed the "conventionalist" issues they faced as part of their quest, their "Odyssey." The "conventionalist" challenges had little or nothing to do with the quality of education. The outcome of the "Odyssey" was determined by the way the "creativists" confronted their challenges. They educated the "conventionalists" with facts, diffused their anxiety with humor, and influenced them by rallying a substantial number of diverse, statewide supporters. In the end, it would appear that the "David" (creativists) slew the "Goliath" (coventionalists).

Recommendation Anticipate opposition by objectively analyzing both sides of issues to determine what is really at stake. Do not underestimate the power of fear and irrational emotion. Acknowledge the "power brokers" and create a strategy based on disseminating accurate facts rather than aggressively attacking the opposition.

5. Work Proficiently Within Existing Systems

The IMSA "creativists" were a 'strategic team.' Their collective experiences enabled them to have a working knowledge of the systems that controlled decisions in the local community, regional corporations, the state, and the federal government. Having

worked within complex government programs and guidelines, they were able to fulfill requirements and, at the same time, accomplish their creative tasks. When dealing with legislation or financial issues, they always had a "Plan B."

Recommendation Know how to access and become a part of the formal and informal decision making systems in the community.

6. Expected the Unexpected

The IMSA "creativists" were artists. It is only in hindsight that events documented over a long period of time reveal patterns of development. It is unlikely that the "creativists" could have predicted many of the events that occurred during the seven years before the Academy opened. If art can be defined as "an expected surprise," then the IMSA creativists can be considered renowned artists. By expecting the unexpected, the illogical, the random occurrence, the process of building something new becomes the artistic process of creation.

The fiscal process of accessing the legislative funding, the process of hiring faculty and recruiting students, the acquisition and renovation of the site, the negotiations with the State Board, the eventual transference of jurisdiction to the Board of Higher Education are only a few of the unexpected "twists" that first challenged and then enriched the substance of IMSA. The "creativists" as artists were flexible enough to be able to "fold in" the splashes of unexpected colors, thus enriching the quality of the final product.

Recommendation Rigidly sticking to a game plan may actually thwart the development of a school. Be flexible. Enjoy the ride. The unexpected occurrences may

develop into obstacles or bloom into opportunities. It's all part of the process. Folding in the splatters of paint that accidentally pepper a palette may create unexpected hues that later become the focal points of the painting.

7. Allow for a Natural Time Frame

The "creativists" were "physicists," well aware of the intricate relationships between particles of matter and the forces that compel particles to act in a variety of configurations. The evolution of IMSA's development, until the final two years, did not operate on a time table. In other words, in 1979, no one said, "By 1986, we will have established and opened the Academy." On the contrary, the timing of IMSA's emergence was a gradual evolution of a growing public awareness, fueled by scientific observation, analysis, experimentation, and environmental "forces."

The conditions affecting the "natural" particles of matter which made up IMSA were watched closely by the "creativists." The "creativists" eventually assessed the forces inherent in the prevailing atmosphere and decided to open the school in 1986.

For the Academy, the natural time to emerge was 1986. The "pottery," the vessel, had served its prescribed time in the fiery kiln. Had it been forced to emerge any sooner, the Academy may not have survived or thrived to the degree it currently enjoys. The existing particles of energy evolved, accelerated, collided, and revealed a new entity. It all occurred within seven phases of development over a period of seven years.

Recommendation Do not rush into the creation of a school. Cultivating the necessary groundwork of community relations, public support, financial stability, and

credibility takes time. Watch for the signals of development and the "internal clock," or community "barometer" for "readiness."

The Legacy of IMSA

Years ago, a dear and brilliant Canadian gentleman, politically astute, and sharply aware of the unpredictable forces of nature and life, gave this researcher some profoundly rich advice. "Throughout your life, above all else, pursue your education. He said, "It is the most valuable gift you can ever possess. It is a treasure that no one can ever take away from you. It will enrich you for the rest of your life."

Public education is a valuable gift. Society depends on public education to provide a consistent method of developing good citizens, capable decision makers, preparing the future workforce and generating in human beings an inherent passion for learning. Providing quality public education is a formidable task - one that cannot be taken lightly. Poor quality public education affects the fabric of society and the health of the economy, social interactions and, worst of all, entraps the brilliant potential of the human mind.

Students have participated in organized learning for centuries. For centuries, educators have experimented with, and have created, a plethora of learning methodologies in an effort to discover "formulas" for cultivating within the students a process and a love of learning.

An internationally renowned Sumerian scholar, Dr. Hermann Behrens, invited this researcher to visit him at the University of Pennsylvania Museum of Anthropology and Archeology several years ago. He worked in the "tablet collection" room, as he was one

of only five scholars in the world capable of deciphering the ancient Sumerian language. Together we walked through what felt like miles and miles of carefully sorted and labeled specimen cases. Each case contained an infinite number of clay tablets inscribed with mysterious messages left by unsuspecting writers from ancient times long ago.

Hermann stopped abruptly and, bending forward, carefully pulled open one of the many long, shallow drawers in the case that stood before us. Using his finger tips, he delicately removed a dark, flat, stone-like object from its paper-lined sanctuary. Placing it in the palm of his hand, he ran his index finger horizontally across its narrow width. "Look very closely," he instructed me. "Do you see any similarities in any of these characters?" Although I focused until my eyes grew tired, I had to admit, I saw only a series of etched, archaic looking symbols, with no apparent patterns.

He beckoned me to look more carefully as he once again ran his index finger under the series of symbols imbedded in symmetrical lines across the stone. Then he looked me squarely in the eye, a familiar signal that I was about to learn something important. In his rich, lyrical, German accent, the scholar slowly explained, "It is Sumerian script dating from hundreds of centuries before Christ. It was found in an archeological dig that we believe was a school of some sort."

His glasses slid slightly downward as he drew the ancient clay tablet closer to his eyes. "It is the same phrase repeatedly inscribed by the writer, over and over again, approximately one hundred times." He paused briefly. "It translates - 'I will not talk in school.'" He shook his head, looked at me and said, "Some things never change. Be

kind to your students. They have a great deal to teach you, if you make the time to listen."

The task performed by the Sumerian student suggests an example of a learning methodology handed down through the centuries, one in which the student enters a classroom as an empty vessel and quietly submits to the "pouring into" of knowledge directed by the teacher. Symbolically, the story of the clay tablet represents the deeply rooted history of many educational methodologies still employed in modern schools today. It suggests an awesome task for educators interested in challenging or, even more overwhelmingly, renovating "clay tablet" educational methodologies.

Many such "clay tablets" are deeply rooted in the granite-laden foundation of American school systems. If new educational approaches are to ever take root and flourish, bedrock practices need to be chiseled into more effective vessels of educational delivery systems. Such a task requires 'change-agent' educators with a healthy respect for tradition but with exceptional resilience, motivation, stamina, high levels of creativity and an unrelenting commitment to new possibilities.

Moving "boulders" requires strength. The belief systems, traditions, values, schedules, contracts, curriculum, floor plans, audio visual equipment, textbooks, teacher training, financial structures, and administrative organizational charts collectively comprise the "Gibraltar" of the American education system. It is a system that in some cases continues to prohibit students from "talking," or from "being heard." The days of the passive student, who silently submits to the tasks which are dictated by an educator, are rapidly vanishing.

This document has traced the successful activities of a group of such pioneer change-agent, "creativist" educators. The Illinois Mathematics and Science Academy's "creativists" successfully designed, implemented, and continue to nurture an innovative educational system that is gradually influencing systems of education throughout the United States and the world. Their experiences hold important lessons for other courageous educators who may be interested in wrestling with the traditions that, for better or worse, gifted or challenged, rich or poor, bind us, free us, create and maintain what we know as the American education system.

Historically, the development of new learning methodologies often occurs in response to monumental events and discoveries: the printing press, the industrial revolution, magnetic tape, the television, space exploration, and computers, to name a very few. These events have activated "creativists" throughout the centuries. At the same time, the very same events have, more than likely, served to secure the rock-solid determination of the "conventionalists."

The IMSA "creativists" were faced with just such a challenge. Innovations in technology were radically affecting the educational needs of the workforce. The rationale for establishing the Academy was indisputable as it related to the economic needs of the state, the community, and the needs of the population of gifted students. The innovative approach demonstrated by IMSA became a threat to the conventionalist factions.

The IMSA creativists shared a collective passion for the purpose that would be served by the Illinois Mathematics and Science Academy. It was their passion that drove them to decide to establish their own school. Their decision can be likened to deciding

whether to renovate an old home, or raze it in order to rebuild, using specifications that better meet the assessed needs of those who intend to live their lives within the walls.

The "creativists" were challenged by the fact that the existing educational system was not meeting the needs of gifted students, so the IMSA "creativists" razed the system, and built a more flexible, responsive structure. They chose to assess the needs of their students and customize their new space to meet those needs. They were able to build from the ground-up. As a result, some of the conventionalist "system structures" which threatened to "choke" IMSA's creative potential had to be confronted.

Whether an educator is bound and determined to support the more conventional approaches to education, or is stimulated to pursue more creative avenues, there is one concept upon which both groups would most probably agree: the "passion" educators have for learning will directly affect their students' ability to acquire the skills necessary to remain on the learning track for the rest of the students' lives.

Passion for learning fuels the link between a student's inquiring mind and their ability to pursue the information necessary to quench their questions, and generate even higher levels of inquiry. Passion for learning is also the energy that fuels the educators' ability to encounter "conventionalist" forces and emerge energized rather than defeated, motivated to take more risks rather than stifled.

The IMSA "creativists" each had an individually-based source of passion for their dream of creating a school for the gifted. It was the type of risk-taking passion that is driven by an intuition that overrides logic. They were, and are, driven from within. They

were, and are, reputable professionals with a commitment to provide gifted students with an innovative, challenging, educational environment.

The Illinois Mathematics and Science Academy provides public education. During its development, it dared to question and challenge the more conventional approaches prevalent in public schools throughout the state of Illinois. As IMSA has grown through the years, its methodologies have become enhanced by the scores of students and educators who have exchanged ideas within its walls. Through its outreach program, IMSA "spins out" of its walls to infect other public schools with newly designed learning methodologies. IMSA graduates infect the job market with open minds primed for inquiry, analysis, and experimentation. IMSA, as an environment that embraces the concept of public education, has cultivated a legacy of excellence. It continues to embellish the art which documents its accomplishments.

It only takes one educational environment such as IMSA to "break the mold" of the "conventionalist" approaches to education. Studying the early stages of IMSA's development give some clues to the characteristics and stages inherent in the art of creating new schools. Ultimately, the challenge rests in the hands of courageous change agents like the IMSA "creativists." IMSA has opened the flood gates of educational innovation. Let the movement continue.

APPENDIX 1

IMSA: AN ANALYSIS OF THE GRECIAN VASE

IMSA: AN ANALYSIS OF THE GRECIAN VASE

IMSA: AN ANALYSIS OF THE GRECIAN VASE

Listed below are the titles for the symbols on the Grecian vase designed by Fermilab artist, Angela Gonzales, as the cover for the original proposal explaining the purpose and the design of the "Illinois Science Academy." Later, the vase was used as a symbol for the Academy on a variety of documents and as a lapel pin.

1. Biochemistry
2. Biology
3. Physicis
4. Chemistry
5. Biology
6. Computer Storage (outdated)
7. Biology
8. Quark Neutrino, Lambda Nuon, Upsilon Electron, W.Z. Quark
9. DNA
10. "Dead people" who made life worth living
11. Astronomy
12. Biology
13. Chemistry
14. Accelerator
15. Irrational alpha
16. Feynman diagram
17. Student
18. Biology
19. "Dead people" who made and still make life worth living.
20. Elements

APPENDIX 2

IMSA STATEMENT OF PHILOSOPHY AND MISSION

IMSA STATEMENT OF PHILOSOPHY AND MISSION
as Adopted by the IMSA Board of Trustees
14 April 1986

The IMSA is created to inspire and challenge young boys ad girls gifted in mathematics and scientific ability so as to increase the flow of the extraordinarily talented into the greater society in a manner which will maximize the use of these talents for the benefit of society. For this purpose the academy has two primary goals.

> To provide an educational, social and emotional climate in which students with exceptional aptitude in mathematics and science can develop their intellectual gifts and become committed to the search for human solutions to our world's problems.
>
> To serve as a laboratory for the testing and dissemination of innovative techniques in mathematics, science and humanities education and as a resource for secondary school teachers in Illinois and the nation.

Selection of Students

We will accept highly qualified students who are normally expected to enter the sophomore year in high school and in three years residence, graduate them ordinarily into the sophomore year of university. Our selection of students will be based upon a dynamic process, involving many criteria since recognition of giftedness at an early age is not easy. Exceptional ability and creativity are not always manifest by grades and examination scores. Therefore our admission criteria also include indicators of future potential among the enormous diversity of talents, backgrounds and preparations characterized in our candidates. It is our objective to admit promising students who will not only thrive and grow in this new environment but also strive for and achieve higher levels of critical thinking and understanding.

Curricula and Education Strategy

The course work and other programs in our school must be rich enough so that even the better among the gifted may find challenge and inspiration. Educational strategy will be evolutionary as staff blend tradition with innovation. Curricula and staff must emphasize the excitement and joy of inquiry and discovery. The use of seminars, mentors, and self-guided study, independent research, flexible hours and schedules, and as yet undreamed of strategies will be among the imaginative approaches which will be adopted by staff in its own time and experience whenever they help to maximize educational benefits.

A strong component of our focus is in the liberal arts tradition Scientists must function in a complex world and a early appreciation of this condition is enormously valuable to our

A strong component of our focus is in the liberal arts tradition Scientists must function in a complex world and a early appreciation of this condition is enormously valuable to our young scholars. Thus we expect to be strong in the language arts, in history, in literature, creative arts and in communication skills. Although the advance of science and mathematics are value-free activities, the applications of these disciplines have vast implicates for society in our global age. Humanities add wisdom and unity to knowledge.

The Larger Community

There is a special obligation to expose our students to the outside community. Too soon they will be asked to specialize their study and too occupied to see more than newspaper headlines. We must be sure that our students recognize the importance of service to their fellow human beings and the communities in which they live. Our young people would also benefit from association with students of different cultures. Already blessed by contact with a student body which mirrors the diverse demographic and ethnic population of Illinois, our scholars must also be able to sample the diversity in human characteristics provided by contact with students from out-of-state and out-of-nation.

Exposure of our students to the best minds in the world should be an important aspect of the IMSA experience We expect the core staff to be supplemented by teachers on sabbatical from universities, scientists from industrial research laboratories, and even retired Nobel Laureates. It is therefore important that we forge cooperative links with the rich collection of educational constituencies within reach including Fermi and Argonne National Laboratories, world renown museums, colleges, universities and vibrant industrial research laboratories working at the very fringes of science and technology.

The Underlying Philosophy

If we do what we know and feel is right it is bound to happen that among our graduates there will be numbered scientists, engineers, and those who go on to earn degrees in law and letters. There are likely to be those few, who create new intellectual worlds, cure a dreaded human ailment or in some other way significantly influence life on our planet. Our philosophy will be to treat our charges as if each one is capable of this extraordinary achievement. Only one such product will make the effort and expense of the school for its entire duration worthwhile.

APPENDIX 3

EXCERPT FROM SENATE BILL 730
THE COMPREHENSIVE ILLINOIS EDUCATIONAL REFORM PACKAGE 1986

EXCERPT FROM SENATE BILL 730
THE COMPREHENSIVE ILLINOIS EDUCATIONAL REFORM PACKAGE 1986

Article III

Section 1. Policy and Purposes

It shall be the policy of the State of Illinois to provide excellence in mathematics and science education in order to nourish an informed citizenry, assure technological skills for the work force, and assist in the preparation of professionals to serve the interests of Illinois in such fields as and computer technology. It shall further be the policy to enlist the support of the educational, industrial, and scientific communities in a cooperative effort to provide excellence in science and mathematics education as a symbol of this cooperative endeavor, there shall be established the Illinois Mathematics and Science Academy to serve the people Illinois as a preparatory institution and the school system of the State as a catalyst and laboratory for the advancement of teaching.

The primary role of the Academy shall be to offer a uniquely challenging education for students talented in the areas of mathematics and science. Both high school and college levels of instruction will be provided in order to assure appropriate linkage with higher education. Other programs deemed necessary to assure the elements of a strong general education required of creative scientists will be provided .

The Academy shall also carry a responsibility to stimulate further excellence for all Illinois schools in mathematics and science That responsibility may be exercised through any or all of the following means:

1. Stimulating curriculum development and revisions through the collaborative efforts of the interacting institutions involved in the Academy including universities secondary schools, the industrial sector and national laboratories.

2. Providing preservice training sites for persons in preparation for the teaching of science and mathematics.

3. Hosting summer institute opportunities for Illinois teachers modeled after the successful national Science foundation program prevalent in the 1960s.

4. Providing opportunities for exchanging teaching or faculty seats at the Academy for science and math educators in the elementary and secondary schools in this State.

5. Creating the opportunity and potential to link vocational programs, education for technology and employment programs to the work of the Academy.

6. Offering speakers and programs for teacher institutes and in-service training around the state.

7. Producing videotapes of lectures and experiments for use in the schools of this state.

8. Providing assistance in identifying necessary competencies to be incorporated in public school district graduation requirements.

Section 2. Establishment, Funding and Location

Thereby is hereby created the Illinois Mathematics and Science Academy which shall be a residential institution located in the Fox River Valley in close proximity to the national science laboratories based in Illinois. The Academy shall be a pilot project, funded by State appropriations, private contributions and endowments. Minimal fees for residential students may be charged. The academy may admit those students who have completed the academic equivalent of the 9th grade and may offer a program of secondary and post secondary course work. Admission shall be determined by competitive examination.

Section 3. Board of Trustees

The Illinois Mathematics and Science Academy shall be governed by a Board of Trustees which shall consist of the following members:

1. Four ex-officio nonvoting members who shall be: the State Superintendent of Education; the Executive Director of the State Board of Higher Education; the Superintendent of schools in the school district which the Academy is located.

2. Three representatives of secondary education, one of whom must be a math or science teacher, appointed by the State Superintendent of Education.

3. Two representatives of higher educate; one of whom must be a Dean of Education, appointed by the Executive Director of the Illinois Board of Higher Education.

4. Three representatives of the scientific community in Illinois appointed by the Governor.

5. Three representatives of the Illinois private industrial sector appointed by the Governor.

6. Two members representative of the general public at large appointed by the Governor.

With the exception of the initial appointments, the members terms of office shall be for six (6) years. At the first meeting members shall draw lots for appointments of 2, 4, or 6 year initial terms. Vacancies shall be filled for the unexpired portion of the terms by appointment of the officer who appointed the person causing such vacancy. The initial terms shall commence upon appointment and upon expiration of a term, a member shall continue serving until a successor is appointed. The Board shall select a chair from among its members who shall serve a two (2) year term as chair. Members shall receive a salary but shall be reimbursed for all ordinary and necessary expenses incurred in performing their duties as members of the Board.

Section 4. Powers of the Board

The board is hereby authorized to:

a) Accept donations, bequests, or other forms of financial assistance for educational purposes from any public or private person or agency and comply with rules and regulations governing grants from the federal government or any other person or agency, which are not in contravention of the Illinois Constitution or the laws of the State of Illinois.

b) Purchase equipment and make improvements to facilities necessary for the use of the school, in accordance with applicable law.

c) Adopt, amend, or repeal rules, regulations, and policies necessary or proper for the conduct of the business of the board.

d) Award certificates ad issue diplomas for successful completion of programs of study requirements.

e) Select a Director who shall be the chief administrative officer of the Academy and who shall administer the rules, regulations, and adopted by the Board pursuant hereto. The Director shall also be the chief administrative officer of the Board and shall be responsible for all the administrative functions, duties, and needs of the Board. Until such time as the board selects a director, the State Superintendent of Education shall serve as the chef administrative officer of the

Board and shall be responsible for the duties of the Director as they relate to the Board.. The State Superintendent of Education shall relinquish such administrative duties to the Director when such Director officially assumes his duties with the Board.

f) Determine faculty and staff positions necessary for the efficient operation of the school and select personnel for such positions.

g) Prepare and adopt an annual budget necessary for the continued operation of the school.

h) Enter into contracts and agreements which have been recommended by the Director in accordance with applicable law, and to the extent that funds are specifically appropriated therefore, with other public agencies with respect to cooperative enterprises and undertaking related to or associated with an educational purpose or program affecting education in the school. This shall not preclude the Board from entering into other such contracts and agreements that it may deem necessary to carry out its duties and functions.

i) Perform such other functions as are necessary to the supervision and control of those phases of educate under its supervision ad control.

j) The Board shall delegate to the Director such of its administrative powers and duties as it deems appropriate to aid the Director in the efficient administration his responsibility for the implementation of the policies of the Board.

In addition to the authorities granted herein and any powers, duties, and responsibilities vested by any other applicable laws, the Board shall:

1. Adopt rules, regulations, and policies necessary for the efficient operation of the school.

2. Establish criteria to be used in determining eligibility of applicants for enrollment. Such criteria shall ensure adequate geographic, sexual and ethnic representation.

3. Determine subjects and extracurricular activities to be offered.

4. Pay salaries and expenses, including but not necessarily restricted to facilities, equipment and supplies of the faculty and staff of the Academy out of funds appropriated or otherwise made available for the operating and administrative expenses of the Board and the Academy.

5. Exercise budgetary responsibility and allocate for expenditure by the Academy and programs under its jurisdiction, all moneys appropriated or otherwise made available for purposes of the Board and of such academy and programs.

6. Prescribe and select for use in the school free school books and other materials of instruction for children enrolled in the school and programs under its jurisdiction for which the general Assembly provides funds.

7. Prepare and adopt or approve programs of study and rules, bylaws, and regulations for the conduct of students and for the government of the school and programs under its jurisdiction.

8. Employ such personnel as may be needed, establish policies governing their employment and dismissal, and fix the amount of their compensation. In the employment, establishment of policies and fixing of compensation the Board may make no discrimination on account of sex, race, creed, color or national origin.

APPENDIX 4

1986 IMSA NATIONAL ADVISORY BOARD

1986 IMSA NATIONAL ADVISORY BOARD

Dr. Theodore H. Ansbacher	Director of Education Museum of Science and Industry Chicago, Illinois
Joseph Cardinal Bernadin	Archbishop, Archdiocese of Chicago Chicago, Illinois
Mr.Guion Bluford	National Aeronautics and Space Administration Houston, Texas
Dr. Manford Byrd	General Superintendent of Education Chicago Board of Education Chicago, Illinois
Professor James Cronin	Physics Nobel Laureate, University of Chicago Chicago, Illinois
Dr. John Deutch	Provost, Massachusetts Institute of Technology Cambridge, Massachusetts
Mr. Roger Gilmore	Provost, School of the Art Institute Chicago, Illinois
Dr. Marvin Goldberger	Director, Institute of Advanced Studies Princeton, New Jersey
Dr. Mary Good, Signal	President, Signal UPO Research Des Plaines, Illinois
Dr. Hannah Holborn Gray	President, University of Chicago Chicago, Illinois
Dr. Stanley O. Ikenberry	President, University of Illinois Urbana, Illinois
Dr. Anthony Jones	President, School of the Art Institute Chicago, Illinois
Ms. Nina Klarich	Vice President and Chief Regional Economist The First National Bank of Chicago Chicago, Illinois

Dr. Frank Press	President, National Academy of Sciences Washington, D.C.
Mr. Robert Pritzker	President, Marmon Group Chicago, Illinois
Professor Carl Sagan	Laboratory for Planetary Studies Cornell University Ithaca, New York
Dr. Stanley O. Ikenberry	President, University of Illinois Urbana, Illinois
Mr. Robert A. Schoelihorn	Chairman of the Board, CEO, Abbott Laboratories North Chicago, Illinois
Sir Georg Solti	Music Director, Chicago Symphony Orchestra Chicago, Illinois
Dr. Arnold Weber	President, Northwestern University Evanston, Illinois
Mr. William Weiss	Chairman and CEO, Ameritech Chicago, Illinois
Dr. Harry Woolf	Professor, Institute of Advanced Studies Princeton, New Jersey

APPENDIX 5

IMSA CHARTER STAFF TENTH-YEAR SURVEY

IMSA CHARTER STAFF TENTH-YEAR SURVEY

Seventeen of the twenty-six members of the charter staff/faculty responded to questions posed to them by this writer during a luncheon at IMSA on February 3, 1997. The purpose of the luncheon, "Reminisce for Research," was to acquire recollections from the charter staff about their experiences and perceptions for the period of time prior to the opening of classes at IMSA in 1986.

Five different "research stations" were set up in the IMSA conference room. Four of the five stations were supplied with a written questionnaire consisting of not more than three questions. At the third of the five stations, participants were interviewed. Their responses were recorded using a lap top computer.

The charter staff members were asked to rotate through all five stations. They were invited to share their memories with each other by posting their responses on flipchart sheets.

The following page lists the survey questions.

LIST OF TENTH-YEAR SURVEY QUESTIONS

Station #1 ENTERTAINING AN IDEA . . .

A. Think back to the very first time you heard about IMSA. List three "things" about IMSA that attracted you at the time.

B. Using one word, describe what motivated you to pursue a position at IMSA.

Station #2 DECIDING TO TAKE A RISK . . .

A. As you look back, what was the biggest risk you took by accepting your position at the Illinois Math & Science Academy?

B. When did you know, without a doubt, that you had made the right decision?

Station #3 YOUR INTERVIEW . . .

A. Name three facts about the interview that led to your employment at IMSA?

B. What characteristic about you do you believe influenced their decision to hire you over the other candidates?

C. Why did you want to work at IMSA?

D. Ten years ago, did you picture yourself being at IMSA for ten years?

Station #4 THE IMSA "PIONEERS"

A. List three adjectives that describe your first impression of the IMSA students

B. Briefly describe your first encounter with IMSA students

Station #5 CHALLENGES AND REWARDS

A. Briefly describe your first reaction when you saw the Sullivan Road site that would become IMSA.

B. List the three memorable challenges that you faced between the time you were hired and the first day of classes.

C. Recall the moment when you knew, without a doubt, that you really "belonged."

APPENDIX 6

IMSA STUDENTS: 1986 CHARTER CLASS

IMSA STUDENTS: 1986 CHARTER CLASS

The following students arrived at the Illinois Mathematics and Science Academy on Sunday, September 7, 1986. They are the Academy's "charter class."

Charles Aaron
Lisa Alexander
Andrew Alt
Mark Armantrout
Rebecca Arnal
Judie Ashbaugh
Ann Ashenfelder
Stephen Blessing
Portia Blume
Laura Bodley
Marc Booth
Frank Borras
Lori Buetow
Christopher Bullinger
Nicholas Bullinger
Brian Butler
Kelly Cahill
Tim Callaghan
Paul Capriotti
Christina Caruso
David Case
Gary Cerefice
Suja Chacko
George Chadderdon
Robert Chang
Thandeka Chapman
Denise Chatfield
Andrew Chen
Andrew Choi
Samuel Choi
Bowen Chung
David Colclasure
Steven Collins
Amy Courtin
Matthew Cullen
Ray Dames
Katina Daniell
Christopher Dargis
Sophia Davenport
Roslyn Dean
Gabriel Demombynes
John Dexter
Jeff Dodge
Amy Downey
Elizabeth Doyle
Arek Dreyer
Phillip Dunham
Richard Dunham
Chris Dunlap
Marcie Edwards
Jennifer Eichelberger
John Ellingson
Kurt Ewen
Anna Feltes
John Ferrell
Lynn Fields
Kristina Fowler
Daniel Frakes
David Franklin
Maria Garcia
Peter Gast
Rick Gimbel
Kristine Gerhard
Mitchell Gordon
Jodi Gottman
William Grambley
William Grebner
Lisa Green
Todd Groner
Susan Gruber
Mehmet Guler
Geeta Gurnaney
Jin Han
Michael Hancock
Wendy Hansen
T. J. Harrington
Andrew Harrison
Matthew Hausken
Cheryl Heinz
Sean Hendricks
Shirley Ho
John Hoesley
Monique Howery
Jill Howk
Saunders Hsu
Eugene Huang
Andrew Huizenga
Mae Hung
Daniel Irwin
Paul Ivsin
David Joerg
Christoper Johnson
Deborah Jump
Jessica Kahn
Lillian Kao
Karen Kiener
Eleanore Kim
Stanley Kim
James Kingery
Karl Koschnitzke
Jordan Koss
Lonnie Kowalski

Laura Kozlevcar
Timothy Kreher
Bob Kuhl
David Kung
John Kwon
Frank Lai
Todd Laufenberg
Pamela Lawhorn
Paul Lee
Wynne Lee
Young Lee
Lydia Leong
Erik Littell
Theodore Lizak
Rowan Lockwood
Doug Lundquist
Matthew Maddox
Brian Maier
Gregory Manning
Eric Martell
Ronald McKenzie
John Mench
Bonnie Min
Jill Mitchell
Carrie Mokry
Kevin Munoz
Sona Nadenichek
Kevin Narimatsu
Jennifer Nesbitt
Ilor Newman
Deborah O'Fallon
Andrew Oh
Theodore O'Neal
Aparna Parthasarathy
Brian Patterson
Ronjon Paul
Joseph Payton
Michael Perekas
James Petrie
Scott Pfister
Christine Posega
Shelly Pracht
Brent Pressey
Laura Radkiewicz
Krista Rakers
Stephen Ramsey
Carlin Reed
David Reed
Marie Reinke
Badrinath Rengarajan
Kevin Richter
Richard Riley
Katharine Rink
Diana Rios
Erin Roche
Michael Rodriques
Steven Roman
Alvia Romious
Erik Rothbaum
Tara Rudsinski
Efstathia Saranteas
Kevin Schraith
Sally Schultze
Jennifer Schwartz
John Schweitzer
Stephen Scott
Mark Shepard
Christopher Smith
Mark Smith
Dion Steele
Randi Stouffer
Anthony Stuckey
Sharon Sundy
Maggie Taylor
Erika Tracy
Jeff Truitt
Gail Tulchinsky
Douglas Turnbull
Jessica Urbanik
Dawn VanDekreke
Kellie VanHousen
Kim Ward
Kerry Washburn
Tracy Wiley
Terri Willard
Carol Wilhelm
Amy Wirth
Dana Wishnick
Derek Wolfgram
Sarah Woolsey
Wayming Wu
Korin Yang
Jody Yates
Sarah Yates
Clay Young
Jeffrey Young
Nancy Young
David Yung
K.T. Zavadowsky

APPENDIX 7

IMSA FACULTY AND STAFF: 1986 CHARTER MEMBERS

IMSA FACULTY AND STAFF: 1986 CHARTER MEMBERS

The IMSA faculty and staff listed below are the "charter members." They were employed prior to the opening of the Academy and they were present the day the students arrived for the first time on Sunday, September 7, 1986.

Dale Arentsen	Security Officer
Sue Bernal	Registered Nurse (contractual)
Jim Bondi	Chief of Security
Joan Dorion	Bookkeeper
Sue Eddins	Mathematics Faculty
Dana Goodman	English Faculty
Marti Guarin	Librarian
Charles Hamberg	Mathematics Faculty
Connie Jo Hatcher	Assistant to the Director
Bernie Hollister	Social Studies Faculty
Chris Kawa	Chemisty Faculty
Tim Klomhaus	Project Architect (contractual)
Kim Lehman	Security Officer
Elia Lopez	Foreign Language Faculty
Stephanie Marshall	Director
Eric McLaren	Resident Counselor
Mary McCracken	Secretary to the Fiscal Officer
Cheryl McGuirk	Social Worker
Rosalind Moore	Foreign Language Faculty
Valerie Popeck	Secretary to the Director
LuAnn Smith	Dean of Admissions and Research
John Stark	Foreign Language Faculty
Sherry Tracey	Maintenance
Cathy Veal	Dean of Student Services
David Workman	Physics Faculty
Gregg Worrell	Fiscal Officer

APPENDIX 8

INTERVIEW LETTER AND LIST

JUDITH M. COATES
1224 West Elmdale Avenue
Chicago, Illinois 60660
Home (312)764-2860 Work (847)676-3545

(Date)

(Name)
Illinois Math and Science Academy
1500 West Sullivan Road
Aurora, Illinois 60506-1000

Dear (Name),

I am currently doing dissertation research for my Ph.D. from Loyola University. I am researching the processes that lead to the creation of the Illinois Mathematics and Science Academy. "Processes" refers to all of the events that occurred between the moment the concept of the school was "conceived" until the first day the school opened for classes. My purpose is to discover the phases of development necessary to create a successful alternative high school.

I would very much appreciate the opportunity to interview you and discuss your role in the establishment of IMSA. In preparation for our meeting, I have had a guided tour of IMSA by a student; attended the informational Saturday program for parents/students interested in becoming part of the IMSA community. I've collected and sifted through a plethora of information from your archives and information acquired from Dr. Connie Jo Hatcher's dissertation and personal log. I am currently "wading through" IMSA's historical documentation.

I am conscious of using your valuable time in the most efficient manner possible. In our interview, rather than focusing on questions that could be resolved through documentary research, may I suggest we focus on your own personal recollections of:

- The specific moment you first recall hearing about the establishment of the academy
- Unanticipated obstacles, and how the obstacles were hurdled
- Characteristics of IMSA's development:
    - convincing the legislature
    - the influence of industry
    - assembling a team to develop the school
    - acquiring and adapting to the location of the school
- The key influencing factors in the development of the curriculum
- The vision of IMSA compared to the current reality.

I have been in touch with your assistant who has already "penciled in" a date on your calendar. I will call you to confirm the date and the time. Many thanks in advance for your cooperation.

Sincerely,

Judith M. Coates

INTERVIEW LIST

The following individuals received a customized version of the form letter depicted on the previous page, and participated in an interview with this researcher using the outline included in the letter.

Dr. Forest D. Etheredge

Sheila Griffin

Marti Guarin

Dr. Leon M. Lederman

F. Borden Mace

Dr. Stephanie Pace Marshall

Jack McEachern

James Pearson

Catherine Veal

Gregg Worrell

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VITA

Judith Mary Coates was born in Chicago, Illinois, August 13, 1954. She attended St. Eugene Grammar School in Chicago, and Mother Theodore Guerin High School in River Grove, Illinois. As an undergraduate, she studied for two years at the Loyola University Rome Center in Italy. Ms. Coates received both her B.A. in history and her M.Ed. in multicultural curriculum and instruction from Loyola University Chicago.

Beginning with her studies in Rome, Italy, Ms. Coates began observing and investigating deductive-based teacher/learner models used in "scientific inquiry." As an inner city high school teacher, she became an avid instructional designer, basing her programs on the motivation generated by the essential links between her students and the resources of the community in which they lived. Using a customized experience-based program model, Ms. Coates initiated the first community-based experiential learning program at Triton Community College in River Grove.

In 1979, Ms. Coates was hired by the Illinois Institute of Technology (IIT) as a Coordinator of their Cooperative Education Program. Again the experience-based model of education was proven to be successful as she developed bi-semester job opportunities for electrical, mechanical, and computer science engineering students in corporate work environments throughout the Midwest.

Ms Coates founded a branch of the IIT high school weekend and summer programs. She linked professors of engineering with corporate sponsors in the creation of "real-life" practical hands-on math and science laboratory workshops to increase the number of inner-city students pursuing math and science studies and careers.. Many program participants went on to study engineering and science. The IIT pre-university program remains in operation today.

Ms. Coates was recruited by P.M. Haeger and Associates, Chicago, to design similar experience-based nationwide leadership development programs for bank managers experiencing the deregulation chaos of the early 1980's. Later, as the Director of Management Training and Development for Aon Corporation, a Fortune 500, worldwide financial services conglomerate, she designed and implemented experience-based programs for managers responsible for maintaining employee productivity in the dynamic environment of corporate mergers and acquisitions.

As an educational consultant, Ms. Coates has designed and implemented programs for the Chicago Public Schools; the Golden Apple Foundation; the American Indian Business Association; Northeastern Illinois University; University of Illinois at Chicago; and the Kayenta School District on the Navaho Indian Reservation in Arizona.

Ms. Coates is currently the Director of Curriculum and Staff Development for District 69 in Skokie/Morton Grove, Illinois.

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The dissertation is therefore accepted in partial fulfillment of the requirements for the degree of Doctor of Philosophy.

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