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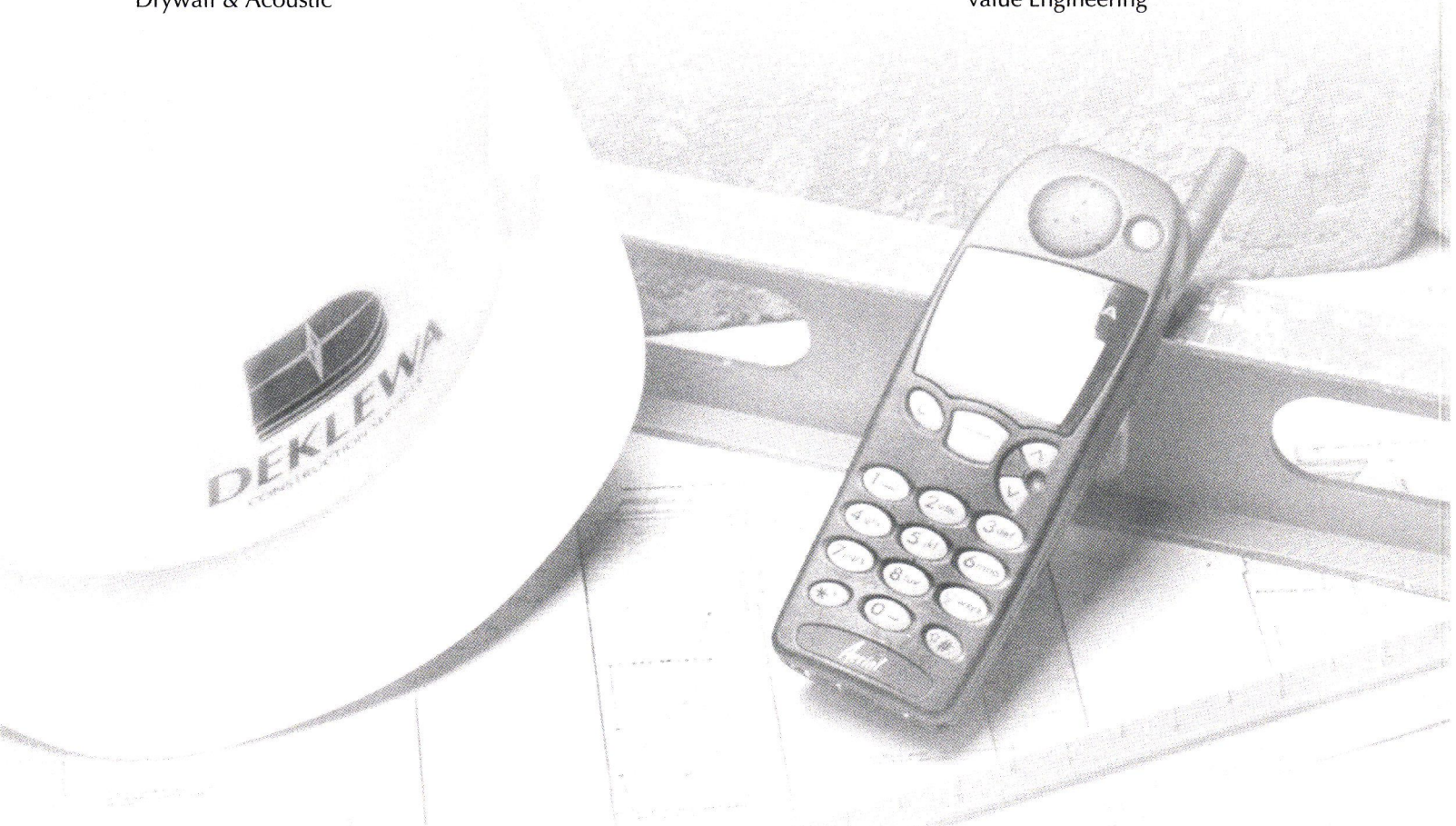
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# Do You Hear What I Hear?

By Tracy Certo



*If you like music, history and architecture, this is the column for you.*

## Can architecture be heard?

In the book *Experiencing Architecture* (1959), author Steen Eiler Rasmussen writes that some would argue that since architecture doesn't produce sound, then it can't be heard. Yet, he counters, architecture doesn't radiate light and we can see it.

"We see the light it reflects and thereby gain an impression of form and material. In the same way we hear the sounds it reflects and they, too, give us an impression of form and material. Differently shaped rooms and different materials reverberate differently," the author writes.

David Vater, AIA, thoughtfully copied this book chapter for me as I went to work on performing spaces and acoustics for this issue. He was enthralled with the book in college and I can see why. He also sent me another, equally interesting article by Dankmar Adler, an architect and partner of Louis Sullivan, who died in 1900 but who had a remarkable sense of acoustics that was unheard of in his time (p. 10). Adler and Sullivan designed the Auditorium Theater in Chicago, which was then the largest in America. David, who is a font of knowledge, told me that Sullivan was only 24 at the time of the theater's opening which the President attended. Heady stuff for such young architects who were leading members of the Chicago Movement of Architecture.

I learned this and all kinds of interesting things in researching acoustics and interviewing two architects—Al Filoni, AIA and Syl Damianos, FAIA who are coincidentally both Fulbright scholars—on designing for performing spaces. In a break from format, I'm presenting the crux of Rasmussen's chapter here. If you like music, history and architecture, this is the column for you.

If I were to interview Al and Syl today I would ask them: can architecture, indeed, be heard? The author of the book David sent me seems to think so. He offers the final scenes of the movie, *The Third Man*, as an example—of the gangster hunt through the endless underground tunnels of Vienna's sewer system.

"The characteristic sounds which tunnels project are clearly heard in the splashing of the water and the echoes of the

men hunting the third man. Here architecture is certainly heard. Your ear receives the impact of both the length and the cylindrical form of the tunnel."

A similar acoustical effect of passageways and tunnels is present in Thorvaldsen's Museum in Copenhagen, writes Rasmussen. Originally, a barrel-vaulted coach house, the museum's floors, ceilings and walls—even the sculptural residents—are all made of stone. A gift from the Danish king to house the famous sculptor's work, each barrel-vaulted room houses a single statue.

"All these hard, sound-reflecting surfaces give the rooms their hard, long-reverberating tones. When you enter this home of statues you are in a world that is very different from the rather provincial little capital of the nineteenth century which built it," the author says, comparing it to a great and dignified Rome with its vaulted ruins of Antiquity "or the stone corridors of the grandiose palazzos from which ease and comfort were debarred."

When the spectacular entrance hall is used for concerts, the acoustics are converted completely by covering the floor with matting and hanging fabrics on the walls.

*"Then if the audience is large enough to compensate for the lack of upholstery in the austere hall the room changes its manners, gives up its stentorian voice and becomes so civilized that it is possible to distinguish every tone of each instrument."*

So, the acoustics are sub-par unless improvements are made...or are they? Provided the right kind of music is performed, the museum has excellent acoustics, argues Rasmussen who references Hope Bagenal in her book, *Planning for Good Acoustics*. The chants from the Early Christian church in Rome are well-suited for this acoustic space, for instance. The old basilicas had the same hard character, with their mosaic floors, bare walls and marble columns. They were so huge and so empty that sound long reverberated back and forth between the massive walls.

In another example of hearing architecture, the author notes how the enormous, five-aisled structure of St. Peter's Basilica in Rome demands a definite kind of music, like the museum, as well as a distinct speaking voice. The priest

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**On the cover:** Heinz Hall in 1992 after acoustical renovations by MCF.



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## DO YOU HEAR WHAT I HEAR? continued from page 3

addressing the congregation couldn't use his normal speaking voice if he wanted to be heard clearly.

*"If it were powerful enough to be heard throughout the church, each syllable would reverberate for so long that an overlapping of whole words would occur and the sermon would become a confused and meaningless jumble," Rasmussen explains.*

Instead, the priest had to speak rhythmically, "to recite or intone". In large churches with great reverberation, there is usually a "sympathetic note" present, which is defined as a pitch in which tone is apparently reinforced. So the priest would begin on a reciting note—somewhere near A or A flat—"and then let his voice fall away in a cadence, going up and down so that the main syllables were distinctly heard and then died away while the others followed them as modulations. In this way the confusion caused by overlapping was eliminated."

A prayer or psalm reading would be delivered in a "slow and solemn rhythm, carefully adjusted to the time of reverberation." The Gregorian chants were custom created for the old basilica of St. Peter's. In old churches the walls became instruments which people learned to play.

Every large church has its own voice. St. Mark's in Venice has a special acoustical effect. Built over a Greek cross in plan, the church has five domes, one in the center and one over each of the four arms of the cross. This produces unusual acoustical conditions, says Rasmussen.

"The organist and composer Giovanni Gabrieli, who lived around 1600, took advantage of them in the music he composed for the cathedral. St. Mark's had two music galleries, one to the right and one to the left, as far from each other as possible and each with its dome as a mighty resonator. The music was heard from both sides, one answering the other in a Sonata Pian e Forte. The congregation not only heard two orchestras, it heard two domed rooms, one speaking with silver tones, the other responding in resounding brass.

After the Reformation, changes had to be made in many churches to accommodate the new focus on preaching. Here, the author showcases St. Thomas church at Leipzig, where Bach was the organist. Much of Bach's music was composed specifically for the church which features a large, three-aisled Gothic edifice with level vaults. Large areas of resonant wood were added to absorb sound and reduce the period of reverberation.

The side walls were lined with tiers of wooden galleries and richly carved numerous private boxes or "swallow's nests" as they were called. Due to the Lutheran system of church government, which placed the church under the town council, each member had his own family loge or box, just as one might at the opera.

All this wood helped to create the acoustics that in turn led to the creation of the development of Cantata and Passion. The absence of a note or region of response cleared the way for Bach to write his music in a variety of keys.

During the Classic and Gothic revivals of the late eighteenth and early nineteenth century, when eclecticism came into vogue, much that was gained acoustically in the past was ignored and then forgotten. "There was no longer any personal conception behind the rooms the architect planned and therefore he gave as little thought to their acoustic function and acoustical effect as to the texture of the materials he used." Although the exteriors of Classic and Gothic revivals were precise copies, the interiors were no longer designed with auditory or music functions in mind.

Flash forward to Rasmussen's present day—the book was written in 1959—and he argues that architects began to study acoustics but much attention was given to absorbing sound and shortening the period of reverb. "Too much interest has been given to these easily attained effects," he said. With a lack of interest in designing room with different acoustical effects, he believed all rooms sounded alike.

Just as I was finishing the piece on acoustics and performing spaces, I attended a concert at the newly renovated Levy Hall at Rodef Shalom in Squirrel Hill. Peter Guroff, violist for the Pittsburgh Symphony and a good friend of mine, is also the artistic director of the Ionian Chamber Players which performed—masterfully, I might add—that night. Syl Damianos told me if you want to know a concert hall's acoustics, ask a musician. So I did. Peter's take? He thinks Levy Hall's acoustics were much improved with the renovation, making for a nice space for chamber music groups. His wife and my bud Maureen, no slouch in the music department, told me the group sounded spectacular practicing Brahms in her living room the other night. Great acoustics or not, that's one performance I'd love to experience.

Here's to many more in the coming New Year. Hope it's great.





## The Quotable Pat Lowry

In case you missed it, the Post Gazette's architecture critic, Patricia Lowry, was quoted in William Safire's recent column, *On Language: Defenestration*, that ran in the New York Times and Post-Gazette in early December. Safire starts the column with a historical note: In 1941, a gangster on death row jumped out of the window, or was pushed, thereby avoiding the electric chair. This act was then described as: the Kid "defenestrated".

Defenestration, says Safire, is now one of the building blocks in the new language of architecture and design which he refers to as talkitecture or archispeak. Lowry was noted for her use of the word "fenestration" in describing what Safire refers to as a new hospital in Pittsburgh: "the architects subtly varied the fenestration patterns, establishing individual identities for the two pavilions."

Safire continues the column, examining such words as charrette—note he spells it with one r—along with planar, "new urbanism" and blobitecture. To get an emailed copy of this noteworthy column, save yourself the archive fee you'd pay the newspapers and email this editor at: [tcerto@adelphia.net](mailto:tcerto@adelphia.net). P.S. Way to go, Pat.

## Architecture for Kids

### AT CARNEGIE MELLON UNIVERSITY

The Carnegie Mellon University School of Architecture is offering a Saturday morning course for students in grades 3 through 12. Classes are taught by local architects and upper level architecture students.

Through paper, cardboard, wood and computer graphics, students learn basic design principles and how to represent their ideas through drawing and modeling while gaining a greater understanding of the built environment around them.

The program starts January 11 and runs for eleven weeks. Classes are 9:30-11:30. For more information call 412-268-2355.

## Tracy Myers and Raymond Ryan Named Curators At HAC

Congrats to Tracy Myers who was named curator at the Heinz Architectural Center along with Raymund Ryan, an architect, teacher, and critic currently based in Dublin. Myers, who is well liked and respected among area architects, has organized a number of exhibitions including *Designing Oakland*, *Aluminum in Contemporary Architecture*, and *Inside Out: New Perspectives on the Heinz Architectural Center's Collection* (co-organized with Joseph Rosa). She was the local curator for exhibitions organized by other institutions, including *Out of the Ordinary: The Architecture and Design of Robert Venturi, Denise Scott Brown and Associates*. Prior to joining Carnegie Museum of Art, Myers was Special Assistant to the Assistant Director for Public Programs at the Cooper-Hewitt, National Design Museum. She also has been a panelist and reviewer for The National Endowment for the Humanities. Myers has a Masters Degree in Art History from Hunter College of The City University of New York and is a Ph.D. candidate in Art History at the

University of Delaware. She served as adjunct lecturer at both institutions.

Raymund Ryan holds a Masters Degree in Architecture from Yale University and was a practicing architect from 1981 to 1990. He was co-director of the Urban Design Group, National Building Agency, Dublin. He has since been studio lecturer in the School of Architecture, University College, Dublin. In 2002, he was the Irish Commissioner for the 8th Annual Architecture Exhibition, Venice Biennale. He is a contributing editor for *Blueprint* (London), contributor to *The Architectural Review* (London), and former editorial board member of *LA Architect*. In addition he has published articles in many magazines including *Architectural Record* (New York), and *World Architecture* (London). "I am looking forward," said Ryan "to working with my new colleagues to engage a broad spectrum of architectural issues in the context of the Museum, of the city of Pittsburgh, and of international architectural culture."

## If you haven't met them yet...



**Courtney Curotola (left), and Maya Haptas are the new very cool people working in member relations at AIA Pittsburgh. Courtney is a graduate of Seton Hill College and Maya is a graduate of Bard College.**



# The Art and Science of Performance Spaces By Tracy Certo



*The Grand opening of Heinz Hall in 1970 after it's conversion from the Loews Penn Theatre.*

In the late sixties, H.J. Heinz was considering a new home for the Pittsburgh Symphony Orchestra. Initially he was eyeing a sight near the Civic Arena and he contacted the firm Owens Skidding Merrill to submit design ideas. In the end, he reconsidered, opting instead to convert Loew's Penn Theater, a declining movie palace, into a performing arts center now known as Heinz Hall.

The result was not only one of the first conversions of its kind but also the 1970 renovation of Heinz Hall was "the beginning of the thinking of the Cultural District," said project architect Al Filoni, AIA of MacLachlan Cornelius & Filoni.

"He wanted the home in the city," Filoni added, and "he had the foresight to realize that home in the city would turn the city around."

Bear in mind that historic renovation was not the big deal it is today, Filoni reminds. That may explain why, when the noted acoustician Keilholtz was brought in, he was given total authority. Back then, the trend was "big walls to reflect sound" and that's what was installed, destroying or covering up "tremendous amounts of ornamentation," Filoni explains, adding, "If we had the money we would go back to that kind of ornamentation." Surprisingly, much of it is still there behind the big walls.

Five to six years ago, MCF was back at Heinz Hall making major acoustical renovations which included widening the proscenium. "If it's not wide enough, then a performance of Mahler or Strauss with a huge orchestra is too deep front to back," says the classical music and opera buff who studied theater architecture in Europe on a Fulbright Schol-

arship. "Getting the sound into the hall is a problem, not to mention the ability of musicians to hear each other."

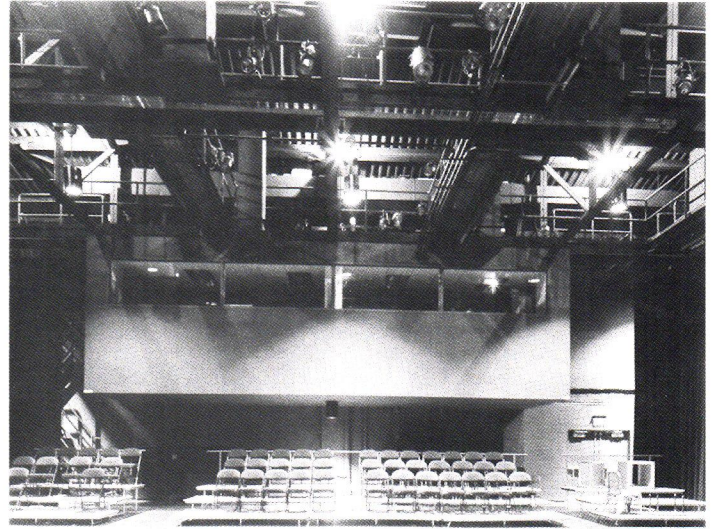
From an acoustics standpoint, the ideal width of the proscenium is 60 feet, which they were just able to hit while heightening the proscenium to 40 feet. "You fool the sound into thinking its in the same room and not on the stage," Filoni says. The result? "For 2,600 seats, it's as good acoustically as any."

In addition, they built a new, very thick and heavy shell to reinforce and reflect the bass sound which needs lots of density. They worked behind the scenes, too, including the corridors behind the stage as well as the mechanical system to cut noise.





**The Pasquerilla Performing Arts Center (above and below) at the University of Pittsburgh in Johnstown serves the needs for a teaching space and performance space with two venues: a 1,000 seat proscenium theatre and a flexible 'black box' studio theatre. Built on a restrictive budget, the performance space has been described by many of its users—from opera singers to symphonies—as 'acoustically perfect.' Architect: Damianosgroup.**

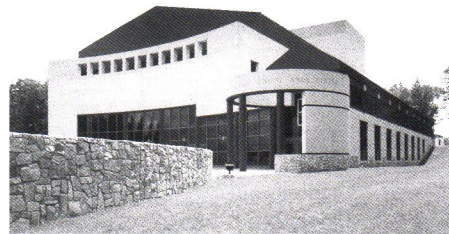


Acoustically, things had changed in the few decades since the original restoration. It wasn't new technology or new thinking as much as it was a return to old things that work, says Filoni. For instance, articulated walls with ornamentation came back into favor for the purpose of diffusing sound instead of solely reflecting it as would a great flat wall expanse.

Also, steep ceilings were considered superior in ushering the sound into the hall. And, more attention was being paid to density for reflection of sound. That includes the stage floor and the riser system to avoid vibration of their surfaces.

In addition to improving the performance space, Filoni thinks the renovations have helped the performance of the PSO which he calls "one of the finest orchestras in the world."

You can't separate architecture from acoustics in designing or renovating a performance space, insists the architect. "That's why so many theaters are bad acoustically because architects don't understand acoustics." The halls we love so much—he mentions Concertgebouw in Amsterdam and the Vienna Opera House—were all built before acoustics were understood, that is, prior to the turn



of the 20<sup>th</sup> Century. European halls were smaller, making it easier to get it right than in large-volume spaces, but they were done by trial and error and, Filoni offers, understood by intuition.

"When you step up to the 2000-seat plus range, that's when you run into the big problems," he says.

### **The Pasquerilla Center**

A few years ago, Sylvester Damianos, FAIA of Damianosgroup, had the daunting task of building the Pasquerilla Center, a performance space designed to accommodate a multitude of different venues: opera, symphony, dance, lecture, movies and drama. "The acoustics required for each are vastly different and not necessarily compatible," he says.

*"You can't separate architecture from acoustics in designing or renovating a performance space."*  
— Al Filoni, AIA



To aid in the transitions, the walls have removable sections, the ceiling is adjustable and there's a traditional canopy for symphonic use.

Acoustics can be tricky. Damianos says there's a break-in period for acoustics, up to five years. Ultimately, he said you really have to rely on the musicians to measure the results.

Another performance space his firm designed was the interior of the Purnell Center. As a teaching venue, that space is quite different with a typical proscenium, and stage for limited use for the school of drama.

### **The Benedum Center for Performing Arts**

Unlike Heinz Hall, the Benedum Center for Performing Arts was a true restoration, from the proscenium to the lobby. MCF referred to black and white photographs from the theater's opening night to achieve authenticity, and relied

on paint scrapings to determine the original paint color. When someone discovered a tiny scrap of carpet in a heating duct, the scrap was utilized in weaving carpet to match the original.

One of the distinguishing features of the Benedum was the creation of the largest column-free stage house anywhere, says Filoni. The intent was to prohibit the architecture from interfering. As a result, performance companies are enthralled with the space. When the Phantom of the Opera rolled into town, they were able to set up a week early due to the ease of the space, Filoni reports, and he says the Frankfurt Ballet called it the best theater in North America.

Not that the restoration was easy. It was "compromise after compromise" with the competing groups of acoustic experts, theater consultants and architects. For instance, the groups spent a full month discussing the width of the proscenium. The acousticians wanted the ideal 60-foot



*A true restoration from start to finish, Benedum Center boasts the largest column-free stage space anywhere.*



width while the others were concerned how that would strain the sight lines. The compromise was a 56-foot width that serves both purposes: orchestra acoustics and the view from the theatre seats.

Although Filoni considers the Boston Symphony Hall to be one of the country's finest, he would match Heinz Hall and the Benedum against any theater in the world.

Without Mr. Heinz, there wouldn't be a Benedum, Filoni adds with admiration. He has deep respect for the man whom he credits with great foresight. "I marvel at his vision," says the architect. Not to mention his passion. "He just loved Heinz Hall. He worried about what was going on around it, about the color of the flowers in the plaza and a missing section of baseboard."

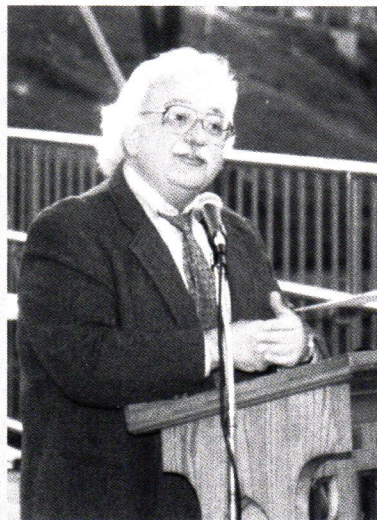
One legacy of Heinz' is still not well known and that's the space below the garden with room for a 300-seat theater. Several times already, Filoni has been called in to discuss plans to build it but now with the recent financial woes of the orchestra it's on the back burner.

## CAPA

Yet another MCF project, the Creative Arts and Performance Academy (CAPA) is now underway with an expected completion of spring. Filoni is thrilled about the project even as he says that CAPA has had every acoustical problem imaginable—like the gym on top of a large rehearsal room.

To help control noise, they called in Robert Jones, a noise control expert. Although officially retired from Bolt Berenek and Newman, the renowned acoustics firm in Boston, Jones has worked with MCF before and agreed to the project. His job will be to install double slabs of sound insulating material inbetween the gym and the large rehearsal room below it. He will also focus on the ductwork to ensure it's as noise-free as possible.

If there are other arts schools on the same scale as CAPA, Filoni doesn't know of any. This exceptional school will feature a 400-seat theater, a moveable orchestra pit, full stage house and moveable proscenium for a more traditional feel. In addition, it includes an experimental theater that seats 100 as well as a vast instrument rehearsal room.



**After graduating from Harvard, a Fulbright Scholarship led Al Filoni to Europe resulting in an 18-month study with Werner Ruhner, a renowned theater architect. Filoni visited theaters all over Europe, and even staged production of an opera. "You experience what works," he says modestly, although he's worked on the other side of the stage as well, in opera productions in Europe as well as Pittsburgh.**

**Filoni belongs to a group of theater architects, the International Organization of Theater Architects and Technicians (IOTAT) based in Europe. The group meets annually to tour halls throughout Europe and discuss what they're doing in other cities.**

The school will serve up to 600 fortunate students who will have tried out for spots in painting and sculpting, animation and photography, ceramics and performance arts.

"CAPA is some kind of a dream. I can't believe it's happening," Filoni says. The fact that this dream school is located in the middle of the Cultural District is almost too much for the architect. He pauses, and laughs. "I want to go back to school!"



## Dankmar Adler on The Theater

In 1900, the American physicist W. C. Sabine published *Architectural Acoustics*, which marked the beginning of acoustics as a modern science. Yet for twenty years prior, the architect and partner of Louis Sullivan, Dankmar Adler, who was never scientifically trained in acoustics, had accomplished much in its study and practice.

In an article titled "The Theater", that was pieced together with notes found after his death, he writes of theater acoustics:

"It should not be more difficult to predict the behavior of sound waves within a theater than it is to determine the interactions of sea-waves, ship, and propelling screws, of the conduct of steam in the cylinders of an engine," argued Adler. Yet, "When a theater is found in which all can see and hear, the result is regarded by the public as something abnormal; a phenomenon which cannot be repeated except by luck.

"The true history of architecture is the history of the evolution of human civilization. This is the spirit in which author of this article sees the theater that has been, the theater that is, and the theater that should be," wrote the architect.

*"When a theater is found in which all can see and hear, the result is regarded by the public as something abnormal; a phenomenon which cannot be repeated except by luck."*

— Dankmar Adler

In Adler's day, theaters and opera houses in Europe were built by kings as a legacy of their court's splendor and glory. Consequently, the focus was not on the stage but rather, on the opulent costumes worn by the court nobility. "Thus the practice of surrounding each auditorium by tiers upon tiers of stalls or boxes, so disposed that the magnificence of the apparel and jewels worn by their occupants were fully in evidence, was as important and essential a feature of the spectacle as the play presented upon the stage," Adler said.

Below, those of lesser status huddled on wooden benches if they were lucky; in many cases, they stood. Far above, in the rising heat of many burning candles and lamps, were the narrow galleries which were filled by those of even less social import than in the pit below.

In England puritanical influence prevented support of the theater which was funded wholly by the public. Those who worked to keep the theater alive enclosed courtyards of inns, surrounding them with galleries. While the inn's guests were seated in the galleries, others of lesser stature were in the courtyard. Although Adler states that this prototype was "crude and inelegant, yet its general lines were almost identical with the plans developed on the Continent in the style of the Renaissance and of the Rococo from the classic theater of Bitruvius."

In the beginning of the 18<sup>th</sup> Century, there was one basic type of theater which included a level pit, high surrounding walls with many balconies and galleries, a ceiling raised high and within it, a dome high enough to allow the central chandelier to be hung above the line of vision for most of the audience. There was also a proscenium built with conventionally accepted rules for the proportions of the doorway in a palace of the period of the Renaissance. This design dominated the entire nineteenth century as well.

No theater design can fulfill "legitimate requirements", Adler wrote, "unless there has been provision for everything which furthers scenic illusion, facilitates movement upon the stage, and makes for comfort and convenience of actors and all others employed upon the stage. Yet after all this has been done, if each spectator cannot see every actor in the play and all the minutiae of scenic setting, if every member of the audience is not able to hear distinctly and effortlessly every word spoken upon the stage, no matter how perfect the stage and its consideration and appointments, and how consummate the art of the performers, the structure will not have fulfilled its purpose." — TC



**The Purnell Center for the Arts includes a 450-seat main theater, a studio theater and video studio and other related facilities along with the Regina Gouger Miller Gallery for the College of Fine Arts and The Entertainment Technology Center, a joint program of the Schools of Computer Science, Drama, and Art. The School of Drama and Miller Gallery Wing are projects of DDF Associates, a joint venture; the North Wing is a project of Damianosgroup.**



## What happens when a theater fails to perform?

Recently, classical music critic Andrew Druckenbrod wrote a story in the Pittsburgh Post-Gazette lamenting the move of the Y Music Society to the Jewish Community Center in Squirrel Hill:

*"Pianist Vladimir Feltsman usually speaks with his hands, striking the keys with aplomb and vigor. Last night, at the Jewish Community Center in Squirrel Hill, his face said it all. The conditions in which he had been asked to give a recital were clearly a trial.*

*The ventilation system in the multipurpose Katz Performing Arts Center bellowed above him, the terribly bright sound of the room projected every patron's unwrapping of candy at him and a poorly tuned piano ruined one of the four Chopin Ballades he played. Struggling to focus on the music, Feltsman grimaced, looked skyward and even talked to a board member of the Y Music Society. It was, in short, a fiasco."*

From the first, when the Y Music Society's first concert there subjected violinist Hilary Hahn to regular distractions by the audience, conditions haven't improved, wrote Druckenbrod. "For all its talk about world-class quality, the PSO is stuffing top talent into an inferior box," he added.

His solutions? Granted, he said solutions aren't easy in these poor economic times, but he suggested the nearly 10 rows of seats on the floor must go since the audience is too close to the performer.

As for acoustical improvement, the critic has some suggestions. "Secondly, a serious effort must be made to improve the acoustics. Feltsman's reading of Bach's Overture in the French Manner sounded as if it were being played in a practice room, so harsh was the sound zooming off the wall behind him. Why not pull the curtain across the wall, or move the piano toward the audience so the sound diffuses a bit?"

Finally, he suggests, "Perhaps it is worth the money to rent Carnegie Music Hall, where the series used to present. And if the PSO is planning to someday move the series to the small hall it hopes to build in Heinz Hall, it should fill us in."

### ASK THE MUSIC CRITIC:

#### Andrew Druckenbrod's Top Five

When *Columns* asked the P-G's classical music critic, Andrew Druckenbrod, to rank the area's performing spaces, he gave it some thought and came up with the following:

Top 5 musical spaces in Pittsburgh, rated for acoustics only:

- Carnegie Music Hall
- Heinz Hall
- Frick Museum Auditorium
- Byham Hall
- Benedum Center

## ACOUSTICS 101

There are three acoustical tools to control sound:

- 1) absorption
- 2) diffusion
- 3) reflection

Absorption is the "fuzzy stuff fabrics" and fiberglass acoustical ceiling tiles so familiar to us. This is most people's definition of acoustics, explains Greg Vizza, an acoustic consultant with The Sextant Group. "The word acoustic to them means absorptive," he says.

When the Sextant Group started the renovation of The Alumni Concert Hall at Carnegie Mellon University, "it was probably 75% absorptive" and "it was miserable," reports Vizza. "We tore out all the absorption." Think of absorption as flat black velour. Shine a flashlight into it and nothing comes back.

Diffusion sends sound back into the room as scattered and broken up. Think of this as shining light at a white piece of paper or as indirect lighting of a ceiling.

Reflection is used in auditoriums. It's a controlled, mirrorlike, hard flat surface usu-

ally set at specific angle. When this is used correctly, sound is heard exactly as it was when it left the original source.

Example: Let's say there's a giant, 1500 seat auditorium where reflective panels are set up at right angles throughout, on the walls and the ceiling. (how many is to be determined) When it's done properly, the person on stage could speak in a normal voice and every person in the auditorium could hear every word.

In another example, The Sextant Group was called in to rectify acoustics in a boardroom where all the absorptive surfaces absorbed so much sound that those seated at a table couldn't hear each other. The solution? Installing a reflective surface on the ceiling. In this case it was hardwood although dry-wall, metal, plastic laminate or masonite are materials commonly used for reflective surfaces.

In the Alumni Concert Hall, the group relied more heavily on diffusion since the space is not a concert hall—there's no audience—but rather, a rehearsal hall. Vizza explains that there might be a 150 piece orchestra in there at times. "It has to sound good in and among the orchestra members so we didn't use much reflection," he says.

Diffusion worked since it scatters all the instrument sounds, mixing and homogenizing them to create an ensemble sound instead of isolated pockets of say, a flute here and cello there.

The Alumni Concert Hall has an interesting look because of all the diffusers visible. "It didn't have to be that way," says Vizza who explains that in other cases they hide all the diffuser elements behind stretched fabric or a speaker grill.



Acoustics were much improved after recent renovation of the Carnegie Mellon Alumni Concert Hall.



## BOOK REVIEW

# Henry Hornbostel: An Architect's Master Touch

by Robert J. Bailey, AIA, IKM, Inc.



**The architect in 1910. With several buildings at Carnegie Tech now complete, along with Rodef Shalom and Soldiers' and Sailors' Hall, Hornbostel was gaining a national reputation.**

In 1977, my freshman year in the department of architecture at Carnegie Mellon University, I didn't know Henry Hornbostel from Hal Holbrook. As I studied the College of Fine Arts Building, along with an explosion of information on the older CMU buildings, I learned soon enough about the architect who designed the campus by winning a design competition. During the course of my investigations, someone suggested I talk to the beloved professor John Pekruhn, now deceased, about Hornbostel, who had taught Pekruhn 40 years earlier. What I mainly remember from that conversation is that Hornbostel was charismatic and quite a natty dresser. In retrospect, I wish I'd had the wisdom to question the professor further about how and what Hornbostel taught.

It didn't take much for me to become a Hornbostel aficionado. I soon wondered why a monograph had never been done and, for the past twenty years now, I have hoped for one. So it was with great pleasure that I learned that the task had at last been accomplished by Walter Kidney. The Pittsburgh architectural community needs no introduction to Kidney's fine writings on architecture. For other readers

not acquainted with his work, the architectural historian with Pittsburgh History & Landmarks Foundation has authored several books on local subjects. Two favorites are *Allegheny Cemetery* (1990) and *Pittsburgh's Bridges* (1999). In *Henry Hornbostel: An Architect's Master Touch* Mr. Kidney has given us a much-needed and expertly handled volume that brings the legendary Hornbostel closer to a generation that lives in the constant shadow of his considerable legacy.

The book's contents include a foreword by Arthur Ziegler (president of PHLF and publisher of the book), and a preface by Charles Rosenbloom. The main text is grouped under four headings: Hornbostel Himself, Hornbostel Nationwide, Hornbostel in Pittsburgh, and Hornbostel Remembered.

The abundance of illustrations of Hornbostel's gloriously illustrated works covers design schemes, construction photos, historical photos, details, and present-day images. Color photographs of Hornbostel's work in Pittsburgh were taken by William Rydberg, Photon, who has done previous work for PHLF. Additionally, there are treats such as



**Present-day Hamerschlag Hall at Carnegie Mellon. Completed in 1913, this building with its originality, inventiveness, and materials may well be the quintessential Hornbostel building.**





**One of Hornbostel's most important buildings outside of Pittsburgh, City Hall in Oakland, California (1914).**



**Hell Gate Bridge, New York, NY. At the time of its completion, Hell Gate was the longest steel arch bridge in the world. Hornbostel was the first architect to collaborate with engineers on bridge design.**

shots of an elderly but spry Hornbostel at his home, showing off artifacts from a lifetime immersed in art.

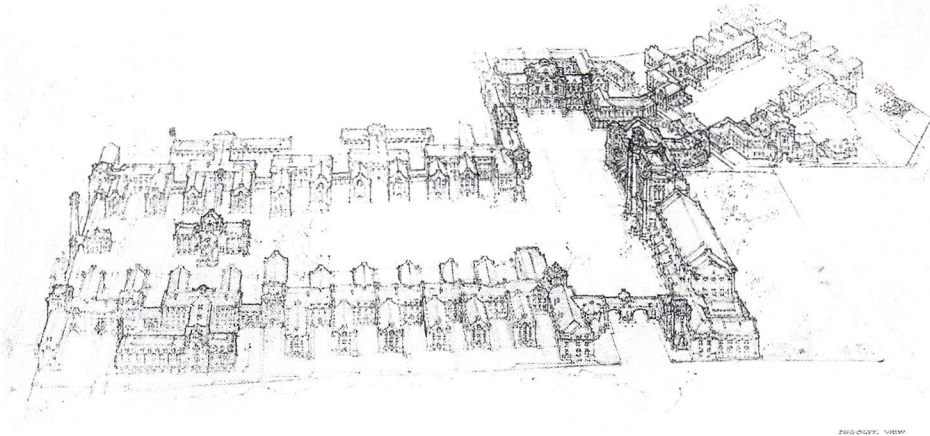
Charles Rosenbloom, an architectural historian who teaches a course on Hornbostel at CMU, opens his excellent preface with the question "Was Hornbostel a Pittsburgh architect?" Noting "the phrase has a dismissive undertone," he focuses on how Hornbostel's Beaux-Arts planning principles led the way in Pittsburgh's civic improvement, notably in the Oakland neighborhood. Rosenbloom emphasizes that while he could not be separated from the principles of Beaux-Arts so maligned by modernists, Hornbostel, in his own words, felt its purpose was "to solve a problem, not [to produce] the archaeological architecture [that was prevalent] in America." He notes Hornbostel as a practitioner of what has been called "Modern French," a type of Beaux-Arts work that was in many ways less tied to historical antecedents. Rosenbloom also discusses Hornbostel's broader influence outside of Pittsburgh, notably in bringing architectural collaboration to bridge design and as a pioneer of skyscraper governmental buildings with the City Hall in Oakland, California.

In the section *Hornbostel Himself*, author Kidney succinctly covers the character of the man, his training, and his place among architects of his day. Hornbostel's penchant for the

mischievous is illustrated in a gem of a story about a person at one of the institutions for which Hornbostel was designing. In hopes of disgracing Hornbostel, this person claimed the building's stone lintel was overloaded. Under cover of darkness, Hornbostel and a colleague drew a crack with charcoal on the lintel that was of course noticed by this person. The next day, when the building committee had been duly convened to inspect the flaw, it wasn't Hornbostel who was disgraced when the committee found no evidence since the charcoal crack had been erased as mysteriously and suddenly as it had appeared.

In *Hornbostel Nationwide* and *Hornbostel in Pittsburgh*, the text is a straightforward and factual chronology. Kidney's descriptions are scholarly in their precision and he critiques the projects from a historian's perspective. His facility as a writer is especially evident where he manages to say a great deal with an economy of words. For example, commenting on Machinery (now Hamerschlag) Hall, one of Hornbostel's true master works at Carnegie Tech, Kidney states, "In the mid-1990's Roberts Hall, a large new structure built close to the [Junction] Hollow's floor, rose in front of Hamerschlag Hall and took away much of its scenic drama." There is dry humor as he writes of Hornbostel's proposed addition of 1904 to the Allegheny





**LEFT:** This scheme won the competition for the design of the Carnegie Technical Schools campus in 1904.

**ABOVE:** Hornbostel with the nearly 80-year old Andrew Carnegie on site during the construction of Carnegie Tech, c. 1914.

County Courthouse: "It is natural to wonder what Hornbostel thought he was doing in putting a 700-foot tower in the courtyard of H.H. Richardson's masterpiece and degrading Richardson's 310-foot tower to an obscure auxiliary function. A brash proposal by another architect, F.J. Osterling, to heighten the Courthouse had had Hornbostel talking about shotguns: and now this!"

A student at Columbia when Richardson built the Allegheny County Courthouse, Hornbostel would build next to him thirty years later on Grant Street with the City-County Building in 1917. From Columbia, Hornbostel, like Richardson, went on to the Ecole de Beaux-Arts in Paris where he was a star student, skilled at perspective renderings. In a career that spanned five decades, Hornbostel was nothing if prolific. In addition to the emphasis on the Pittsburgh projects, Kidney thoroughly covers Hornbostel's broader presence in significant buildings built nationwide such as the renowned campus of Emory University in Atlanta, Georgia.

The volume of large commissions that Hornbostel's office turned out in Pittsburgh and elsewhere is truly impressive. While immersed in the design of the College of Fine Arts building at Carnegie Tech, for instance, Hornbostel's office simultaneously produced the State Education Building in Albany, New York, featuring a colonnade more than 600 feet long (in 1912 the longest in the world at the time)

and the 15-story City Hall of Oakland, California. As an architect, I find the thought of detailing such buildings staggering. We no longer build as Hornbostel did; in an era when the palette for institutional and commercial architecture was substantial masonry, iron, and steel, he was extremely inventive and tended to design his own ornament.

Personally I would have liked to learn more about Hornbostel's office: its size, for instance, and how they practiced. Given Hornbostel's design ingenuity it is reasonable

to assume that he had some innovative practice and production methodologies. As Kidney points out, Hornbostel's heyday was the era of architectural competitions and his skill and success in winning commissions via this route, in many ways, made his career. Hornbostel won nearly half of the thirty competitions he entered and we see how in many cases his winning entries evolved, usually for the better. We also see some of those he didn't win, such as his 1897 entry for the New York Public Library, and some that were never executed.

I would also like to have seen a little more of Hornbostel the teacher. Kid-

ney writes, "Hornbostel effectively conveyed his ideas to his students," but doesn't tell us how. Hornbostel founded the department of architecture at Carnegie Tech in 1905 and was associated with the department for four decades during the time of modern architecture's rising crescendo.



**Detail of lamp and terra cotta ornament, City Hall, Oakland, California. Kidney observes that from competition entry to execution the ornament went from classical to almost Art Nouveau.**

What were his philosophies as head of the department of architecture? How might the relevance of the old Beaux-Arts master have changed over his tenure? In this area Mr. Kidney never really reaches beyond the legend.

*Hornbostel Remembered* includes excerpts from two pieces written about Hornbostel, in which we get a strong sense of a vibrant and admired personality. One concerns an architects' dinner of 1909 celebrating Hornbostel and the other is from Hornbostel's secretary in 1954.

Foremost among the various appendices is the comprehensive List of Works of all known Hornbostel projects compiled by local architect and AIA member, David Vater. He includes the collaborators as well as when the buildings were drawn and if they were built.

Was Hornbostel a "Pittsburgh" architect, whatever that means? What can be said is that eventually he called the city home, moving here in 1920. Pittsburgh in turn embraced Hornbostel; in the late 1930's, his formal association with Carnegie Tech at long last ended and he became an engaging figure as Allegheny County's Director of Parks. Most importantly, Hornbostel left Pittsburgh with an amazing legacy among which are the buildings at Carnegie Mellon and the University of Pittsburgh, the City-County Building, Soldiers' and Sailor's Hall, Rodef Shalom, B'nai Israel, Smithfield United Church, the University Club, Webster Hall, the Grant Building and a handful of private residences. All these and more are thoroughly given their due in this long-awaited and quite wonderful book.

*Henry Hornbostel: An Architect's Master Touch* costs \$45 and is available through Pittsburgh History & Landmarks Foundation.





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### From the Firms

→ **Hayes Large Architects** was selected for the Armstrong School District's five-year, \$63 million renovation and construction program for seven elementary schools.

**Hayes Large Architects** will break ground on a new middle school next year in the Yough School District in Westmoreland County.

The firm will also design the first new school for the Cleveland Municipal School District's \$1 billion, 10-year district-wide facility construction and renovation initiative.

**Hayes Large Architects'** partner **John Missell, AIA**, will return to China in November to continue working with the Nanjing International School for a new K-12 building.

**Burt Hill Kosar Rittelmann Associates** has been selected to design a 145,000 square foot School of Engineering and Applied Science building at Miami University in Ohio. Burt Hill will also provide site master planning services for the adjacent quad.

Massaro Company completed construction of the new 10,000 square foot UPMC Cancer Center at St. Clair Hospital. The architect for the project was **L.D. Astorino Companies**.

Massaro Company began construction of an \$18 million, four-level brick student center at Chatham College.

General Industries, Prof. Affiliate has completed Woodlands Outdoor World, a 60,000 sf retail store located one mile south of Nemacolins Woodlands Resort & Spa. Architect is Sweeny & Shank Architects.

Repal Construction was awarded the contract for a new dining hall at Camp Allegheny in Stoystown, PA. Architect is **Davis Gardner Gannon Pope Architecture**.

Repal Construction Co. has been awarded the contract for the new 7300 sf Devlin Funeral home in Cranberry Twp. Architect is **Paul Slowik & Associates Architects**.

Repal has also been awarded a project at Koser State Park in Somerset County which includes the construction of two shower houses, a sanitary sewer system and a contract for the Westmoreland County Lenox Reuse Industrial Redevelopment Project.

NASA hired **Facility Planning & Resources, Inc.** to design and construct their new Nanotechnology Research Laboratory. The research spaces are cleanrooms designed to control molecular and airborne particles from entering the research space.

Harchuck Construction Inc., Prof. Affiliate, Apollo, was awarded the contract to build a Starbucks Coffee at Robinson Towne Center. The architect is **McCormick Architects + Designers**.

### Business Briefs

→ Continental Building Systems, Prof. Affiliate, hired Stephen Manukas as estimator.

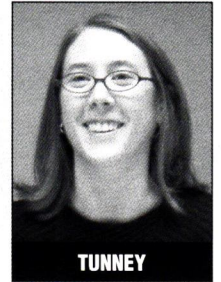
LLI Technologies, Inc. hired Raymond J. Zerjav as an Architectural Designer.

Carrie DiFiore, and Kate Tunney have joined **Rothschild Architects** as staff architects. DiFiore recently returned to Pittsburgh after nine years in Los Angeles. She is a graduate of SCI-ARC and worked for five years with Michael Rotondi at Roto Architects.

Tunney, a graduate of Parsons School of Design, serves on the board of Mt. Washington Community Development Corporation.

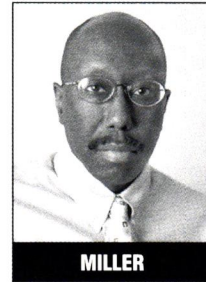


**DIFIORE**

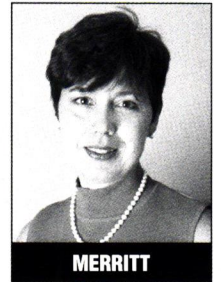


**TUNNEY**

**L.D. Astorino Companies (LDA)** announces the addition of **Marvin Miller, AIA** as an A/E department project architect; **Donna Merritt, AIA**, as a project manager in its residential architecture group, and Blake Hanick and Kara Uhrlen as marketing coordinators.



**MILLER**



**MERRITT**

**Robert H. Hoffman, AIA**, resigned from Hoffman Popovich Architects to start his own firm. He will stay in his current office address at 110 West Main St., Boalsburg, PA.



**HANICK**



**UHRLIN**

**WTW Architects** added Douglas M. Lieb, Andrew Maass, James Chambers, and Derek J. Eversmann to its professional staff.

**JSA Architecture Planning Engineering Interior Design** hired Sarah-Marie DeFelice as an engineering cad draftsman. Rob Condron, also an engineering cad draftsman, was made a full time employee with the firm.

LLI Technologies, Inc. and McKamish will offer a joint 12-week internship program for juniors and seniors this summer in mechanical system design and construction engineering onsite field work and electrical design and onsite field work. For more information call (412) 338-0700.



**Kudos**

→ **Burt Hill Kosar Rittelmann's** 700 Park Regency Condominium in Atlanta received one of America's Ten Project Achievement Awards for 2002 from the Construction Management Association and Building Design and Construction Magazine in the category of Private Projects less than \$100 million.

**Ken Doyno, AIA**, of Rothschild Architects was featured with the Pittsburgh Folk Orchestra on NPR's Saturday Light Brigade program. In addition to other music, the group performed three songs written by Doyno.

GAI Consultants, Inc. won the 2002 Engineering Excellence Award in the Structural Systems Category for rehabilitation of the Easley Bridge in Bluefield, West Virginia.

James D. White, Leo E. Marsh, Gary M. Albert, Scott A. Kraynak and Kurt A. Scheer of LLI Technologies, Inc. earned the Leader in Energy and Environmental Design (LEED) 2.0 Professional Accreditation from the U.S. Green Building Council.

LLI Technologies, Inc. was recently named as one of Pittsburgh's 100 fastest-growing companies. LLI placed 6<sup>th</sup> in the Real Estate/Construction/Development category and 31<sup>st</sup> overall. LLI was also a Tech 50 winner in the Service Provider category at the Pittsburgh Technology Council's annual look at the region's leading technology-oriented companies.

The Master Builders' Association of Western Pennsylvania, Prof. Affiliate, and the Construction Advancement Program of Western Pennsylvania Fund have donated \$100,000 to the 29 children who lost a parent from the crash of United Flight 93 in Shanksville on Sept. 11<sup>th</sup>. Executive Director of MBA, Jack Ramage, said, "While millions of dollars were being collected by charitable organizations, many families left with the responsibility of caring for the victim's children are struggling to provide immediate basic needs."

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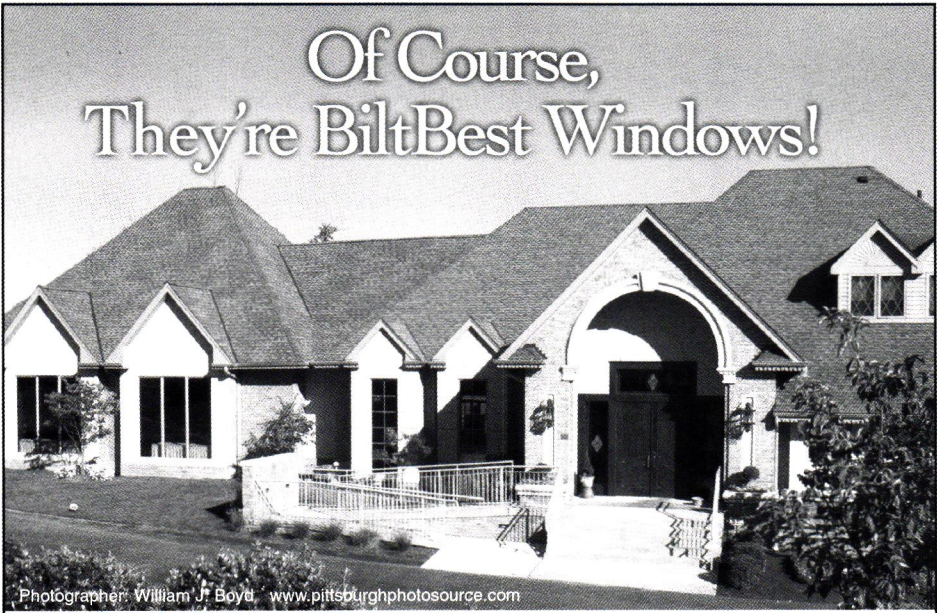
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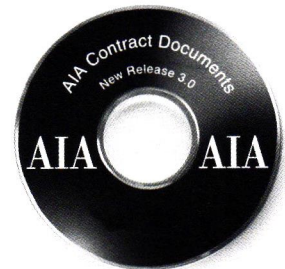
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# AIA Pittsburgh 2002 AT-A-GLANCE

## April 10th-12th

TRI AIA, AIA Pittsburgh's first annual regional conference takes place. Attendees take in lectures, tours and exhibits. Architects are able to acquire all their CES credits during this successful three-day event.

## October 31st

PennDOT unveils the new Pennsylvania Barrier. AIA Pittsburgh is the project manager for the design of this new barrier, allowing the view of Pittsburgh's skyline from the Fort Pitt Bridge to be unobstructed.

## June 17th

Courtney Curotola joins the AIA Pittsburgh team and is immediately thrust into the manic world of the AIA. She dreams of an office where there are two cool people working in Member Relations.

## September 3rd

Maya Haptas quits her job at the Children's Hospital and fulfills her lifelong dream of working in Member Relations at AIA Pittsburgh.

## October 3rd

The Design Pittsburgh gala takes place at the new David L. Lawrence Convention Center with a record number of attendees. This is the first affair ever to be held in the new glass atrium.

## October 12th

During Architects' Saturday, students and community members enjoy tours of seven Lawrenceville area Architecture and Design firms.

## October 22nd

Design Awards take place at the Carnegie Museum of Art, where Lead Juror Andrea Leers, FAIA of Leers Weinzapfel in Boston presents the jury's comments and 13 awards are given out.

## November 15th

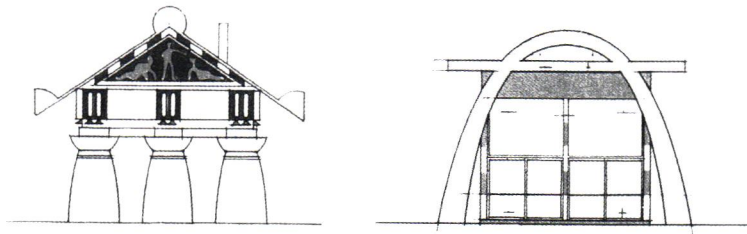
The Pittsburgh Business Times is circulated to 13,500 people with an AIA Pittsburgh Design Awards insert detailing the awards and listing all 119 of this year's submissions.

## December 17th

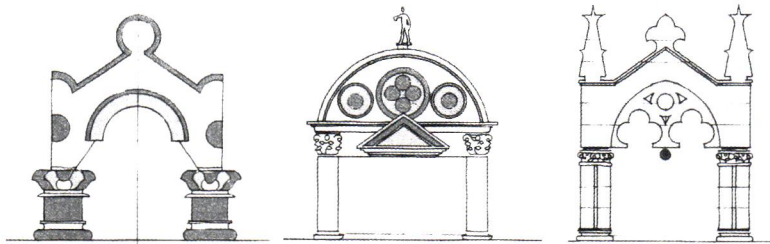
AIA Pittsburgh's Annual Holiday and President's Party goes off without a hitch at the Penn Brewery where guests enjoy local beer, wine and a German buffet.

## January 2nd (Ideally)

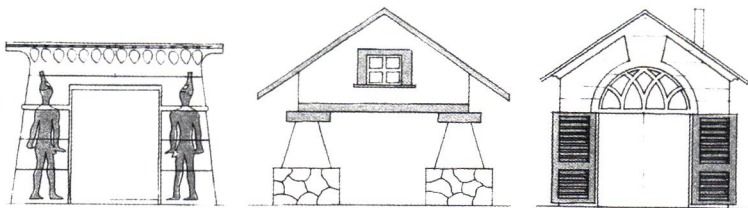
Columns magazine January/February double issue begins to arrive in almost 3000 mailboxes across Western Pennsylvania. All boards and binders have been picked up from the AIA Pittsburgh office, marking the successful completion of another Design Awards.



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9-11 a.m. – **Planning Electrical and Infrastructure Requirements for AV Systems**

12-2 p.m. – **Understanding the AV Projection and Display Environment**

3-5 p.m. – **Understanding Audio and Acoustics in AV Presentation Systems**

The seminars will take place at The Design Center, 5001 Baum Boulevard in Oakland (parking provided). Cost is \$45 per seminar; \$100 for all three. To register or obtain course outlines please contact Britta Manges with PRO-COM SYSTEMS at 412-586-2024.

## April 10-12

### TRI-AIA Regional Convention at the Omni William Penn Hotel

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## AIA ACTIVITIES

### January 3, Friday

**AIA Communications Committee Meeting** Noon at Chapter Office  
412-471-9548

### January 14, Tuesday

**AIA Pittsburgh Board Meeting** 5:00 pm at the Chapter Office. All members are welcome 412-471-9548

### January 16, Thursday

**Legislative Committee Meeting** Noon at the Chapter Office, Chuck Coltharp, AIA  
412-452-9690

### January 29, Wednesday

**AIA Pittsburgh's Foundation for Architecture** 5:00 pm at Strada LLC office, 925 Liberty Avenue. Contact Ed Shriver, AIA  
412-263-3800

### February 11, Tuesday

**AIA Pittsburgh Board Meeting** 5:00 pm at the Chapter Office. All members are welcome 412-471-9548

### February 20, Thursday

**Legislative Committee Meeting** Noon at the Chapter Office, Chuck Coltharp, AIA  
412-452-9690

### February 26, Wednesday

**AIA Pittsburgh's Foundation for Architecture** 5:00 pm at Strada LLC office, 925 Liberty Avenue. Contact Ed Shriver, AIA  
412-263-3800

## AROUND TOWN

### January 13, Monday

**Pittsburgh Architecture Lectures.** 3:30 p.m. at McConomy Auditorium, CMU. Guest speaker will be Steve Badanes of Jersey-devil Design-Build.

### January 14, Tuesday

**CSI Meeting.** International Building Code panel discussion, Piccolo Mondo at Foster Plaza Building Seven. Social hour at 6 p.m., dinner at 6:30, \$25 per person. For reservations call Deborah Merges at 412-855-0928 or email her at [dmerg@ATTBI.com](mailto:dmerg@ATTBI.com) by Jan. 8.

### January 15, Wednesday

**Secrets for Success Conference – 2003,** 11:00 a.m.- 4:00 p.m. at David L. Lawrence Convention Center. For reservations call Diana Rudoy at 412-209-2885 or email her at [drudoy@ldastorino.com](mailto:drudoy@ldastorino.com)

### February 19, Wednesday

**"Meet the Press."** 11:30 a.m.-1:30 p.m. Rivers Club. Lunch will be included. Contact Diana Rudoy at 412/209-2885 or [drudoy@ldastornio.com](mailto:drudoy@ldastornio.com)

### February 1, Saturday

**Sign and Pattern in Today's Mannerist Architecture.** Lecture by Robert Venturi and Denise Scott Brown. 3:00 p.m. at Carnegie Lecture Hall.

### February 3, Monday

**Pittsburgh Architecture Lectures.** 3:30 p.m. at McConomy Auditorium, CMU. Guest speaker will be William McDonough, celebrated green architect and innovator.

### February 12, Wednesday

**Society of Design Administrators Meeting.** Engineers Club, 11:30 a.m.-1:30 p.m. \$17 members \$19.50 non-members. Reservations call Cheryl Marlatt at 412-281-1337.

AIA Pittsburgh is using e-mail to keep our members informed of the chapter's activities. If you would like to be included and are a member, please send your address to [info@aiaapph.org](mailto:info@aiaapph.org)



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CONTACT: Laura S. Deklewa

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VISIT: www.burns-scalo.com  
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CONTACT: A. Richard Kacin, Pres.

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3 Walnut Street, Pittsburgh, PA 15223  
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## ■ L.V. CONTRACTING, INC.

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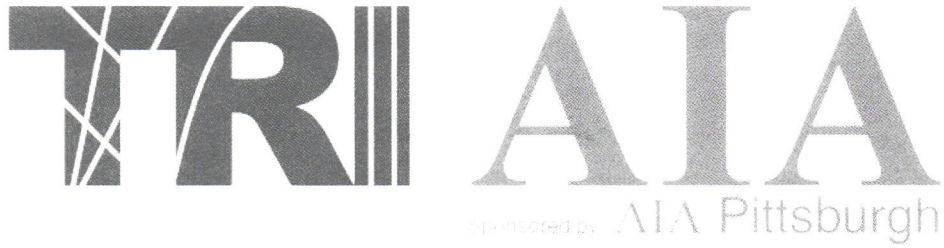
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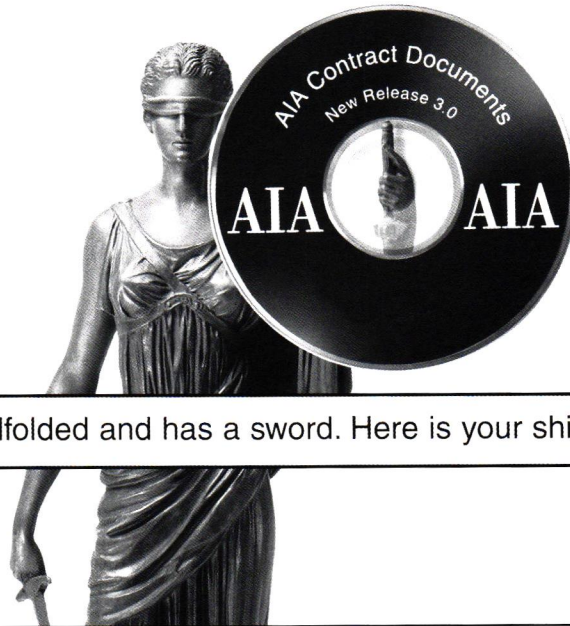
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CONTACT: Todd Chambers  
E-MAIL: TC@zoominternet.net  
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P1650 Norcross Road, Erie, PA 16510  
PHONE: 814-825-3253 FAX: 814-825-0775  
CONTACT: Daniel J. Dahlkemper  
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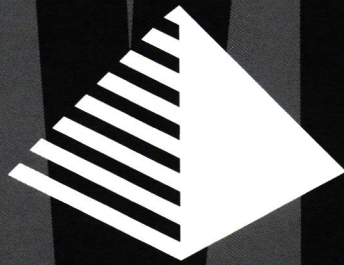
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