# Gary W. Siebein Elevated to the College of Fellows American Institute of Architect

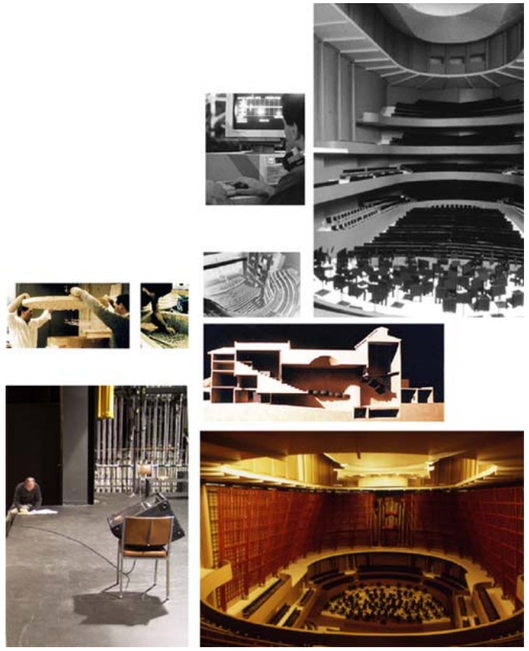
## Teaching, Research and Critical Practice Exploring the Architecture of Sound

Gary W. Siebein, President and Senior Principal Consultant for Siebein Associates, Inc. is one of 2,765 members distinguished with the honor of fellowship out of a total AIA membership of almost 86,000. He is also one of a very small number of Architects who are fellows of both the American Institute of Architects and the Acoustical Society of America. He will receive his AIA Fellowship medal during the Investiture of Fellows Ceremony at the 2009 National Convention and Design Exposition in San Francisco on May 1, 2009.

His election to fellowship was based on 30 years experience conducting internationally recognized research in architectural acoustics that has established the state-of-the-art in the field; integrating the results of this research in the acoustical design of many significant projects; disseminating this knowledge to professionals and architecture students through university teaching at the University of Florida School of Architecture; and a prolific record of publications.

He has developed a diverse body of work to explore the architecture of sound through a highly integrated, multi-disciplinary career involving years of teaching thousands of graduate and undergraduate students at the University of Florida; conducting research funded through the National Science Foundation and other Federal agencies that has formed the state-of-the-art of acoustical designing in architecture; and engaging in a critical practice that simultaneously raises issues for the research to address and translates the results of the research into creative design solutions on over 1200 prestigious projects around the world. He has served as an inspiring mentor to a generation of masters and doctoral students who are themselves leaders in the academic, research and professional communities; and has encouraged many students and professionals with his enthusiasm and accomplishments in the field. His publications have elevated current thinking in the architectural design basis for acoustics to a high art and a precise science.

Professor Siebein is currently a tenured professor on the faculty of the School of Architecture at the University of Florida. He has taught in many areas of the architecture program from the Ph.D. program to first year in studio, seminar, lecture and laboratory courses. He has developed a graduate education program for advanced masters and doctoral students and supervised a long term, interdisciplinary research effort in architectural acoustics.



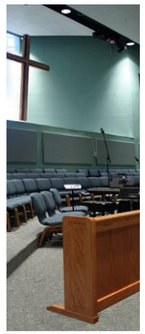
His main concern as an educator and as a practitioner has been to convey to students and professionals that the quality of the built environment can be enhanced through an understanding of sound as a phenomenological experience and to successfully integrate these concerns in a holistic architectural design philosophy developed through a rigorous, 30 year research program. ***The investigation of the relationships among people, sound, technology and architecture as an aspect of design and the development of innovative methods to explore these relationships in actual buildings has been the thrust of his teaching, research and practice.***

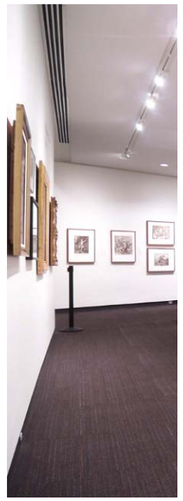
He has collaborated on the design of world class concert halls including architects James Stirling and Michael Wolford's *Esplanade: Theatres-on-the-Bay* in Singapore with noted acoustician Russell Johnson; Moore Ruble and Yudell's *California Center for the Arts in Escondido* with Rick Talaske; and with Jaffe Holden Acoustics on *Alice Tully Hall*, and *Troy Music Hall*, New York.

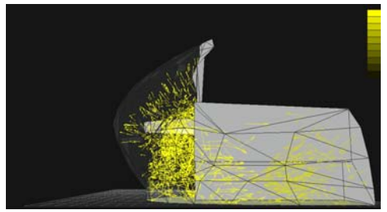
Mr. Siebein has translated years of National Science Foundation research into design methods, perceptual evaluation of performance venues and modeling of the architectural features of buildings that affect perception of artistic intent into unique design approaches that allow regional, state and local performance venues to be built with high quality acoustics for music and theater on the limited budgets associated with regional, local, college and high school performance venues. Through his understanding of the tectonics of sound, he has effectively distilled a set of acoustical and architectural design principles that blur the line between architecture and acoustics and require a unified design approach where each element performs multiple functions to maintain cost effectiveness and achieve superior acoustical results.

## Practice

Mr. Siebein has developed a unified theory of architecture and acoustics based in his practice that allows work on multiple building types as well as environmental or ecological studies that examines the possibilities for poetic expression of architectural forms; seeks an acoustical identity from their program; develops sophisticated aural and visual aesthetics; and is inherently woven in the design concept for a building through its site and natural context; the form, space, materiality and structure of its architectural systems; and the active or special purpose acoustical systems used on the project. The theory has served as a method to organize his seminar and studio classes, ask questions that form the basis for his long term research agenda; produce innovative architectural and acoustical design solutions in many complex building projects; and form productive architect/ consultant relationships in his practice. The theory is also used as a starting point for his graduate seminar and studio classes that examine these issues through applied design work in the studio and laboratory.







## Teaching: Poetics, Technics, and Mechanics of Sustainable Buildings

Professor Siebein introduces architecture students to the theoretical and practical relationships among people, technology and buildings relative to the thermal environment, heating and air-conditioning systems, environmental quality and sustainability issues, water supply systems, waste disposal systems and life safety systems. His primary goal is to give students an exposure to the various relationships among people, technology (in what is often called environmental control), and the environments in which people dwell. Issues are raised on a theoretical level regarding buildings and environmental issues that students are encouraged to be familiar with as they develop an architectural philosophy. The needs for environmental control systems based on the reactions of people to dynamic, changing environments (such as heat, light, sound, etc.) are investigated for each of the sensory systems. It is hoped that students exhibit an awareness of these concepts in their current and future design studios

## Teaching: Soundscape Studio

Professor Siebein explores soundscapes through his graduate design studio at the University of Florida. The Soundscape Studio presents a theory about the relationship between the soundscape or acoustical landscape and design as the basis for making architectural form. Students explore the relationships between sound, perception and space as a basis for beginning site planning and design for complex building types. Students begin by mapping aural space in several existing contexts to develop a sensitivity to sound in the environment. Analysis and mapping of a soundscape for an historic context that can only be read about is also undertaken to abstract the sound from the sensory perception of the sound transforming it into something that can be diagramed, designed and manipulated graphically. Field trips are made to existing theater to see and hear performances and gain a first hand understanding of the architecture of sound. An acoustic identity is sought for a complex program usually with a real client for a performing arts center or other acoustical building type. The tectonics of sound are explored in the design and development of the building through modeling of various types and conventional architectural design methods to produce unique and unconventional approaches to design.

## Teaching: Famous Fires

Through teaching Professor Siebein explores the issues of life safety in the theories and practice of architecture. Emphasizing the history, theory, and concepts of life safety and its application in architectural design. The role of human behavior and other areas of current research interest are discussed as potential influences on the emerging science of fire protection. Students begin by establishing a familiarity with the historical development of fire safety codes and practices through the investigation of famous fires from the burning of Rome to the present time and the role it has played in the development of fire safety practice.

## Publications

Professor Siebein has published over 140 papers and professional society presentations, seven monographs, 16 book chapters and five books which have greatly increased the architectural knowledge of acoustics and which form an applied basis for intelligent design of acoustical spaces.

He recently authored a chapter entitled "Recent Innovations in Acoustical Design and Research" for the second edition of *Architectural Acoustics* by William Cavanaugh that will be released in the fall of 2009. The chapter focuses on the most recent progress in the field of acoustics in developing methods of evaluating, modeling, and predicting the acoustical qualities of buildings and environments.

## Research: Acoustical Modeling and Measuring

As Director of the Architecture Technology Research Center at the University of Florida, Professor Siebein and his graduate students have developed sophisticated Acoustical Research Instrumentation for Architectural Spaces or ARIAS, measuring systems for full size concert halls, as well as methods to predict and evaluate design proposals in physical scale models and computer models of rooms while they are being designed. Professor Siebein and his graduate students collaborated on the design of several world class concert halls including *Esplanade: Theatres-on-the-Bay*, Singapore with noted acoustician Russell Johnson; the *California Center for the Arts in Escondido* with Rick Talaske.

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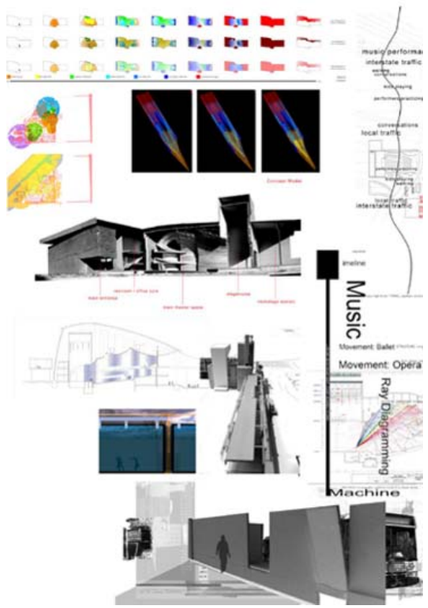
## Research: Listening to Buildings

As a supplement to research completed on acoustical modeling, *Listening to Buildings* was developed to include an extensive database containing a comparison between the acoustical quality of over 100 rooms using the subjective evaluations of speech intelligibility tests, acoustical measurements taken in the rooms, and also laboratory controlled listening tests exploring the acoustical subtleties of specific architectural features of the rooms.

## Research: Soundscape Design

Soundscape is a term first coined by Murray Schaeffer in the 1960s. Professor Siebein has adapted his own soundscape research to include the architecture of sound and its relationship to place. He has developed a method to create a "Net Zero" noise impact for large institutional and infrastructure projects through making an aural mapping of a geographic local with the identification of specific acoustic events and ambient sounds to describe and predict the resultant soundscape of a future development. This technique was initially developed on the *Southwest 20th Avenue Urban Village project* at the University of Florida, and was refined through design work for numerous projects in Florida and abroad including noise ordinance development for Lake County, Hilton Head Island, Ybor City, Sarasota, and the Federal Law Enforcement and government facilities including at Cheltenham, Maryland, Brunswick, Georgia, and Brighton, Michigan. This revolutionary work has also been shared at various acoustical conferences in the US and Europe.




Professor Siebein's Soundscape Design Studio is always heavily enrolled and is noted for the enthusiasm of the students for the topic as well as the innovative, multi-sensory designs that are explored in the class. The studio explores a theory about the relationship between the acoustic landscape and design as a basis for making architectural form.

## Research: Classroom Acoustics

Classroom acoustics research conducted by Professor Siebein with masters of architecture students helped to establish the acoustical criteria used in ANSI 12.60 which is the standard used in LEED for Schools. The research involved many hours of observation and listening in classrooms at Pre-K, Kindergarten, elementary, middle and high schools. A review of current literature on the topic, and an analysis of room typology through physical and computer modeling. The work has also been investigated in practice through the design of high performance learning environments for school districts in Florida including Orange County, Miami Dade, and Hillsborough County.

## Research: National Science Foundation

- *Project Design Phase Analysis Techniques for Predicting the Qualities of Buildings*

## Research: National Rifle Association

- *A Preliminary Acoustical Analysis of Existing Indoor Firing Ranges*
- *Field Measurements of the Insertion Loss of Earth Berms*
- *Field Measurements of Sound Pressure Levels of Various Firearms*

## Research: Ph.D Students

- *Objective Acoustical Analysis of Room Acoustic Measurements in Portuguese Roman Catholic Churches* by Antonio P. Carvalho
- *Effects of Various Architectural Parameters on Acoustical Measurements in Rooms for Listening* by Wei-Hwa Chiang
- *Techniques for Interaural Cross Correlation Measurements* by Gary S. Madaras
- *Objective Evaluations of Multiple Source and Omnidirectional Impulse Response Measurements* by Youngmin Kwon
- *Effects of Specular and Diffuse Sound Reflections on Acoustical Texture* by Pattra Smitthakorn

## Awards and Recognition

Mr. Siebein has received numerous professional recommendations including Award Citations from the AIA, Progressive Architecture, ACSA, and Honors from the University of Florida, the National Council of Acoustical Consultants, and Phi Kappa Theta Honorary Society.

## Concert Hall Research Group (CHRG)

Professor Siebein is one of the founding members of CHRG, an international consortium of acoustical consultants, architects, researchers, and other design professionals. Members are encouraged to share research and collaborate on innovations in architectural acoustics with the goal of improving the design of concert halls and performing arts spaces.

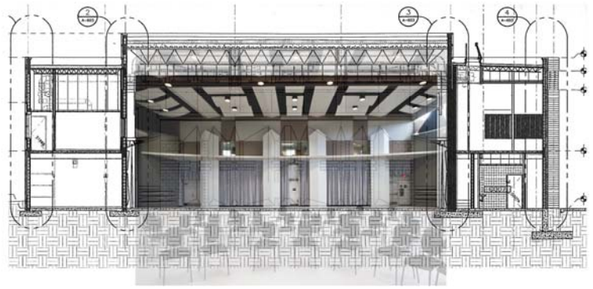
He was the Keynote Speaker at the International Concert Hall Design Symposium in Tanglewood, Massachusetts in 1999 where he presented an invited address "The Emerging Art, Science and Technology of Concert Hall Design." He presented "Exploring the Architecture of Sound: Experiments in Measuring, Mapping, Modeling, Simulating and Evaluating Architectural Acoustics in Performing Arts Hall" with Ph.D. students Youngmin Kwon and Pattra Smitthakorn at the 2007 Symposium in Aspen, Colorado.

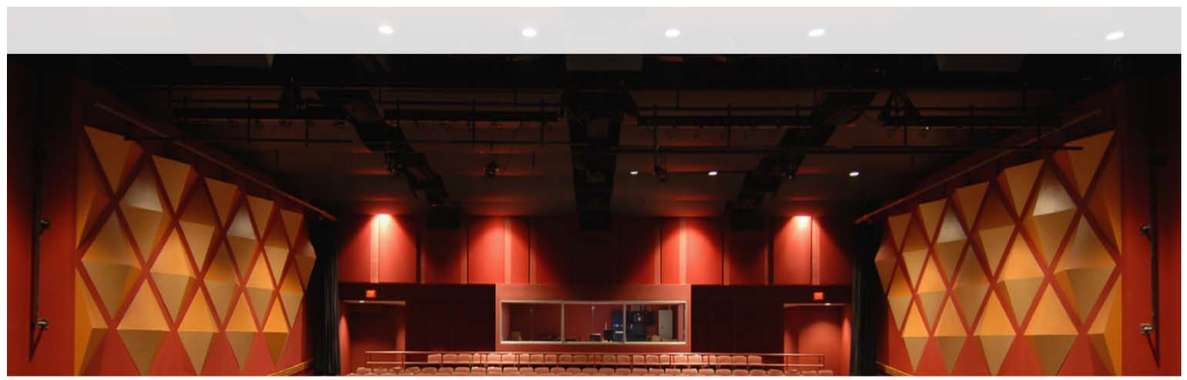
## Professional Affiliations

- Fellow, American Institute of Architects (FAIA)
- Fellow, Acoustical Society of America (FASA)
- Member, National Council of Acoustical Consultants (NCAC)
- Member, Institute of Noise Control Engineers (INCE)
- Member, American Society for Heating, Refrigerating and Air-Conditioning Engineers (ASHRAE)
- Member, American Society for Testing Materials (ASTM)

## National Committees

- ASA Technical Committee on Architectural Acoustics
- ASTM Committee E33 on Environmental Acoustics.
- President, Florida Chapter Acoustical Society of America
- Advisory Board, Robert B. Newman Foundation





- **Project Recognition**

Catherine A. Hickman Theater in Gulfport, Florida; Jacksonville University Performing Arts Center in Jacksonville, Florida; and the Players Theater in Sarasota, Florida were selected for inclusion in the Acoustical Society of America's *Halls for Drama Performance* book that will be released in 2009.

- **Project Recognition**

Saint Petersburg College Music Recital Hall in St. Petersburg, Florida; The Charlotte Center for Performing Arts and Education in Punta Gorda, Florida; and Don Thompson Theatre in Tampa, Florida were selected for inclusion in the Acoustical Society of America's *Halls for Music Performance 1982-2002* book that was released in 2003.

- **Project Recognition**

Saint Agnes Catholic Church and Grace Lutheran Church in Naples, Florida; Calvary Chapel in West Melbourne, Florida; Hyde Park Methodist Church in Tampa, Florida; and Palm Harbor United Methodist Church in Palm Harbor, Florida were selected for inclusion in the Acoustical Society of America's *Spaces of Worship: Another Quarter Century* book that will be released in 2010.

## Summary

Professor Siebein's work is characterized by unique design-based inquiry using technically sophisticated methods to transform sound into space, material, and form that can be seen and manipulated by designers and heard through auralizations or acoustic simulations derived from computer and physical scale models of rooms as an integral part of a process that seeks unique acoustical and architectural identities for each project. These methods have enriched both his teaching and practice. He continues to complete acoustical design work for many interesting and diverse projects that include theaters, concert halls, churches, schools, universities, hospitals, offices, theme parks, industries, amphitheaters, high-rise condominiums, hotels, convention centers and large scale mixed use urban designs among others.