

Standards

SPEECH PRIVACY: MOMENTUM GROWS IN HEALTHCARE

David M. Sykes

Remington Group

Cambridge, Massachusetts 02138

and

Gregory C. Tocci

Cavanaugh Tocci Assoc., Inc.

Sudbury, Massachusetts 01776

Overview and context

During the Fall 2004 meeting of the Acoustical Society of America in San Diego, the issue of speech privacy¹ in healthcare facilities was identified as a critical issue by the Technical Committee on Architectural Acoustics (TCAA). Their discussions resulted in the establishment of the Joint Subcommittee on Speech Privacy in Hospitals, a cooperative arrangement between TCAA, the Technical Committee on Noise (TCN), and the Technical Committee on Speech Communication (TCSC). The Institute for Noise Control Engineering (INCE) and the National Council of Acoustical Consultants (NCAC) have provided liaison with the subcommittee, as well.

Members of the subcommittee approached the American Institute of Architects (AIA) inquiring into how the subcommittee could serve AIA by providing general guidelines and criteria for speech privacy to be included in the *AIA Guidelines for Design and Construction of Health Care Facilities*. Their response was that they needed assistance with all aspects of sound and vibration in the design of all types of healthcare settings. In response, the subcommittee assembled a team of writers that prepared what is known as the *Interim Sound and Vibration Design Guidelines for Hospital and Healthcare Facilities*. As would be expected, part of this document addressed speech privacy in healthcare facilities by providing speech privacy design goals and discussing methods for evaluating speech privacy. However, the Interim Guidelines in themselves are not intended to be a standard per se, but rather a tool for architects to use in identifying what and how acoustical design issues including speech privacy are to be addressed.

Speech privacy standards work and applicable regulations

In view of this need for compliance criteria, a new Standards Working Group S12/WG44, Speech Privacy, was

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founded in 2005 whose mission was to focus on the need for comprehensive standards and guidelines in healthcare acoustics and speech privacy. The need can be better highlighted than by recognizing that hospitals have been cited by the Joint Commission (on the Accreditation of Healthcare Organizations) for having insufficient speech privacy. Yet there are no standards or widely used guidelines for what constitutes acceptable speech privacy in healthcare settings, how it is evaluated, or how it can be achieved in healthcare facility design.

The Working Group (WG) operates within a dynamic environment of rapidly changing public policies that produces a burgeoning need for guidelines and standards. S12/WG44 has prepared an initial draft of a speech privacy standard for Working Group discussion titled S12.70 *Speech Privacy in Healthcare Facilities*. It is being prepared in concert with other standards development activities related to speech privacy, most notably work taking place in the American Society for Testing and Materials (ASTM) International. This work relies heavily on research undertaken by the National Research Council of Canada.

The Working Group's activity in drafting a speech privacy standard responds to the needs of the public, the needs of those designing healthcare facilities, and is, in part, in response to Federal and state legislative efforts. Six different areas of federal legislation set the pace and focus of the standards-development activity of S12/WG44. These are:

- (a) Privacy laws such as the Health Insurance Portability and Accountability Act (HIPAA), Gramm Leach Bliley Act (GLBA), Canada's Personal Information Protection and Electronic Documents Act (PIPEDA), and other state, provincial and local laws have created a need for standards and guidelines to enable enforcement of the consumer's right to privacy.

- (b) Financial transparency laws such as Sarbanes Oxley Act (SOX), etc. that created a need to protect confidential executive deliberations.
- (c) National security/anti-terrorism laws such as the USA Patriot Act which created a need for clear definitions related to “confidential” and “secure” speech privacy.
- (d) Healthcare reform laws that created a need for objective privacy metrics to enable the implementation of electronic patient records and improve the environment of care while preserving patients’ rights to privacy.
- (e) Energy independence and economic security laws such as the Energy Policy Act, the Department of Energy Final Rule, and the Energy Independence and Security Act of 2007 (EISA). When coupled with the U.S. Green Building Council’s Leadership on Energy and Environmental Design (LEED) rating program, creates a clear and urgent need for definitions and an understanding of the role of acoustics and speech privacy within the complex concept of “environmental quality.” The LEED Green Building Rating System has now been licensed to eighty countries around the world.
- (f) Advanced technology development laws such as the Bush Administration’s 21st Century Nanotechnology Research and Development Act of 2003 that has created a stream of new, often “green” materials and technologies that impact acoustics and challenge traditional methods for evaluating speech privacy.

With so many catalysts, Working Group S12/WG44 balances a continuing need to do three things: (1) to engage and sustain a broad, active and international membership that represents all of the varied constituencies (policy, law, medicine, architecture and design, engineering, information technology, research and development, manufacturing, distribution, etc.) whose members are interested in these several, disparate areas; (2) create consistent guidelines and standards that reconcile the differences between the conflicting needs of the different constituencies and government agencies involved in these areas; and (3) sustain the rapid pace of development of standards and guidelines while simultaneously coping with the need for numerous and lengthy periods of extensive public review and inevitable change that are necessarily part of the standards development process.

Current standards development activity

The draft standard has the usual grouping of sections: scope, references, definition of terms, descriptors and methods for evaluating speech privacy, recommended values for these descriptors based on adjacencies, and methods for *in*

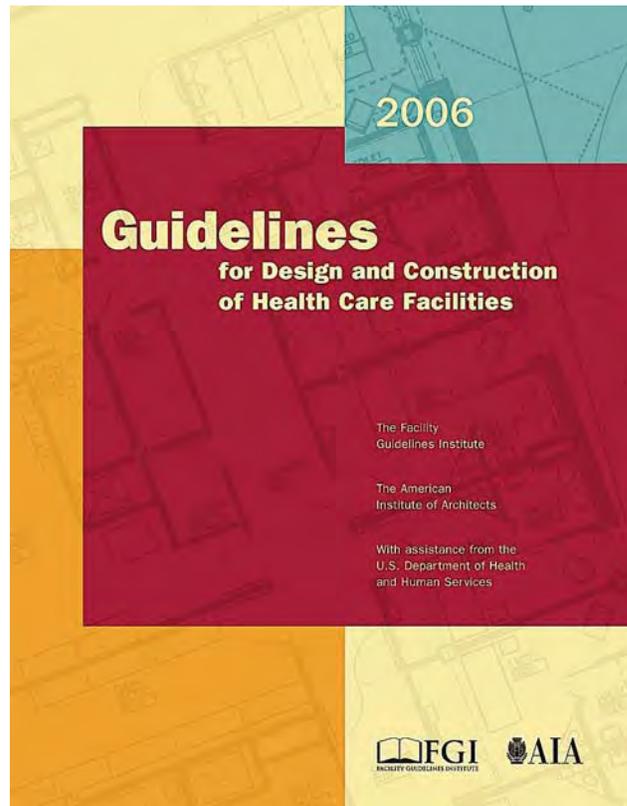


Fig. 1. Cover of the 2006 edition of the 60-year-old, code-level American Institute of Architects Guidelines for Design and Construction of Health Care Facilities.

situ evaluation for compliance purposes. The most significant challenge is to determine the relationship between speech privacy descriptor values and speech privacy expectations by patients and healthcare staff and enforcement officers. Much of this work will draw upon a large history of office speech privacy work first comprehensively enunciated by Cavanaugh, Farrell, Hirtle and Watters² as well as Hirtle, Watters, and Cavanaugh.³ These and other papers by Pirn⁴ and Young⁵ have formed nearly the entire body of office speech privacy knowledge used over the several decades since then. In addition, the Working Group will consider the recent work by Gover and Bradley⁶ in speech security at the Building Research Institute of the National Research Council of Canada.

We speculate that speech privacy needs and descriptors for healthcare will follow the forms that developed for office speech privacy, but the levels of speech privacy categorization might be expanded to include both lower and higher classifications than the “normal” and “confidential” speech privacy classifications very familiar to those working in architectural acoustics.

Ultimately, there are several questions that need answering—when federal legislation requires “confidentiality,” does this mean “confidential” ($AI < 0.05$) speech privacy customarily used in office acoustics or perhaps the less demanding “normal” ($0.05 < AI < 0.15$) speech privacy classification? Should, or would, privacy expectations be influenced by the setting, i.e., should a privacy descriptor for a specific classification of privacy in an open-plan space be the same as that

for a closed-plan space? Should the more demanding speech security issue be addressed in the standard? These are among the many questions that remain unanswered. Until more research is completed we will need to rely heavily on the extensive experience in the architectural acoustics profession with speech privacy in offices and secure locations.

Figure 1 shows the cover of the 2006 edition of the 60-year-old, code-level AIA *Guidelines for Design and Construction of Health Care Facilities*. The 2006 edition is the first to discuss speech privacy and the privacy law, HIPAA. The committees' first work product (completed in 2005-6) was a supplement to this volume called the *Interim Sound and Vibration Design Guidelines for Hospital and Healthcare Facilities*. In 2007 this *Interim Guideline* on acoustics was accepted for LEED credits by the LEED for Healthcare initiative and the *Green Guide for Healthcare* V2.2. In 2010 the complete contents of the *Interim Guideline* will be included in the 2010 edition of the AIA *Guidelines*, at which point acoustics will become part of building code for healthcare facilities in forty-two states.

References

- 1 A short, useful definition of speech privacy from ANSI T1.523-2001/Glossary is "Speech privacy...techniques to render speech unintelligible to casual listeners."
- 2 W. J. Cavanaugh, W. R. Farrell, P. W. Hirtle, and B. G. Watters, "Speech privacy in buildings," *J. Acoust. Soc. Am.* **34**, 475-492 (1962).
- 3 P. W. Hirtle, B. G. Watters, and W. J. Cavanaugh, "Acoustics of open plan spaces," *J. Acoust. Soc. Am.* **46**, 91 (1969). Presented at the 77th Meeting of the Acoustical Society of America, April 1969. (available at www.speechprivacy.org.)
- 4 R. Pirn, "Acoustical variables in open planning," *J. Acoust. Soc. Am.* **49**, 1339-1345 (1971).
- 5 R. W. Young, "Re-vision of the speech-privacy calculation," *J. Acoust. Soc. Am.* **38**, 524-530, (1965).
- 6 B. N. Gover and J. S. Bradley, "Measures for assessing architectural speech security (privacy) of closed offices and meeting rooms," *J. Acoust. Soc. Am.* **116**, 3480-3490, (2004).

CALL FOR VOLUNTEERS

"Procedure for Measuring the Ambient Noise Level in a Room"

(October 13, 2008, Melville, NY) Accredited Standards Committee S12, Noise, has approved the formation of a new working group to develop a new American National Standard dealing with **Procedure for Measuring the Ambient Noise Level in a Room**. Many other standards require such measurements but do not specify a standard procedure for obtaining them. Measuring noise levels is a complex issue and measurement results may vary significantly with microphone location and other factors.

The first meeting of the working group will be held during the week of May 18, 2009, in Portland, OR, in conjunction with the 157th meeting of the Acoustical Society of America. (Specific meeting details will be announced when available.) Stakeholders from all related fields are encouraged to participate in the working group. There is no fee for working group membership. For working group details contact Jerry G. Lilly, Working Group Chair, at (425) 649-9344 or by e-mail at jerry@jglacoustics.com.

Accredited Standards Committee S12 is administered as a public service by the Acoustical Society of America (ASA) on behalf of the American National Standards Institute (ANSI). Participation by all directly and materially affected parties is encouraged. Membership in ASA is not required. Organizational membership in S12 is also available to organizations and companies wishing to participate. Contact Susan Blaeser for details at (631) 390-0215 or by e-mail at sblaeser@aip.org.

The Acoustical Society of America is a nonprofit organization, founded in 1929. It is the premier international scientific society in acoustics, dedicated to increasing and diffusing the knowledge of acoustics and promoting its practical applications.



David M. Sykes, MA, graduated cum laude from the University of California at Berkeley and did his graduate work in Cognitive Science at Cornell University. Pursuing his interest in the cognitive impacts of the built environment, he joined the Cambridge, Massachusetts architecture firm of Bauhaus founder Walter Gropius known as “TAC,” and then the firm of Design Research. Following a brief stint at Harvard Business School, Sykes switched careers to public-

company management consulting and technology investment in fields such as environmental and healthcare technology where federal legislation drives policy changes and technology development. In this context, he was engaged in 2000 by a spin-off of Bolt Beranek and Newman where acoustical scientists had developed technology that could address societal needs created by new privacy laws. To address research, standards, and policy issues related to the new laws, in 2004 Sykes co-founded with Bill Cavanaugh and Greg Tocci the joint ASA/INCE/NCAC subcommittee on healthcare acoustics and speech privacy, and in 2005, ANSI S12/WG44. He presently co-chairs these groups with Tocci, where he coordinates the committees' work with American Institute of Architects,

American Hospital Association, U. S. Green Buildings Council and other organizations. Sykes has organized three university-based research projects and several private-sector-funded research projects totaling over \$1M, all related to the human impact of acoustics and the work of the Technical Committee on Architectural Acoustics and the Working Group on Speech Privacy.



As President and founding partner of CAVANAUGH TOCCI ASSOCIATES, INC., Gregory C. Tocci is responsible for both its technical and business activities. Among types of projects managed by Greg are speech privacy and intelligibility studies; mechanical system noise and vibration control studies; environmental noise impact assessments for residential, commercial, and industrial developments. He is active in several professional organizations, has served as an Invited Lecturer at the Harvard School of Public Health, and is author of the *Solutia Acoustical Glazing Design Guide* and papers published in various magazines and proceedings. Greg Tocci has also lectured in several environmental and industrial seminar programs.



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