



Smithsonian Institution Archives

Acuson Ultrasound Machines
Videohistory Interviews, 1997

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Collection Overview

Repository:	Smithsonian Institution Archives, Washington, D.C., osiaref@si.edu
Title:	Acuson Ultrasound Machines Videohistory Interviews
Identifier:	Record Unit 9593
Date:	1997
Extent:	6 videotapes (Reference copies).
Creator::	
Language:	English

Administrative Information

Preferred Citation

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Historical Note

Medical diagnostic ultrasound systems use high-frequency sound waves to produce images of soft tissues and internal body organs. First introduced to the medical world in the 1950s, it is a widely used diagnostic imaging modality today. Ultrasound exams are non-invasive and generally considered safe at the power levels used for diagnostic exams. Ultrasound is used in obstetrical, abdominal, urological, vascular and cardiac applications.

Sonar - the technique of sending sound waves through water and observing the returning echoes to characterize submerged objects - inspired early ultrasound investigators to explore ways to apply the concept to medical diagnosis. Early on, ultrasound was used to detect gallstones, breast masses, and tumors. During the early 1970s, the technology advanced to gray scale ultrasound systems that produce static images of internal organs easily recognizable to physicians. Later in the 1970s, the development of real-time ultrasound imaging enabled physicians to see continuous live-action images of the area under investigation. The 1980s saw the introduction of spectral Doppler and later color Doppler which depicts blood flow in various colors to indicate speed of flow and direction.

In 1979, Samuel H. Maslak, Sc.D., began developing a new approach to medical ultrasound imaging. The scanners used in the existing ultrasound technology produced satisfactory diagnostic images from the returning echoes through sixty-four electrical channels, but the machines could not refine the images because computers for ultrasound imaging did not exist. Dr. Maslak's work in applying computer technology to ultrasound led to the founding, with Robert Younge and Amin Hanafy, of Acuson Corporation in 1982. Acuson introduced its first product in 1983, the Acuson 128 Computed Sonography System which applied computer technology to diagnostic ultrasound. The 128 channel software-controlled image formation process provided black-and-white and color ultrasound images with high resolution and clarity.

Acuson continued to develop ultrasound technology. The introduction of the Sequoia 512 system in 1996 provided clinicians with twice the amount of image information in half of the time. Acuson's development of a new way to form ultrasound images called Coherent Image Formation used both the phase and the amplitude information from ultrasound echoes to produce images. Conventional ultrasound systems produced images based only on the amplitude information. This discovery offered the user increased spatial and temporal image resolution.

Bradford C. Anker was educated at Purdue University receiving the B.S. degree in industrial engineering in 1968. Anker joined the Hewlett-Packard Automatic Measurement Systems Division in 1968. During his six years there, Anker progressed through the materials management function and was master scheduling manager when he left Hewlett-Packard to join Spectra-Physics, where he held several senior manufacturing and management positions during his ten years at the company. Anker was Vice President, manufacturing, for Margaux Controls before joining Acuson in 1983, as Vice President, manufacturing.

Corinne Augustine was educated at the University of Florida where she received the B.S.I.E. degree in 1980, and the M.B.A. degree in 1991 at Stanford University. Augustine joined Frito Lay Company in 1980 as the Industrial Engineering Department Manager. She then joined Intel Corporation in 1984 as the Industrial Engineering and Production Manager. From 1986 through 1989, Augustine was the New Products Project Manager at Sun Microsystems. In 1991, Augustine joined Acuson Corporation as a project manager and was promoted to Director of manufacturing in 1994.

Amin Hanafy, Sc.D., was educated at Alexandria University in Egypt where he received the bachelor's degree in electrical engineering in 1965. He attended the New Jersey Institute of Technology receiving the M.S. in electrical engineering in 1971 and the Sc.D. in acoustical optical imaging in 1977. His professional experience included four years with Alexandria University Faculty of Engineering, where he was an instructor in the electrical engineering department. He spent six years as a design engineer at L & R Manufacturing Company. He then joined Hewlett-Packard Company as Technical Director of transducer activity, from 1975 until 1981. Hanafy was one of the founders, with Robert Younge and Samuel Maslak, of Acuson Corporation in 1981. He was the transducer division director at Acuson until 1988, and continued his association as Principal Fellow.

Thomas Jedrzejewicz received the B.S. degree in electrical engineering from Northeastern University in 1958. After ten years as a field application engineer with Raytheon Company, Jedrzejewicz worked as product development specialist at Corning Glass Works and then as product manager at American Optical. From 1975 to 1978, he served as Marketing Manager for ultrasound for Picker Corporation. Then, following two years at SmithKline Instruments and one year at Technicare, Jedrzejewicz became Marketing Manager for ultrasound and nuclear medicine at Toshiba America Medical Systems. From 1983 to 1989, he performed various tasks for Acuson, including the commencement of Acuson's marketing and communications plans. He then worked as Director of ultrasound marketing for Toshiba America Medical Systems for two years before again joining Acuson as Director of technical programs in 1992.

Hugh G. Larsen received the B.S.E.E. degree from Brown University in 1965. He received the M.S.E.E. at the University of Cincinnati in 1971 and the Ph.D. in Electrical Engineering at the University of Vermont in 1976. From 1976 to 1983, Larsen worked at Hewlett-Packard on their phased-array cardiac ultrasound system. In 1983, he joined Acuson working in a variety of technical and managerial roles to advance ultrasound technology. In 1991, he was promoted to Director of Imaging Technology on the Sequoia program and then served as Director of the Sequoia Engineering.

Samuel H. Maslak, Sc.D., was educated at the Massachusetts Institute of Technology (M.I.T.), receiving the degree of Sc.D. in 1975 and the degrees of E.E., S.M. and S.B. in electrical engineering in 1971. Maslak's dissertation was on ultrasound design. His professional experience included four years with Hewlett-Packard Company, where he was a member of the technical staff and project manager at Hewlett-Packard Laboratories. While at Hewlett-Packard, Maslak invented a unique scanner architecture which was subsequently patented and assigned to Hewlett-Packard. In 1979, Dr. Maslak began developing a new and proprietary approach to medical ultrasound imaging. This work led to the founding, with

Robert Younge and Amin Hanafy, of Acuson Corporation in 1982. Maslak served as President and Chief Executive Officer from the inception of the company until June 1995, when he was elected to Chairman of the Board. Maslak retained his position as Chief Executive Officer.

After receiving her law degree from Ohio State University in 1982, Liza K. Toth first worked in the Chicago patent law firm of Hume Clement. She helped start the Intellectual Property group in the San Jose, California, law firm of Hopkins & Carley. After July 1994, Toth served as Acuson's Chief Patent Counsel responsible for the patent, trademark and copyright portfolio of the company.

J. Nelson Wright received the B.S. in 1976 and the M.S. in 1978 in electrical engineering from the Massachusetts Institute of Technology. Prior to joining Acuson, Wright was a member of the technical staff at the MIT Lincoln Lab from 1976 to 1981. Wright joined Acuson as Project Manager during the development of the Acuson 128 ultrasound system. Beginning in 1987, Wright initiated and subsequently contributed to and managed the development of Sequoia ultrasound technology.

Additional interviewees included David Burris and Marketing Communication Manager Jackie Ferreira. Also included are Gelston Howell, Manager of transducer development, Alan Kirby, 128 XP Production Manager, Jon Knight, Production Manager of Sequoia manufacture, Vaughan Marian, Mechanical Engineering Senior Fellow, Rick Sperry, Process Engineer, and Worth Walters, New Products Development Engineer.

Introduction

The Smithsonian Videohistory Program, funded by the Alfred P. Sloan Foundation from 1986 until 1992, used video in historical research. Additional collections have been added since the grant project ended. Videohistory uses the video camera or digital recorder as a historical research tool to record moving visual information. Video works best in historical research when recording people at work in environments, explaining artifacts, demonstrating process, or in group discussion. The experimental program recorded projects that reflected the Institution's concern with the conduct of contemporary science and technology.

Smithsonian historians participated in the program to document visual aspects of their on-going historical research. Projects covered topics in the physical and biological sciences as well as in technological design and manufacture. To capture site, process, and interaction most effectively, projects were videotape recorded in offices, factories, quarries, laboratories, observatories, and museums. Resulting footage was duplicated, transcribed, and deposited in the Smithsonian Institution Archives for scholarship, education, and exhibition. The collection is open to qualified researchers.

Descriptive Entry

Ramunas Kondratas, curator at the National Museum of American History, documented the history, development, commercialization and applications of diagnostic ultrasound. Session One was recorded between January 20 through January 24, 1997 at Acuson Corporation located at Mountain View, California. Interviewees included scientists, engineers, managers, and a patent attorney from Acuson. The session took place at several sites on the Acuson campus. Interviews focused on the history of the company, the development of ultrasound and transducer technologies, design and commercial development of the equipment, the manufacturing process, clinical applications, education of clinicians, and the patenting process.

Kondratas also interviewed several of the participants on audiotape. The tapes and transcripts complement the videotape sessions and are also available through the Institutional History Division, Smithsonian Institution Archives.

This collection consists of one interview session, totaling approximately 12:00 hours of recording and 203 pages of transcript.

Names and Subject Terms

This collection is indexed in the online catalog of the Smithsonian Institution under the following terms:

Subjects:

- Bioengineering
- Biotechnology
- Interviews
- Medicine
- Medicine -- History
- Molecular biology
- Oral history
- Science -- History
- Scientific apparatus and instruments
- Technology -- History

Types of Materials:

- Transcripts
- Videotapes

Names:

- Acuson Corporation
- Anker, Bradford C.
- Augustine, Corinne
- Burris, David E.
- Ferreira, Jackie
- Hanafy, Amin
- Howell, Gelston
- Jedrzejewicz, Thomas
- Kirby, Alan
- Knight, Jon M.
- Kondratas, Ramunas, interviewer
- Larsen, Hugh G.
- Marian, Vaughan
- Maslak, Samuel H.
- Sperry, Rick
- Toth, Liza K.
- Walters, Worth
- Wright, J. Nelson
- Younge, Robert

Container Listing

Interviews

Interviews

Session 1: January 20-24, 1997

Interviews

Recorded at Acuson, participants discussed the history and development of ultrasound technology, the commercial manufacture of the equipment and its clinical applications, including: manufacturing of Sequoia products; philosophy and process of patenting inventions; marketing strategies; manufacturing, testing, and shipping of the 128XP machine; transducer development and manufacturing; invention and development of Sequoia technology. Visual documentation included: tour of the Sequoia manufacturing facility; assembly and testing of Sequoia products; Acuson marketing and trade literature; tour of the 128XP manufacturing facility; 128XP board integration and testing; Samuel Maslak's biographical information; tour of transducer manufacturing facility; close-up of a variety of transducer designs; early transducers and drawings; illustrated discussion of Sequoia technology; product design; close-up of Sequoia printed circuit boards; and slides illustrating general ultrasound principles, circa 1960-1997.

Interviews

Transcript, pp 1-203, of videotape recording, 12.0 hours.

Interviews

Video Recordings of Interviews: Total Recording Time: 12.0 hours

Note:

- Original Masters: 24 Betacam videotapes
- Preservation Masters: 24 Motion jpeg 2000 and 24 mpeg digital files
- Dubbing Masters: 24 U-Matic videotape
- Reference Copies: Six VHS videotape cassettes, 24 Windows Media Video and 24 Real Media digital files