

Detailed Resumé: Stephen Travis Pope

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Introduction

Stephen Travis Pope (b. 1955, New Jersey USA) studied at Cornell University, the Vienna Music Academy, and the Mozarteum in Salzburg, Austria, receiving degrees and certificates in electrical engineering, computer science, recording engineering, and music theory and composition. He has taught both computer science and music at the graduate level, and has worked as a software engineer, engineering manager, consultant, editor, composer, and performing musician. From 1988-97, he served as editor-in-chief of *Computer Music Journal*, published by the MIT Press.

He is currently active as chief technology officer of Imagine Research, Inc. (<http://Imagine-Research.com>). From 1996-2010 he worked as a senior research specialist and project manager at the Center Research in Electronic Art Technology (CREATE) in the Department of Music at the University of California, Santa Barbara (UCSB) and as a senior continuing lecturer in the UCSB Department of Computer Science and Graduate Program in Media Arts and Technology (MAT).

In his over 30 years of software research and development, Stephen has undertaken projects at the Vienna Music Academy, the Mozarteum, Stanford University, U. C. Berkeley, the Swedish Institute for Computer Science, the Technical University of Berlin, STEIM in Amsterdam, and U. C. Santa Barbara. He has over 100 publications on topics related to artificial intelligence, graphics and user interfaces, integrated programming environments, object-oriented programming, music theory and composition, distributed systems, and digital multimedia.

In parallel with his academic career, he has held technical and managerial positions at PCS/Cadmus Computers in Munich, Xerox PARC, ParcPlace Systems (now Cincom), Predixis (now MusicIP) and Expertcity.com (now Citrix-Online) in California, and a variety of other US-based, European and Asian industry and defense organizations.

Stephen lived in Europe (Austria, France and Germany) from 1977-86, and has spent several years there since then (Holland, Sweden and Germany). He has worked in environments ranging from small start-ups to large industrial and defense organizations in a variety of countries; he is willing to travel and speaks several languages well.

Stephen's primary multi-year research projects have revolved around the issues of models and languages for sound/music processing, tools for developing and deploying distributed real-time software, multi-channel spatial sound processing and performance, and signal analysis and statistical processing for music information retrieval.

Education

1974-1977: Cornell University, Ithaca, New York—Bachelor's of Science in Electrical Engineering (completed in three years). Concentration in computer architecture and design (senior project in digital audio signal processing), courses in computer science, analog and digital signal processing, circuit design, and a minor in music.

1977-1980: Vienna Music Academy, Vienna, Austria— Music theory with Günther Kahowez, composition with Roman Haubenstock-Ramati, electroacoustics with Dieter Kaufmann; honors certificate (*Zeugniss mit sehr gutem Erfolg*) in Tontechnik (Tonmeisterlehrgang, recording engineering). Other courses in harmony, counterpoint, conducting, and electroacoustics.

1980-1986: Academy of Music and the Performing Arts Mozarteum, Salzburg, Austria— Composition with Cesar Bresgen, piano with Michael Walter. Honors certificates in music theory and composition, form and analysis, music history, and orchestration. Served on the faculty 1981-86 as a lecturer in the composition dept.

Professional Experience

2010-present: Imagine Research, Inc., San Francisco, California (Imagine-Research.com)—Chief technology officer of a start-up delivering “software that listens,” meaning audio analysis solutions for sound object recognition, content labeling and segmentation, and applications that profit from intelligent sound/music processing.

1992-2010: FASTLab, Inc., Santa Barbara, California (FASTLabInc.com)—Development and management consultant/contractor for teams building multimedia and numerical signal processing and data networking software. Clients have included Sprint (Lead), Parasoft (Lead), Yamaha, Apple, Teknowledge, John Deere, Ameritech (Lead), American Express (Lead), Catalyst Mobile (Lead), Citrix Online (Lead), US Air Force, US Navy, and a variety of intellectual property law firms.

1986-1994: Xerox Palo Alto Research Center (PARC, www.parc.com), ParcPlace Systems, Inc., Palo Alto, California (now www.cincomsmalltalk.com)—Software developer and team manager for the Smalltalk-80 language and system. Responsible for kernel code, user interface frameworks and developer's tools. Implementation of distributed processing environments (CORBA), strategic planning, documentation, PR, support, publications, and training development/delivery.

1983-1986: PCS/Cadmus: Periphere Computer Systeme GmbH, Munich, Germany—Manager and lead programmer, artificial intelligence (AI) and graphics software groups, design/development of C, LISP and Smalltalk-80 software for graphics and window systems, and AI tools and applications. Participation (group manager and planner) in European-funded R&D projects for graphics and AI.

1972-1975, 1990-93 (Part-/full-time): Eventide Clockworks, New Jersey (www.eventide.com)—Design, construction, prototyping and custom projects for digital signal processing devices for audio applications; graphical development tools for assembly-language programming.

Academic Positions

2008: Dept. of Computer Science and Communications, University of Milan, Italy—Ph. D. committee external member for Dr. Adriano Baratè.

1996-2010: Center for Research in Electronic Art Technology (CREATE), University of California, Santa Barbara (UCSB)—Research Director and Senior Research specialist; project management, publications, fund-raising, events, supervision of graduate students and visiting researchers.

1999-present: UCSB Graduate Program in Media Art and Technology—Senior Continuing lecturer; teaching of required and elective graduate courses for composers and computer scientists, advising of graduate students, numerous MAT Program faculty committees and thesis committees.

- 2001: Dept. of Computer Science, Swedish Royal Institute of Technology (KTH), Stockholm—Ph. D. committee external member (and opponent) for Bjørn Eiderbäck, .
- 2000: Dept. of Communication, Technical University of Berlin—First-ever “Edgard Varese Visiting Professor” in computer music in Berlin (jointly administered by the DAAD, the Technical University of Berlin, and the Berlin Music Academy).
- 2000: Université de Paris VI—Member of the habilitation committee for Prof. Francois Pachet.
- 1997: Dept. of Computer Science, UCSB—Lecturer (co-taught CS graduate course in Software Engineering with then-department-chair Prof. Richard Kemmerer).
- 1993-1996: Center for New Music and Audio Technologies (CNMAT), University of California, Berkeley—Post-doctoral research associate at a computer music research, education, and production center. Project work in composition and music software development.
- 1992-93: Swedish Institute For Computer Science—Guest Researcher, participation in the DIVE VR group and the parallel SICStus Prolog logic programming systems group.
- 1990-91: STEIM Institute, Amsterdam and Center for Art and Media Technology (CKMT), University of Utrecht, The Netherlands—Visiting composer and researcher; development of new performance interfaces, composition and concert activity.
- 1986-93: Center for Computer Research in Music and Acoustics (CCRMA), Stanford University, Palo Alto. California—Post-doctoral research associate and composer at a computer music research, education, and production center. Project work in composition and music software development. Leader of CCRMA/CNMAT language design group.
- 1988-1997: *Computer Music Journal*, MIT Press, Cambridge, Massachusetts—Editor-in-chief of a quarterly technical/ artistic journal. Management of manuscript processing/production, organization of special issues and CDs, writing, budget planning, and public relations.
- 1981-1986: Computer music center, Mozarteum Academy, Salzburg, Austria—Systems administrator, software development, UNIX operating system programming, systems and applications development for AI applications, graphical user interfaces, and teaching activities.
- 1979-80: University of Toronto Structured Sound Synthesis Project (SSSP, under Bill Buxton)—Visiting composer supported by the Canada Council.
- 1978-1980: IRCAM (Institute de Recherche et Coordination, Acoustique/Musique) Paris, France—Developer of programs in the MUSIC10 language, installation of their recording studios, concert performances with the Ensemble Intercontemporain under Michael Gielen, composition activities.

Publications/Compositions

See the bibliography (<http://HeavenEverywhere.com/stp/bibl.html>) for more detailed documentation.

Books

The Big MAT Book: Courseware for Audio & Multimedia Engineering. Media arts and technology courseware. <http://HeavenEverywhere.com/TheBigMATBook>, 665 pages, 2008 .

Software Models and Frameworks for Sound Composition, Synthesis, and Analysis: The Siren, CSL, and MAK Languages. <http://HeavenEverywhere.com/stp/Dissertation.html>, 462 page anthology, 2005, updated 2007.

Sound and Music Processing in SuperCollider. UCSB, 1998.

Musical Signal Processing (ed. with C. Roads, A. Piccialli, and G. De Poli). Swets and Zeitlinger, 1997.

The Well-Tempered Object: Musical Applications of Object-Oriented Software Technology. (ed.) MIT Press, 1991.
The Computer Music Source Book. (ed. with C. R. Harris). International Computer Music Assoc., 1987.
Smalltalk-80 Programming System V. 2.2 Release Notes and Reference Guide. Xerox PARC, 1987.
Handbuch für das UNIX Betriebssystem. (First German-language UNIX Handbook) ComputerMusik Rechenzentrum Salzburg (CMRS), University of Salzburg, 1981, revised 1983.

Invited Book Chapters and Major Articles

“Experiencing Audio and Music in a Fully Immersive Environment” (with Xavier Amatriain, Jorge Castellanos, Tobias Höllerer, JoAnn Kuchera-Morin, Graham Wakefield, and Will Wolcott) in R. Kronland-Martinet, S. Ystad, and K. Jensen (Eds.): *The Sense of Sound, Lecture Notes in Computer Science 4969*, pp. 380-400, Springer-Verlag 2008.

“Norm und Eigensinn” (Norm and Self-will) in B. Gottstein, ed. *Musik als Ars Scientia, die Edgard-Varese-Gastprofessoren des DAAD.* Berlin, DAAD/Pfau Verlag, 2006.

“Music and Sound Processing in Squeak.” in *Squeak: Open Personal Computing and Multimedia* edited by Mark Guzdial and Kim Rose. Prentice-Hall, 2001. Also produced the CD-ROM that accompanies the book.

“Web.La.Radia: Social, Economic, and Political Aspects of Music and Digital Media.” (invited paper) Salzburg Symposium on New Media Technology and Networking for Creative Applications (1997). Reprinted in *Proceedings of the 1997 International Computer Music Conference.* Reprinted in *Computer Music Journal* 23:1, Spring, 1999.

“Musical Object Representation” in Roads, Pope, Piccialli, and De Poli, eds. *Musical Signal Processing* (see above) pp. 317-347, 1997.

“Object-Oriented Music Representation.” (invited article) in *Organised Sound* 1(1), Cambridge U. Press, 1996.

“Machine Tongues XVIII. A Child's Garden of Sound File Formats.” (with Guido Van Rossum) *Computer Music Journal* 19(1), 1995.

“Machine Tongues XV: Three Packages for Software Sound Synthesis.” *Computer Music Journal* 17(2), 1993.

“The Interim DynaPiano: An Integrated Tool and Instrument for Composers.” *Computer Music Journal* 16(3) 1992.

“Music Composition and Scoring by Computer.” in G. Haus, ed. *Music Processing.* A-R Eds, 1992.

“Machine Tongues XI: Object-Oriented Software Design.” *Computer Music Journal* 13(2), 1989.

“A Cookbook for using the Model-View-Controller User Interface Paradigm in Smalltalk-80.” (with G. Krasner) *Journal of O-O Programming* 1(3) 26-49, 1988.

“Music Notation and the Representation of Musical Structure and Knowledge.” *Perspectives of New Music* 24(2), 1986.

“UNCLE: A UNIX CommonLISP Environment (Report on the ESPRIT UNCLE Project).” (invited lecture) *Proc. 1st Nordic UNIX Conference*, Stockholm, 1985.

Peer-review Journals and Conferences (Selected)

- “The Allosphere: An Immersive Multimedia Instrument for Scientific Data Discovery and Artistic Exploration.” (with X. Amatriain, J. K.-Morin and T. Hollerer) *IEEE Multimedia*, 2008.
- “The Acoustics of a large 3D Immersive Environment: The Allosphere at UCSB,” (with D. Conant, T. Hoover and K. McNally,) in *Proc. 2008 ASA-EAA Joint Conference on Acoustics. Paris*.
- “Interchange Formats for Spatial Audio” (invited position paper) *Proc. 2008 Int’l Computer Music Conference (ICMC)*, Belfast.
- “Models and APIs for Audio Synthesis and Processing” (invited position paper) *Proc. 2007 Int’l Computer Music Conference (ICMC)*, Copenhagen.
- “Scripting and Tools for Analysis/Resynthesis of Audio” *Proc. 2007 Int’l Computer Music Conference (ICMC)*, Copenhagen.
- “Teaching Digital Audio Programming: Notes on a Two-year Course Sequence” *Proc. 2007 Int’l Computer Music Conference (ICMC)*, Copenhagen.
- “Immersive Audio and Music in the Allosphere” (with Xavier Amatriain, JoAnn Kuchera-Morin, and Tobias Höllerer) *Proc. 2007 Int’l Computer Music Conference (ICMC)*, Copenhagen.
- “Metamodels and Design Patterns in CSL4.” (with X. Amatriain, L. Putnam, J. Castellanos, and R. Avery), *Proc. 2006 Int’l Computer Music Conference (ICMC)*, Barcelona.
- “Feature Extraction and Database Design for Music Software.” (with Frode Holm and Alexandre Kouznetsov), *Proc. 2004 Int’l Computer Music Conference*, Miami.
- “The CREATE Signal Library (“Sizzle”): Design, Issues, and Applications” (with C. Ramakrishnan), *Proc. 2003 Int’l Computer Music Conference*, Singapore.
- “Recent Developments in Siren: Modeling, Control, and Interaction for Large-scale Distributed Music Software” (with C. Ramakrishnan), *Proc. 2003 Int’l Computer Music Conference*, Singapore.
- “Distributed Control and Computation in the HPDM and DSCP Projects” (with A. Engberg). *Proc. Symposium on Sensing and Interaction in Media-centric Systems (SIMS 2002)*, Santa Barbara.
- “The Distributed Processing Environment for High-Performance Distributed Multimedia Applications” (with A. Engberg, F. Holm, and A. Wolf). *Proc. 2001 IEEE Multimedia Technology and Applications Conference*, U. C. Irvine, November, 2001.
- “The Real-time (Multimedia) Interface Description Language: RIDL” (with A. Engberg, and F. Holm). *Proc. 2001 IEEE Multimedia Technology and Applications Conference*.
- “The Siren Music/Sound Package for Squeak Smalltalk.” *Proc. 1998 ACM Conference on Object-Oriented Programming Systems, Languages, and Applications (OOPSLA)*.
- “Content Analysis and Queries in a Sound and Music Database” (with Pierre Roy and Nicola Orio). *Proc. 1999 Int’l Computer Music Conference (ICMC)*, Beijing.
- “Real-Time Performance via User Interfaces to Musical Structures.” *INTERFACE* 22(3), 1994.
- “UNIX Software Tools for AI.” in *Proc. 1st AI Europa Conference*, Wiesbaden, 1985.
- “Introduction to the Music Shell.” *Proc. 1982 Int’l Computer Music Conference (ICMC)*, Venice.

Music on CD/DVD

Secrets, Dreams, Faith and Wonder: A Mass for the New Millennium (Feature-length music/video in BluRay HD format). HeavenEverywhere, Santa Barbara, 2011.

Ritual and Memory, triple-disc set (2 CDs plus DVD). Electronic Music Foundation, New York, and HeavenEverywhere, Santa Barbara, 2007.

Ora penso invece che il mondo... String quartet commissioned by the Cologne, Germany-based GIMIK Foundation; premiere Cologne, November, 2006.

Leur Songe de la Paix, DVD published by the Association for Global New Thought and the Gandhi/King Season for Nonviolence, 2005

“Sensing/Speaking Space” on *DISC0 Compilation 2*, Absinthe Records, 2003

“Gates Still Open” on *KREV 10th Anniversary CD*, Touch/Ash Records, 2002

“Four Magic Sentences” on *StateOfTheUnion*, Electronic Music Foundation, 2001

“Kombination XI” on *Or Some Computer Music Volume 1*, Touch/OR Records, 1999

“Bat Out Of Hell” on *Computer Music Journal, 1997 Sound Anthology*, MIT Press, 1997

“Bat Out Of Hell” on *II SBC&M*, SBC Records, 1994

“Kombination XI” on *The Virtuoso in the Computer Age, CDCM V. 13*, Centaur Records, 1991

“Bat Out Of Hell” on *Perspectives of New Music*, Volume 24, 1986

Graduate Courses Taught at UCSB

Each of these courses has its own web page at <http://www.create.ucsb.edu/course-number>, e.g., <http://www.create.ucsb.edu/240>. (Note: Due to an unusual custom at UCSB, 200-series course numbers are graduate courses.)

Core Required MAT Courses

- MAT 201A: Algorithms for Media Processing
- MAT 201B: Computing with Media Data
- MAT 200C: Survey of Media Engineering & Technology

The Digital Audio Programming Series (6 quarters, 2 years)

- MAT 240A: Digital Audio Programming: Sound IO & Streaming
- MAT 240B: Digital Audio Programming: The Spectral Domain
- MAT 240C: Digital Audio Programming: Spatial Sound and Reverb
- MAT 240D: Digital Audio Programming: Sound Synthesis Techniques
- MAT 240E: Digital Audio Programming: Control and Distributed Programming
- MAT 240F: Digital Audio Programming: Music Information Retrieval

Electives

- MAT 275: Music Systems Programming in SuperCollider
- MAT 242: Audiophile Engineering/Recording Studio Design
- MAT 594O: Sensors and Control System for the Arts

Graduate Theses Advised at UCSB

R. Avery (WiFi networking for audio), J. Castellanos (OO frameworks for spatial sound), H. Durrand (control networks), K. Fields (content creation in virtual worlds), F. Hollerweger (speaker layout for spatial sound), MD. Hosale (models of nonlinear narrative), E. Koven (game audio design), S. Ku (video composition), D. McCoy (tools for vector audio panning), E. Newman (synaesthetic editors), A. Norman (smart mixing tools for DJs), B. O'Reilly (music composition), D. Overholt (controllers and musical interaction), R. Pitto (recording surround sound), L. Putnam (music modeling languages), S. Ramakrishnan (wavelet-based audio transformations), C. Roberts (frameworks for audio interaction), D. Romblo (composite audio synthesis techniques), A. Schlegel (networks for video processing), S. Stuckey (audio segmentation), B. Sturm (concatenative synthesis), D. Thall (granular synthesis techniques), G. Thomas (languages for media content scripting), J. Thompson (audio/video composition), T. Voss (cross-platform content delivery), G. Wakefield (scripting languages for media processing), W. Wolcott (scalable wavefield synthesis), W. Yeo (audio visualization), L. Wu (instrument recognition and resynthesis)

Academic Honors

- Officer of the International Computer Music Association 1984-88.
- Elected a lifetime member of the International Computer Music Association in 1990.
- Member of advisory committee of the Institute of Electrical and Electronics Engineers (IEEE) task force on computer-generated music.
- Member of advisory committee of the Audio Engineering Society (AES) working group on Internet audio.
- Member of the Audio Engineering Society (AES) since 1972.
- Regular reviewer for the Journal of the Audio Engineering Society.
- Regular reviewer for the NSF KDI and ESS programs.
- Regular reviewer (since 1985) for the International Computer Music Conference (ICMC).
- Regular reviewer for the International Conferences on Music and Artificial Intelligence.
- Regular reviewer for the Symposia on the Web Delivery of Music (WEDEL Music).
- Jury member for numerous music/film festivals and competitions.

Personal Data

Born 1955 in Ridgewood, New Jersey, USA; citizen of the USA.

Previous working permits in Austria, France, The Netherlands, Germany, and Sweden.

Languages: fluent English & German; moderate French & Swedish; rusty Mandarin & Italian.

Based in Santa Barbara, California.

See also the web sites <http://HeavenEverywhere.com/stp> and <http://FASTLabInc.com>