

## Education

**Master of Arts**, Arts Presenting and Live Entertainment Management, *University of Miami*, Coral Gables, Florida, 2018.  
Award of Academic Merit.

**Bachelor of Music**, Music Engineering Technology, *University of Miami*, Coral Gables, Florida, 1992.  
Awarded *Outstanding Senior* by the Music Engineering faculty.

## Professional Work History

**Academic Professional in Sound Recording**, *Hugh Hodgson School of Music, University of Georgia*, Athens, Georgia, 01/2016 - present.

Creation of audio curriculum for all music majors, planning and overhaul of recital recording infrastructure & equipment, audio production teaching and supervision, live event recording, studio recording.

**Recording Mentor**, *Hot Springs Music Festival*, Hot Springs National Park, Arkansas, Summers, 1999 - 2006.

Training, supervision of apprentice engineers in location recording, editing, mastering. Responsible for Festival concert, session recordings.

**Director of Recording Services**, *Frost School of Music, University of Miami*, Coral Gables, Florida, 07/1998 - 01/2016.

Teaching, supervision of student engineers in recording, editing, mastering, sound reinforcement. Responsible for staffing, supervision of recording, sound reinforcement, live streaming of *Frost School of Music* concerts, recitals, other events. Equipment budgeting, selection, purchasing, updating, installation, maintenance.

**Teaching/Research Assistant**, *Sound Engineering Department, Politechnika Gdańska*, Gdańsk, Poland, 06/1997 - 06/1998.

*Recording Technology* lectures, laboratories; *Sound Reinforcement Techniques* lectures, projects; supervision of Master's thesis projects; equipment specification for new multitrack studio; assistance with research projects.

**Product Specialist**, *Micro Technology Unlimited*, Raleigh, North Carolina, 04/1994 - 06/1995.

*MicroSound* Digital Audio Workstation: product support, product development, demonstrations, presentations, technical manual writing.

**Freelance Engineer**, *P&A Audio*, various locations, 01/1992 - present.

Recording, mixing, producing music albums; live to stereo and multitrack music recordings; analog, digital editing; mastering; sound reinforcement; consultation.

**Recording/Sound Reinforcement Engineer**, *DEOrecordings Studio*, Wisła, Poland, 05/1989 - 08/1989, 01/1990 - 12/1991.

Multitrack recording, mixing, producing; sound reinforcement; on-location recording of sessions, concerts, meetings.

## Professional Training

Pyramix Digital Audio Workstation: Source-Destination Editing Training Seminar, *Merging Technologies*, 6/2019

MAPP Online Pro System Design Software Training Seminar, *Meyer Sound*, 2/2008.

Digital Mixing Seminar, *Yamaha*, 2/2006.

Sound Reinforcement Seminar, *Meyer Sound*, 7/2005.

Wireless Microphone Seminar, *Sennheiser*, 3/2004.

## Teaching Experience

### **University of Georgia (1/2016 - present)**

MUSI 4010: Introduction to Music Technology, 8/2016 - 5/2020.

- Developed the Unit on Recording
- 3-4 weeks of class meetings presented once per semester (2 class sections)
- Brief but in-depth introduction to digital audio, transducers, and microphone techniques
- Unit culminates in demo recording session
- Class size: 25 (per section)

MUSI 4060/6060: *Music in the Real World*, 8/2016 - present.

- 2-lecture series presented once per semester (2 class sections)
- Abbreviated, practical information relating to Recording and Editing
- Class size: 10-15 (per section)

MUSI 4080/6080: *Music Recording Practicum*, 8/2016 - present.

- History
  - Established class in 8/2016
  - The students, along with faculty, record all of the events taking place in the Hugh Hodgson School of Music
  - Initially, the class was offered as MUSI 4000: *Directed Independent Study*
  - MUSI 4080/6080 came online in 8/2017
  - Graduate Teaching Assistants were incorporated through 5/2018, participation only by class enrollment since 8/2018
  - Number of events each academic year: 350+
  - All events are classical / acoustic in nature
    - Very few spot microphones or close microphones are used
    - We only record, no sound reinforcement
    - Emphasis is on microphone selection, technique and placement, and on critical listening
  - Class size: 8
- Teaching
  - New students require both training sessions as well as individual hands-on instruction
    - 3-part series on microphones
    - Specific setup instruction for all three performance venues
    - Use of Pyramix Digital Audio Workstation: Mixing, recording, editing
    - Streaming setup, usage
    - Ongoing, one-on-one teaching
  - Class meets once per week (2 separate times)
    - Lectures on various audio topics
    - Listen to and analyze at least one commercial recording
- Logistics
  - Weekly review of all events scheduled during the upcoming two weeks
  - Create online poll for the second week (after being sure nothing changed for the first week)
  - Send poll to class, tabulate results, make recording assignments
  - Edit any video recordings
  - Distribute audio and video recordings via Dropbox

Streaming: Graduate Teaching Assistants, 1/2016 - present.

- Train assigned graduate students in multi-camera video production
- Hands-on training for one or two performances
- Monthly review of all upcoming events scheduled for multi-camera streaming (Ramsey and Hodgson Halls)
- Create online poll for the upcoming month
- Send poll to graduate assistants, tabulate results, make streaming assignments
- Edit and distribute video recordings
- Group size: 6-8

### ***Hot Springs Music Festival (Summer 1999 - Summer 2006)***

Recording Mentor

- Prepare for upcoming festival
  - Review performance schedule, determine technical and staffing needs
  - Recruit, select recording apprentices
- Teaching
  - Intensive, more hands-on approach to training
  - Partly in classroom setting, partly on-location
- Logistics

- Assignments of events
- Transportation of equipment and people to various venues
- Daily
  - Setups and sound checks – essential as the venues were changing every day
  - Recordings (usually more than one event per day)
  - Album recording projects – scheduled during the “cracks” between sound checks and events
  - Production and duplication of Compact Discs

### **University of Miami (7/1998 - 1/2016)**

#### Workshop: Vocal Microphones and Techniques

- Given numerous times to various classes, especially musical theater, contemporary voice, and jazz voice
- 1- or 2-part series for vocalists
  - Teach about microphones and how they work
    - Different types of operating principles
    - Different polar patterns
    - Special properties of different microphones
  - Teach how to use microphones more effectively as singers
    - How to select a microphone for a specific application
    - How to use the properties of microphones to the singer’s advantage
    - Common pitfalls which can be experienced, how to avoid or eliminate them
    - How to get excellent results from a microphone
- Series occasionally has been adapted for a wider, instrumentalist audience

#### Recording Services

- Coordinate a class of student engineers
  - The students, along with me, record and provide sound reinforcement for all of the events taking place in the Frost School of Music
  - Class intended for majors in Music Engineering Technology
  - Number of events each academic year
    - 1998 (my first year): 190
    - 2015 (my last year): 300+
  - Multiple genres of music are performed, we provide both recording and sound reinforcement
    - Recording engineers are trained in everything from minimalist acoustic recording techniques to contemporary rock/pop to jazz combos & bands to individually miced jazz orchestra with 100+ inputs
    - Sound reinforcement engineers are trained in everything from reinforcing otherwise acoustic performances to contemporary rock/pop to jazz combos & bands to individually miced jazz orchestra with 100+ inputs
  - Class size between 25-40 (varies)
- Student engineers require both training sessions as well as individual hands-on instruction
  - Beginning students are trained as assistant engineers (setups, stage crew)
  - After 1 year of experience as assistants, students may specialize in either recording or sound reinforcement
    - Recording Training Subjects: Mic techniques, console (Yamaha DM-2000), recording/editing software (Magix *Sequoia*), mixing techniques, streaming and video recording
    - Sound Reinforcement Training Subjects: Mic techniques, Front of House console (Yamaha M7CL-48), Gusman Hall setup, Clarke Hall setup, Backstage console (Yamaha LS9-16), remote control of all consoles
  - Trained “apprentice” engineers are then assigned to work alongside experienced student engineers until their skill and confidence are sufficient
  - Personal Training / Mentoring: continues throughout duration of each student’s career, especially as new challenges & requirements are encountered by each student

### **Politechnika Gdańska (6/1997 - 6/1998)**

#### Recording Labs

- Using a combination of archaic and rudimentary facilities, together with some equipment of my own, conducting a series of practical labs in how to record, edit, mix, and synchronize audio to video
- Scheduling field trips to recording studios and on-location productions

#### Lectures

- Teaching the introduction to sound engineering class (in English!)

## Projects

### **University of Georgia (1/2016 - present)**

#### Automated Audio Recording in Edge Hall

- In the Summer of 2018, it was mandated that automated audio recordings be made possible in Edge Hall for use in newly permitted weekend recital time blocks while using as little money as possible
- After some research, it was decided to base this system on a networkable recorder: the Tascam SS-R250N
  - This recorder may be remotely programmed to start/stop recording at recurring times on specific days of the week
  - An already owned Shure VP88 stereo microphone was semi-permanently hung from the ceiling in Edge Hall
    - This particular microphone was selected because it is simple to hang, it requires no special encoding or decoding, and because it required no additional investment
    - The microphone positioning was worked out as a combination of not interfering with the projector & video screen, and working around limitations imposed by the geometry of the ceiling and acoustic clouds
    - Testing was done beforehand using a tall mic stand in order to find the optimum position given these limitations
  - Once a recording is completed, the recorder may be remotely accessed and the recording downloaded to a computer located within our recording LAN
- Finally, the mandate stated that no particular editing of these automated recordings be done in order to minimize the processing time needed
  - The beginning and ending of a performance are trimmed off
  - The recorded level is normalized to maximum volume before distortion
  - The entire performance is rendered as a single file
- In this way, performers who wish to do so may have their weekend recitals (in Edge Hall) recorded without the necessity for staffing arrangements

#### R. Douglas Moore Recording Control Room

- In the Summer of 2017, a complete renovation of the recording control room was carried out
- In this renovation, every aspect of the recording environment was either replaced or updated: Room layout and acoustics; power handling; recording equipment and monitoring; wiring infrastructure; and video monitoring infrastructure
- Preparation for this update began in the Spring of 2016 with research into new equipment and standards, and included discussions with other professionals from around the country as well as a trade show trip for hands-on investigation
- In the process of this renovation, several important goals were reached:
  - The control room and associated machine room were completely gutted with all existing wiring removed
    - The floor plan of the control room was adjusted to greatly increase the usable amount of floor space
    - Wasted space behind the front wall of the control room was adapted into a storage closet while offering accessibility for running wiring
    - All of the existing sound proofing, flooring, lighting, and cable routing ducts were removed, replaced or covered
    - New wall and ceiling treatments were added to provide a better listening environment
  - Recording at high sample rates and bit rates was made standard, with the ability to upgrade to the highest and most esoteric resolutions made possible, if desired
  - Thanks to Audio over Ethernet (AoE) technology:
    - Audio inputs and outputs have been positioned close to their respective sources and destinations for optimum audio quality
    - Ethernet cabling capable of supporting hundreds of audio channels, along with a modular approach to adding banks of audio inputs and outputs, allows for any future expansion
    - Audio recordings may be made simultaneously from each of our three venues, using any or all of the three workstations
    - Additional workstations may be added at any time in any location which may be reached with an Ethernet cable

- Additional audio inputs and/or outputs may be added in any additional venue location which may be reached with an Ethernet cable
- A standalone multitrack recorder is used to make a continuous backup recording of everything happening in every venue, adding a layer of safety to the computer-based recordings
- A portable rack case may be moved to either of the Performing Arts Center stages and connected via Ethernet to the rest of the network, giving us additional inputs on stage, as needed, as well as the capability for high quality sound playback for artists during recording sessions
- Remotely adjustable cameras (one in each hall) together with large screen televisions eliminate problems stemming from not having direct visual contact through a window
- An electrical power scheme is in place so that every component of our system – including the entire control room – is plugged into an Uninterruptible Power Supply (battery backup), protecting our investment from damage or malfunction due to power fluctuations or outages
- Some of the more significant specifics of this system are:
  - Audio inputs/outputs are via devices made by Merging Technologies (*Horus* 6-slot interface and *Hapi* 2-slot interface)
    - The standard cards purchased for these units support sample rates of up to 192kHz, with sample rates of up to DSD256 being possible by purchasing premium cards (we record at 96kHz)
    - Each device may be remotely controlled, allowing them to be physically placed in otherwise inaccessible locations while still being adjusted from the control room
  - Computer workstations take the place of both audio consoles and recorders
    - *Pyramix* software from Merging Technologies is the most widely used Digital Audio Workstation (DAW) in the classical music recording field
    - Avid *S3* control surfaces add tactile control to each workstation, greatly augmenting control of the *Pyramix* software beyond what a standard keyboard and mouse can provide
    - Three workstations have been installed, but more may be added in additional rooms
  - Genelec 8350A *Smart Active Monitors* with a 7370A *Smart Active Subwoofer* have been calibrated to exactly match the acoustics of the control room, and are integrated in such a way that any single workstation may be monitored over speakers
  - Headphones monitoring is available at each workstation, making it possible to simultaneously realize multiple recordings (when multiple recordings are being made, the speakers are briefly used by each workstation for sound evaluation purposes and then monitoring is carried out on headphones)

#### Music Technology Lab (MuTec)

- In the Summer of 2017, an overhaul of the Music Technology Lab was carried out
- In preparation, we researched and specified the equipment and software which would be used
- As a result, we have a high fidelity teaching/listening environment which includes a digital mixing console for microphone and other audio demonstrations

#### Computerized (File-Based) Recording Implemented

- In the Spring of 2016, the existing recording systems were near end-of-life, and the formats (DAT and CD-R) were also becoming unsupported
- In the Summer of 2016, *Pyramix Native Pro* was evaluated and selected as the recording software to carry us forward
- In the Fall of 2016, two *Pyramix* computer workstations were purchased and installed, with backup still taking place to DAT
- Beginning in the Fall of 2016, we no longer preserved recordings on any medium
  - The recordings were all made on computer in Wave file format
  - The recording resolution was eventually improved from 44.1kHz at 16 bits to 96kHz at 24 bits
  - Recording length limitations brought about by media storage size were eliminated, and all of the advantages of workstation-based recording were introduced
  - The recording archive was begun on a shared network drive which is provided, maintained, and backed up by the IT department at UGA, with long-term archiving handled by the Main Library
  - The system for distribution of recordings was changed from the passing along of physical media to the sending of email containing web links for file download

#### Streaming

- Upon starting work at UGA in the Spring of 2016, I was given oversight over streaming and video recording
- A single workstation covers both Hodgson and Ramsey Halls, with the ability to stream from one venue at a time
- The most important aspect of my oversight is training and coordinating the technical personnel (covered under the “Teaching Experience” heading)

- Maintaining and configuring the equipment
  - Though less than a year old, a great deal of the original installation was not well implemented
  - Configuration fixes and improvements included: Calibrating the sound levels (coming from the Recording Control Room); calibrating the cameras; updating and optimizing the encoding software (Wirecast); working with the host on improving the reliability and quality of the stream
- Upgrading the chain
  - In 2018, the encoding computer was exchanged for a far more powerful desktop model with better capture card
  - In 2018, the streaming host was changed to a service with superior quality and worldwide coverage (Kaltura)
    - Thanks to an existing university wide contract, this resulted in eliminating the previous costs which were borne by the School of Music
    - Additional features were also added, especially the ability to multicast (see below)
    - With the improved quality and coverage, the School of Music is able to reach a far larger audience while at the same time eliminating the pesky problems and complaints which are common with live streaming
  - In 2019, the audio connection from the Recording Control Room to the streaming setup in the Hodgson Hall booth was changed to an all-digital signal, bypassing a great deal of problematic analog equipment, greatly improving the audio quality, and improving the overall audio volume
- Expanding the options
  - In the Fall of 2016, a simplified streaming option was created whereby a single camera is used in a pre-determined position, making streaming much simpler to staff, and enabling many more events to be able to have a live stream and/or video recording
    - Audio recording staff who are already in place for almost all events can start a single camera stream and then return to the Recording Control Room to oversee the audio recording
    - Graduate Assistants who are needed for staffing the multi-camera streams are thereby reserved and budgeted for a smaller number of events
  - Thanks to the much-improved computer and the new streaming host, in 2018 streaming was upgraded to multicast: Simultaneous high bandwidth, medium bandwidth and low bandwidth streams which better suit individual viewers and their specific technical capabilities and limitations
  - Also in 2018, an additional streaming setup (using a single, fixed camera) was purchased, installed and configured in Edge Hall, for the first time enabling streams and video recordings to originate from any of the three venues
- Video Editing, Distribution, Archiving and Library Dissemination
  - Video editing is carried out in Adobe Premiere, with resulting files in mp4 format
  - Video recordings are then distributed to performers via email containing web links for file download, with no physical media needing to be produced or archived
  - The video archive is combined with the audio archive, and uses the same infrastructure

#### Microphone Technique Changes

- Upon my starting work at UGA in the Spring of 2016, recording was continued as before in the existing facilities, using all of the existing equipment and microphone setups
- In the Summer of 2016, together with William Marlow, we tried some alternate microphone techniques in each of our performance venues
- After experimenting with positioning and carefully comparing with our existing techniques (in consultation with performance faculty), we changed the microphone technique in Ramsey and Hodgson Halls to “spaced omnis”: Two omnidirectional microphones, capsules spaced 80cm, capsules angled 90° outward
  - Having decided upon a new technique, further comparison between models led to changing the microphones used from Neumann U89i to Sennheiser MKH 20 (all of these microphones were already owned), and these were deployed in Ramsey and Hodgson Halls beginning in the Fall of 2016
  - Further evaluation in Spring 2017 led to purchase of new Schoeps CMC 6xt5g Linear microphones for use in both Ramsey and Hodgson Halls, and these were deployed in Ramsey and Hodgson Halls beginning in the Fall of 2017
- After careful evaluation during the Summer of 2016, it was determined that the existing microphone technique in Edge Hall, a Middle-Side (M-S) array using Sennheiser MKH series microphones, continued to be our preferred choice
  - Later, in the Spring of 2018, a student (Eric Dluzniewski) was searching for a microphone technique to be used with his own pair of inexpensive microphones which have an unusual polar pattern: “wide cardioid”

- After some discussion, it was recommended that he might try a variation of a Dutch microphone technique (NOS) which ordinarily calls for “cardioid” microphones, but which also ordinarily exhibits stereo imaging artifacts
- It was thought that the use of “wide cardioid” microphones might improve the NOS technique while providing a nice result
- In the Fall of 2018, a different student (Kolyo Vanchev) informed us that Eric’s recording technique had produced an excellent result for a demo recording which they had made in Edge Hall
- Armed with this information, we decided to test this modified NOS technique in Edge Hall and to compare it with our existing M-S technique
- After careful evaluation and comparison, it was decided that this adaptation produces excellent results and that we should change our microphone technique to “Modified NOS” in the Spring of 2019: Two wide-cardioid microphones, capsules spaced 30cm, capsules angled 90° outward
- With the change in technique, the microphone model which we deployed was the Neumann U89i (we do not own any other microphones which can switch into the wide cardioid polar pattern)
- Schoeps CMC 6xt21g microphones were purchased in the Summer of 2019, and they were deployed in Edge Hall beginning in the Fall of 2019

#### Microphone Suspension/Positioning in Ramsey and Hodgson Halls (Summer 2016)

- Upon my starting work at UGA in the Spring of 2016, recording was continued as before in the existing facilities, using all of the existing equipment and microphone setups
- In the Summer, together with William Marlow, we devised new ways of hanging microphones in Ramsey and Hodgson Halls so that it is possible to raise and lower them, thereby allowing them to be accurately positioned according to each specific performance
- We devised a hanging mount (built by the UGA metal working shop) which allows a microphone array to hang level, no matter how it is positioned or suspended, but which does not permit the array to spin out of position (not commercially available for purchase)

#### **University of Miami (7/1998 - 1/2016)**

##### Clarke Recital Hall: Wiring Upgrade (Summer 2015)

- Expanded channel count in Clarke Recital Hall from 24 to 48
- This expansion removed every technical barrier which hindered certain events from taking place in the much smaller Clarke Recital Hall – only space and stage limitations remain
- For recording, the cable run was re-routed from underground conduit to over the ceiling of the hall in order to accommodate both more channels and much higher quality wire
- For sound reinforcement, the additional 24 channels of cable were split and routed for easy connection to the console at the Front of House
- Purchased and installed second Yamaha DM-2000 for recording
- Installed conduit, pulled wire, added additional wall panel, reconfigured control booth, designed new furniture to hold consoles, installed new splitter, and many other tasks

##### “Small” Sound Systems in Gusman and Clarke Halls (1998-2015)

- In 1998, both halls had “small” sound systems in place
  - The idea of a “small” sound system is that with little time or effort, certain simpler sound reinforcement needs can be satisfied without special setup or staffing
  - When I first arrived in 1998, these venues had small, 4-channel mixers which allowed 2 wireless microphones and a stereo playback from CD or other medium to always be ready
- Over the years, these systems were continually upgraded, especially as the Yamaha 01V consoles were phased out from the recording areas and moved into the sound system racks
  - Yamaha digital consoles allowed more channels, processing power and flexibility in the “small” sound systems, as well as instant recall of settings
  - With the development of control software from Yamaha which was intended for recording studio usage, we figured out how to use our “small” sound reinforcement consoles via remote control, using Windows tablet computers with touch screens
- In 2011, Yamaha LS9-16 digital consoles were purchased for use in “small” sound in both venues
  - Each hall was thereby enabled to have 16-channel “small” sound reinforcement capability, with no setup required
  - Using digital audio input/output cards, it was also possible to digitally route the audio from the M7CL consoles when set up at Front of House – without degradation – through the LS9 mixers

- This digital routing meant that all of the speaker systems, including all of the monitor channels, could be permanently wired to the LS-9s and therefore also made available to the “small” systems
- Even faster setups and changeovers were also possible when working on the larger sound reinforcement events
- Yamaha introduced the StageMix applications for Apple iPad which were specifically intended for sound reinforcement
  - Wireless control of both the M7CL and LS9 consoles was greatly simplified over the Windows tablets while the feature set was vastly expanded
  - Constant development and refinement of the apps is an added bonus
  - With comprehensive remote control of the LS9 consoles, iPad mixes of events with moderate channel counts became easy and routine
  - Not only was far less time needed for setting up for smaller events, but also no seats were blocked off for Front of House mixing
- Comprehensive remote control of the M7CL consoles brought about another radical change in the way sound reinforcement can be handled
  - While one engineer sits in the audience at the console, another can simultaneously take an iPad and adjust the console from anywhere in the room
  - With this capability, adjusting mixes for monitor speakers during sound checks can be conducted while standing beside each musician as they play, talking with them and listening to the results while adjusting

#### On-Line Recording Archive Introduced, along with Cloud Distribution of Recordings (2013)

- Moving to a file-based system of archiving recordings brings several advantages
  - Easy and fast to move new recordings into the archive
  - Possible to quickly search for and copy existing recordings
  - Possible to back up the archive as many times as desired, in as many locations as desired, making it both safer and less susceptible to deterioration or being misplaced
  - Possible to store recordings in varying and changing formats
  - No longer a concern for recording length brought about by media storage size limitations
- The University of Miami’s IT department provided a cloud storage system at no cost to the School of Music which offered numerous advantages
  - Unlimited storage size – infinitely expandable as more space was needed
  - Expert, full-time maintenance of the storage infrastructure as well as the network
  - Password protection and other safeguards
  - Automated, off-site backup for complete redundancy and safety
- By 2013, the entire archive (mostly on Compact Disc, but some on analog 2-track tape), dating back to January 1996, was converted to file format and placed in an on-line archive
- The remaining archive of 4,400+ analog 2-track tapes dates back to 1970, and may either be gradually digitized on demand or systematically digitized if desired
- New recordings are now both recorded at high resolution, greater than CD quality, and also archived in their native resolution
- Video recordings are also able to be stored in file format, making it possible to archive at far better quality than is permitted with DVD or other media format size limitations
- Low resolution copies of the entire archive are provided in MP3 format to the Music Library, where they are cataloged and entered into a program which includes a search engine and playback capabilities
  - Anyone with University credentials may visit the School of Music Library, use one of the many workstations located there, and immediately access any of the archived recordings
  - With this access limitation, the need for licensing or payment of royalties is averted while all recordings are available for research and study
- Recordings may be disseminated quickly, cheaply and at high resolution using cloud-based file sharing
  - Duplication of recordings is no longer needed, as file copies may be easily and quickly forwarded to as many people as desired
  - Labor, postage, media costs, duplicator maintenance, and all other similar costs associated with duplication and dissemination are eliminated

#### New Position Created: Assistant Director of Recording Services (2013)

- After a great deal of time and effort, a new position for a full-time, salaried Assistant Director was created

- The first Assistant Director of Recording Services was hired in July 2013: Edward Stalzer, a recent graduate of the Music Engineering program and a four-year student engineer for Recording Services

#### Henry Mancini Institute (HMI) Orchestra: Microphones & Console (Summer 2010)

- Over the years, symphony orchestra, jazz band and jazz vocal ensembles were occasionally pulled together for combined concerts
- Amplifying and recording these events was always complicated and difficult, especially because of the large number of musicians on stage but also because of the mixture of classical and jazz ensembles and their respective performance styles and volumes
- In 2007, a new Music Dean, Shelly Berg, came to the University of Miami, and soon afterwards the Henry Mancini Institute was relocated from Los Angeles to Coral Gables
- A major focus of the HMI is the combining of multiple genres: Orchestra, big band, vocals, and more
- With the increased frequency and visibility of these large-format concerts, additional microphones and channels were needed
  - After a great deal of experimentation (and before purchasing), new microphone techniques were developed for clip-on microphones to be used on orchestral string instruments in an effort to produce more natural, acoustic results than are common when close micing orchestral strings
  - In 2010, 48 DPA 4099 clip-on microphones were purchased
  - In combination with existing microphones, each instrument of a symphony orchestra could then be individually miced so that the orchestra could be recorded and amplified together with the jazz band and jazz vocal ensemble
  - A new sound reinforcement console was also purchased (Yamaha M7CL-48), providing 48 additional input channels on stage
    - An additional mixing engineer was positioned on stage to create submixes of orchestral sections
    - These submixes were routed to the recording and sound reinforcement consoles
    - When not in use for HMI events, this console became the main sound reinforcement console for Clarke Hall
  - Other, smaller consoles are also brought in to create submixes of smaller instrumental sections, all in an effort to squeeze all of this musical information through 48 channels from the stage to recording and sound reinforcement

#### Frost School of Music Streaming

- Streaming was steadily upgraded and improved over the entire period 1998-2015
- Upon my arrival in 1998, streaming had been cobbled together by graduate students, was locally hosted, was available only from Clarke Hall, and was audio only
- The target streaming audience member was using a 28k modem
- Immediately, the Clarke streaming was improved with a better computer and capture card, and audio streaming from Gusman Hall was added
- Automation of streaming was introduced
  - Using the existing events calendar database, a data field was created for specifying streaming on/off
  - A streaming page was created, with the feed automatically switched on/off according to the calendar database
  - Streaming encoding was left continuously running in both halls, with access to the stream limited by when the web page was activated through the database
- In 2007, hosting was moved to the main library
- In 2009, a single camera was added to each venue and video recording direct to DVD media was implemented
- In 2013, digital recorders with memory cards were added to each venue, with archiving and delivery of video recordings switched over to file format

#### Sound System Upgrades for Gusman and Clarke Halls (2008-09)

- After the coming of a new Dean for the Frost School of Music, the permanently installed sound systems – main speakers, amplifiers and processors – in both halls were completely overhauled
  - The existing “small” sound system speakers were removed, with the new, improved systems able to be used on both small and large events
  - In both venues, speakers must no longer be carried in and set up for each “large” sound reinforcement event
  - Less manpower, greater speed and faster changeover times are achieved for the numerous events with high technical demands
- Proceeds from providing sound reinforcement to outdoors jazz performances allowed the purchase of a Meyer Sound 700-HP subwoofer, used both outdoors and indoors, when requested

#### Installation of *Servoreeler Systems* (motorized microphone positioners) (Fall 2007)

- In the Summer of 2007, it was mandated that microphones should be hung in front of acoustic performances rather than placing microphone stands on stage and interfering with sightlines
- After much research, a motorized microphone reel system from Servoreeler Systems was selected
  - A patented design allows a continuous, high quality mic cable to run through the reel, rather than using brushes or some other sort of contact in the audio path
  - Remote control of these reels from the control room would allow fast, precise adjustment of microphone positions by a single engineer
- Once installed, several advantages were realized through the usage of Servoreelers
  - The visual appearance of the stage was greatly improved by removing the mic stands from the stage for acoustic performances
  - Hanging the mics allowed for greater flexibility in microphone positioning, both in terms of location and in height
  - A pair of dedicated microphones were hung in each venue, eliminating the time and labor needed for bringing microphones, stand and wiring out onto the stage
  - Because of the speed of setup and resulting simplification in staffing, afternoon recitals were made possible in Clarke Hall
  - The ability to quickly position the microphones while listening greatly improved our ability to make excellent recordings thanks to the resulting increase in precision
- Going forward, it is always possible to bring microphones and stand back out onto the stage, if desired
- Going forward, if a different microphone or technique is desired it is relatively easy to switch out the dedicated mics for others

#### Infrastructure and Sound Reinforcement Upgrades for Clarke Hall (2007)

- In 1998, Clarke Hall had two mic lines from the stage to the recording booth
- By 2007, this channel count was finally upgraded to 24, allowing jazz recitals greater freedom and less restriction due to technical limitations
- Splitters were also installed so that sound reinforcement and recording can share all 24 channels
- Two Meyer Sound UPA-1P loudspeakers were purchased for sound reinforcement, greatly improving the sound quality and audience coverage

#### Yamaha M7CL-48 Console Purchased for Gusman Hall (2007)

- For the first time, seamless sharing of 48 input channels with the recording control room is possible
- Scene Memories enable minute adjustments which may be stored and later instantly recalled during rapid changeovers between artists

#### Gusman Concert Hall: Recording Control Room (Summer 2006)

- In the Summer of 2006, permission was granted to move into a larger, more appropriate control room space in Gusman Hall
- New furniture was installed and all existing equipment was relocated there prior to classes beginning in the Fall
- At this time, surround (5.1) monitoring from Genelec was also installed

#### New Digital Audio Workstation Software (2005)

- After extensive research, multiple demonstrations, and in consultation with engineers from around the world, *Sequoia* Digital Audio Workstation software from *Magix* was selected and purchased for all of the recording and editing workstations
- In addition to its extensive editing capabilities, the upgrade also brought the ability to record individual tracks for each input in addition to a live stereo mix
- *Sequoia* also allows recording high sample and bit rates

#### Proceeds from Sound & Recording of the International Computer Music Conference, held in Gusman Concert Hall, paid for upgrade of main speakers (2004)

- Two Meyer CQ-1 powered loudspeakers were purchased for the large sound system in Gusman
- All of the necessary wiring was also installed

#### Grant for Yamaha DM-2000 (Recording Console) (Spring 2003)

- In the Spring of 2003, a grant was awarded by the Miami-Dade County Department of Cultural Affairs for a new recording console: the 24-input Yamaha DM-2000
- In ensuing months, two additional DM-2000 consoles were purchased through matching funds from the Provost and from the School of Music
- With these new consoles, all of our “stopgap” Yamaha 01V consoles were subsequently distributed to other uses, and eventually they were sold or given to other departments within the School of Music

#### Gusman Concert Hall: Wiring Upgrade (Spring 2002)

- In the Spring of 2002, a complete rewiring of Gusman Hall was completed
- The existing 36 input channels were intermittent and insufficient in number, and the existing splitter system was barely functional
- All at one time, 48 input channels of Mogami cable were run from the stage to the control room, and splits from all 48 channels were permanently installed with multi-core wire run underneath the floor and audience seating to the FOH mix position
- An additional split of only the last 12 channels was run to the backstage sound system mixer, allowing for fulltime sound reinforcement access and fast setup of smaller events

#### Expansion of Microphone Inventory (Fall 1998 - Fall 2015)

- The initial microphone inventory in the Summer of 1998 consisted of several older microphones of high quality but in poor condition, and a large quantity of Shure SM-57 and SM-58 microphones which were used liberally in all kinds of situations
- Some additional microphone models were immediately discarded or repurposed to other areas within the School of Music
- The first priority was to have the high quality microphones repaired in time for use in the Fall, and that provided the foundation for the inventory moving forward
- Balancing the needs of the recording control rooms and sound reinforcement systems, it became an ongoing priority to purchase additional microphones each year, choosing those which would have the widest impact on every genre of performance within the halls
- Upon departure in January 2016, the Gusman mic closet contained 135 microphones from AKG, Audix, Beyerdynamic, Crown, DPA, Earthworks, Electro-Voice, Neumann, Schoeps, Sennheiser and Shure, and a large inventory of both passive (Cable Factory) and active (Summit Audio) direct input boxes
- Upon departure in January 2016, the Clarke mic closet contained 47 microphones from AKG, Audix, Beyerdynamic, DPA, Electro-Voice, Neumann, Sennheiser and Shure, and a large inventory of both passive (Cable Factory) and active (Summit Audio) direct input boxes
- An additional 20 wireless systems from Sennheiser – 10 using DPA headset or lavalier microphones, and 10 handheld – were also added, able to be shared between the two halls according to need

#### All-Digital Recording Path: Consoles, Computers, Various Media (Fall 1998)

- Upon arrival at the University of Miami in the Summer of 1998, it was immediately obvious that the existing recording equipment in both performance halls was barely functional
- With very little budget and tight time constraints, a multi-phase plan was implemented before classes began in the Fall
- The first phase provided basic functionality, and produced immediately improved results
  - Yamaha 01V 12-input digital consoles were purchased for both venues, with more channels added by daisy chaining additional consoles
  - Micro Technology Unlimited Digital Audio Workstations were purchased for both venues, creating an all-digital recording path
  - Existing DAT recorders of differing manufacture were pressed into duty as backup recorders
  - Compact Discs became the only format used for archiving and distribution
  - Genelec 1030a monitor speakers were purchased for Gusman Hall, while the existing monitoring was kept in Clarke Hall
  - Later, Genelec 1031a monitor speakers were purchased for Gusman Hall, and the 1030a pair was moved to Clarke Hall

## Memberships

**Audio Engineering Society**, Member, 1987 - present.

**Recording Academy**, Voting Member, 2017 - present.

**Phi Mu Alpha Sinfonia Fraternity, Epsilon Lambda Chapter (UGA)**, Honorary Member, 2017 - present.

## Publications

**Recording Outside the Studio**, *Downbeat Magazine* (article), Feb. 2014, pp. 100-101.

**The Man Behind the Microphones**, *Score Magazine* (interview), Spring 2014, p. 10.

## Broadcast Recordings

*Berlin Philharmonic Piano Quartet: Luis Esnaola, violin, Matthew Hunter, viola, Knut Weber, cello, Markus Groh, piano*, Hodgson Concert Hall, Athens, Georgia, 3/6/2020.

- *Performance Today*, 4/30/2021.

- *Performance Today*, 3/16/2021.
- *Performance Today*, 11/9/2020.

*Chamber Music Society of Lincoln Center: Wu Han, piano, Paul Huang, violin, Matthew Lipman, viola, Clive Greensmith, cello, Hodgson Concert Hall, Athens, Georgia, 1/21/2020.*

- *Performance Today*, 1/14/2021.
- *Performance Today*, 9/24/2020.

*Takács Quartet, Hodgson Concert Hall, Athens, Georgia, 10/22/2019.*

- *(Recorded for broadcast, but to my knowledge not yet used.)*

*Jerusalem Quartet, Hodgson Concert Hall, Athens, Georgia, 4/16/2019.*

- *(Recorded for broadcast, but to my knowledge not yet used.)*

*Matt Haimovitz, cello, Hodgson Concert Hall, Athens, Georgia, 4/4/2019.*

- *Performance Today*, 4/22/2020.
- *Performance Today*, 11/19/2019.
- *Performance Today*, 8/19/2019.

*Vienna Boys Choir, Hodgson Concert Hall, Athens, Georgia, 2/28/2019.*

- *(Recorded for broadcast, but to my knowledge not yet used.)*

*VOCES8, Hodgson Concert Hall, Athens, Georgia, 11/8/2018.*

- *(Recorded for broadcast, but to my knowledge not yet used.)*

*Chamber Music Society of Lincoln Center: Emerson String Quartet with Shai Wosner, piano, Hodgson Concert Hall, Athens, Georgia, 10/22/2018.*

- *Performance Today*, 5/4/2019.
- *Performance Today*, 5/1/2019.

*Chamber Music Society of Lincoln Center: Gilles Vonsattel, piano, Ida Kavafian, violin, Erin Keefe, violin, Yura Lee, viola, Nicholas Canellakis, cello, Tommaso Lonquich, clarinet, Hodgson Concert Hall, Athens, Georgia, 4/15/2018.*

- *Performance Today*, 4/7/2021.
- *Performance Today*, 1/8/2021.
- *Performance Today*, 10/28/2020.
- *Performance Today*, 7/30/2020.
- *Performance Today*, 9/26/2019.
- *Performance Today*, 6/24/2019.

*Aspen String Trio, Ramsey Concert Hall, Athens, Georgia, 3/20/2018.*

- *(Recorded for broadcast, but to my knowledge not yet used.)*

*Celino Romero, guitar, Ramsey Concert Hall, Athens, Georgia, 2/11/2018.*

- *Performance Today*, 6/15/2021.
- *Performance Today*, 3/12/2021.
- *Performance Today*, 12/11/2020.
- *Performance Today*, 7/31/2020.
- *Performance Today*, 4/27/2020 (2 pieces).
- *Performance Today*, 12/6/2019.
- *Performance Today*, 1/31/2019.
- *Performance Today*, 10/10/2018.

*Chamber Music Society of Lincoln Center: Michael Brown, piano, Wu Han, piano, Chad Hoopes, violin, Paul Huang, violin, Matthew Lipman, viola, Dmitri Atapine, cello, Hodgson Concert Hall, Athens, Georgia, 1/25/2018.*

- *Performance Today*, 1/28/2021.
- *Performance Today*, 11/10/2020.
- *Performance Today*, 7/3/2020.
- *Performance Today*, 3/19/2020.
- *Performance Today*, 5/25/2019.
- *Performance Today*, 5/22/2019.
- *Performance Today*, 10/4/2018.
- *Performance Today*, 6/4/2018.

*Chamber Music Society of Lincoln Center: Arnaud Sussmann, violin, Paul Neubauer, viola, David Finckel, cello, Hodgson Concert Hall, Athens, Georgia, 11/5/2017.*

- *(Recorded for broadcast, but to my knowledge not yet used.)*

*Chamber Music Society of Lincoln Center: Escher String Quartet with Wu Han, piano, Hodgson Concert Hall, Athens, Georgia, 4/2/2017.*

- *Performance Today, 3/28/2018.*
- *Performance Today, 3/5/2018.*
- *Performance Today, 11/20/2017.*
- *Performance Today, 7/29/2017.*
- *Performance Today, 7/26/2017.*

*Chamber Music Society of Lincoln Center: Orion String Quartet with Alessio Bax, piano, Paul Huang, violin, Hodgson Concert Hall, Athens, Georgia, 2/26/2017.*

- *Performance Today, 4/28/2020.*
- *Performance Today, 2/12/2020.*
- *Performance Today, 1/28/2020.*
- *Performance Today, 12/5/2019.*
- *Performance Today, 11/6/2019.*
- *Performance Today, 9/5/2019.*
- *Performance Today, 8/8/2019.*
- *Performance Today, 5/18/2019.*
- *Performance Today, 5/15/2019.*
- *Performance Today, 5/10/2019.*
- *Performance Today, 8/7/2018.*
- *Performance Today, 5/14/2018.*
- *Performance Today, 1/25/2018.*
- *Performance Today, 1/6/2018.*
- *Performance Today, 1/5/2018.*
- *Performance Today, 11/30/2017.*
- *Performance Today, 10/9/2017.*
- *Performance Today, 9/15/2017.*
- *Performance Today, 8/22/2017.*
- *Performance Today, 5/24/2017.*

*The Romeros, Hodgson Concert Hall, Athens, Georgia, 11/17/2016.*

- *Performance Today, 9/18/2018 (2 pieces).*
- *Performance Today, 7/17/2018.*
- *Performance Today, 6/18/2018 (2 pieces).*
- *Performance Today, 4/16/2018.*
- *Performance Today, 11/21/2017.*
- *Performance Today, 9/19/2017 (2 pieces).*
- *Performance Today, 8/28/2017.*
- *Performance Today, 6/24/2017 (2 pieces).*
- *Performance Today, 6/23/2017 (2 pieces).*

*Chamber Music Society of Lincoln Center: Sean Lee, violin, Alexander Sitkovetsky, violin, Matthew Lipman, viola, Richard O'Neill, viola, David Finckel, cello, Keith Robinson, cello, Hodgson Concert Hall, Athens, Georgia, 11/6/2016.*

- *(Recorded for broadcast, but to my knowledge not yet used.)*

*Center City Brass Quintet, Ramsey Concert Hall, Athens, Georgia, 10/19/2016.*

- *Performance Today, 9/12/2020.*
- *Performance Today, 9/10/2020.*
- *Performance Today, 2/10/2020.*
- *Performance Today, 6/7/2019.*
- *Performance Today, 3/10/2018.*
- *Performance Today, 3/6/2018.*
- *Performance Today, 10/23/2017.*
- *Performance Today, 9/5/2017.*
- *Performance Today, 9/4/2017.*
- *Performance Today, 6/9/2017.*
- *Performance Today, 5/1/2017.*
- *Performance Today, 4/22/2017.*
- *Performance Today, 4/19/2017.*
- *Performance Today, 1/30/2017.*

*Seventh Miami International Organ Competition, Church of the Epiphany, Miami, Florida, 2/28/2014.*

- *Pipedreams, 2/26/2015.*

*Bergonzi String Quartet*, Festival Miami, Gusman Concert Hall, Coral Gables, Florida, 10/9/2006.

- *Performance Today*, 1/11/2007.
- *Performance Today*, 11/9/2006.

*Festival Symphony Orchestra*, Hot Springs Music Festival, Hot Springs Youth Center, Hot Springs National Park, Arkansas, 6/11/2006.

- *Performance Today*, 7/4/2007

*Festival Symphony Orchestra*, Hot Springs Music Festival, Hot Springs Youth Center, Hot Springs National Park, Arkansas, 6/5/2005.

- *Performance Today*, 7/29/2005.

*Festival Symphony Orchestra*, Hot Springs Music Festival, Hot Springs National Park, Arkansas, 6/2/2005.

- *Performance Today*, 9/6/2005.

*Festival Symphony Orchestra*, Hot Springs Music Festival, Hot Springs Youth Center, Hot Springs National Park, Arkansas, 6/5/2003.

- *Performance Today*, 2/18/2004.
- *Performance Today*, 10/31/2003.
- *Performance Today*, 7/24/2003.

*Sérgio & Odair Assad, guitars*, Festival Miami, Gusman Concert Hall, Coral Gables, Florida, 10/12/2002.

- *Performance Today*, 10/2/2003.
- *Performance Today*, 4/29/2003.
- *Performance Today*, 2/7/2003.
- *Performance Today*, 1/29/2003.
- *Performance Today*, 11/18/2002.
- *Performance Today*, 10/31/2002.

*Valery Kuleshov, piano*, Festival Miami, Gusman Concert Hall, Coral Gables, Florida, 10/19/2001.

- *Performance Today*, 2/14/2003.
- *Performance Today*, 8/11/2002.
- *Performance Today*, 8/8/2002.
- *Performance Today*, 7/16/2002.
- *Performance Today*, 3/3/2002.
- *Performance Today*, 1/31/2002.
- *Performance Today*, 11/11/2001.
- *Performance Today*, 11/6/2001.
- *Performance Today*, 11/4/2001.

*Jon Nakamatsu, piano*, Festival Miami, Gusman Concert Hall, Coral Gables, Florida, 9/29/2001.

- *Performance Today*, 1/14/2003.
- *Performance Today*, 11/19/2002.
- *Performance Today*, 8/30/2002.
- *Performance Today*, 4/22/2002.
- *Performance Today*, 11/12/2001.
- *Performance Today*, 10/26/2001.
- *Performance Today*, 10/6/2001.

*Anna Karkowska, violin, Kasia Karkowska, piano*, Festival Miami, Gusman Concert Hall, Coral Gables, Florida, 9/29/2001.

- *Performance Today*, 10/6/2001.

*Adam Aleksander, piano*, Festival Miami, Gusman Concert Hall, Coral Gables, Florida, 9/28/2001.

- *Performance Today*, 11/13/2002.

*Festival Chamber Players*, Hot Springs Music Festival, St. Luke's Episcopal Church, Hot Springs National Park, Arkansas, 6/16/2001.

- *Performance Today*, 7/15/2001.

*Peter Zazofsky, violin, Paul Posnak, piano*, Festival Miami, Gusman Concert Hall, Coral Gables, Florida, 10/1/2000.

- *Performance Today*, 11/22/2000.
- *Performance Today*, 10/7/2000.

*Ning An, piano*, Festival Miami, Gusman Concert Hall, Coral Gables, Florida, 9/22/2000.

- *Performance Today*, 11/28/2000.
- *Performance Today*, 10/3/2000.

*Christine Nield-Capote, flute, Robert Weiner, oboe, Margaret Donaghue, clarinet, Luciano Magnanini, bassoon*, Festival Miami, Gusman Concert Hall, Coral Gables, Florida, 9/18/2000.

- *Performance Today*, 3/4/2002.
- *Performance Today*, 9/25/2000.

*Yung Wook Yoo, piano*, Festival Miami, Gusman Concert Hall, Coral Gables, Florida, 9/19/2000.

- *Performance Today*, 9/26/2000.

*Edmond Dédé: Orchestral Works*, Hot Springs Music Festival Symphony Orchestra - Richard Rosenberg, Conductor, NAXOS 8.559038 (2000), recorded, edited, mixed, mastered.

- *Performance Today*, 9/17/2005.
- *Performance Today*, 9/9/2005.

*Charles Lucien Lambert, Sr. - Lucien-Léon Guillaume Lambert, Jr.: Ouverture de Brocéliande and other works*, Hot Springs Music Festival Symphony Orchestra - Richard Rosenberg, Conductor, NAXOS 8.559037, 2000.

- *Performance Today*, 9/18/2005.
- *Performance Today*, 9/17/2005.
- *Performance Today*, 9/9/2005.

*Louis Moreau Gottschalk: A Night in the Tropics*, Hot Springs Music Festival Symphony Orchestra - Richard Rosenberg, Conductor, NAXOS 8.559036, 2000.

- *Performance Today*, 9/6/2005.
- *Performance Today*, 5/17/2001.
- *Performance Today*, 3/4/2001.
- *Performance Today*, 2/27/2001.
- *Performance Today*, 6/20/2000.
- *Performance Today*, 2/29/2000.

*Manuel Barrueco, guitar*, Festival Miami, Gusman Concert Hall, Coral Gables, Florida, 10/10/1998.

- *Performance Today*, 11/7/1998.

*Elizabeth Laich and Marcel Bergmann, two pianos*, The Murray Dranoff Foundation Two Piano Festival, Gusman Concert Hall, Coral Gables, Florida, 9/19/1998.

- *Performance Today*, 9/25/1998.

*Arianna Goldina and Remy Loumbrozo, two pianos*, The Murray Dranoff Foundation Two Piano Festival, Gusman Concert Hall, Coral Gables, Florida, 9/17/1998.

- *Performance Today*, 9/24/1998.

*Cristina Marton and Aglaia Batzner, two pianos*, The Murray Dranoff Foundation Two Piano Festival, Gusman Concert Hall, Coral Gables, Florida, 9/17/1998.

- *Performance Today*, 10/6/1998.

*Hans Peter and Volker Stenzl, two pianos*, The Murray Dranoff Foundation Two Piano Festival, Gusman Concert Hall, Coral Gables, Florida, 9/17/1998.

- *Performance Today*, 10/3/1998.

*Józef Skrzek, multi-instrumentalist*, Oliwa Cathedral, Gdańsk-Oliwa, Poland, 1997.

- Polish Radio, 1997.

## Commercial Recordings

*Mirrors*, Lysander Piano Trio, First Hand Records FHR111 (2020), recorded (tracks 12-16).

*E Pluribus Unum*, Liza Stepanova, Navona Records NV6300 (2020), recorded, edited, mixed, mastered.

*Nicolás Ruiz Espadero: Piano Music, Volume 1*, José Raúl López, Toccata Classics TOCC0544 (2019), recorded, edited, mixed, mastered.

*Migration*, Fuego Quartet, Ravello Records RR8010 (2019), recorded, edited, mixed, mastered.

*Frost Symphony Orchestra Live!*, Frost Symphony Orchestra, Albany TROY 1750 (2018), mastered.

*Ceaseless Beauty*, Juraj Kojs, Centaur CRC 3575 (2017), recorded.

*Reformation 500 Anniversary Album: Martin Luther - Celebration of Spirit*, Rachel Currea, Rachel Currea Music, Inc. (2017), recorded, edited, mixed, mastered.

*Arise: Choral Music of Ola Gjeilo*, Key Chorale, keychorale.org (2017), recorded, edited, mixed, mastered.

*José Comellas: Piano Music*, José Raúl López, Toccata Classics TOCC0347 (2016), recorded, edited, mixed, mastered.

*The Death of Webern*, Michael Dellaria, Albany TROY 1613 (2016), recorded.

*A Quirky Dream*, Gabriel Beavers, Mark 51932 MCD (2015), recorded, edited, mixed, mastered.

*Chamber Music*, Dennis Kam, Palladino Music PMR 0063 (2015), recorded, edited, mixed, mastered.

*Charles-Valentin Alkan: The Complete Transcriptions, Volume One: Mozart*, José Raúl López, Toccata Classics TOCC0240 (2015), recorded, edited, mixed, mastered.

*Franz Schubert: Sonata in D major, D. 384; Sonata in A minor, D. 385; Sonata in G minor, D. 408*, Tomas Cotik, Tao Lin, Centaur CRC 3412 (2015), recorded, mastered.

*Solo: Bach, Telemann, Schubert, Piazzolla*, Tomas Cotik, Centaur CRC 3374 (2015), recorded, mastered.

*Night Thoughts*, Dmitri Ashkenazy, Orlando OR 0012 (2015), recorded, edited, mixed, mastered (track 9).

*Einstein's Inconsistency...a Series of Operas – by Thomas Sleeper*, Brno Philharmonia, Albany TROY 1551 (2015), recorded, edited, mixed, mastered.

*Walking to You*, Rachel Currea, Rachel Currea Music, Inc. (2015), recorded, edited, mixed, mastered.

*Four Concerti*, Thomas Sleeper, Albany TROY 1475 (2014), recorded, edited, mixed, mastered.

*Ástor Piazzolla: Tango Nuevo*, Tomas Cotik, Tao Lin, Naxos 8.573166 (2013), recorded, edited, mixed, mastered.

*Specific Gravity*, Lansing McLoskey, Albany TROY 1443 (2013), recorded, edited, mixed, mastered.

*Bach Repurposed: Solo Bach for Clarinet*, Margaret Donaghue, Centaur CRC 3206 (2013), recorded, edited, mixed, mastered.

*Four of a Kind: Live in Concert*, Miami Saxophone Quartet, Fourtitude (2013), recorded.

*Franz Schubert: Duo Sonata Op. 162, D. 574; Rondo Op. 70, D. 895; Fantasy Op. 159, D. 934*, Tomas Cotik, Tao Lin, Centaur CRC 3250 (2012), recorded, edited, mixed, mastered.

*Riccardo Malipiero: Complete Music for Solo Piano*, José Raúl López, Toccata Classics TOCC0129 (2012), recorded, edited, mixed, mastered.

*Olas – Solo CD VI*, Orlando Jacinto Garcia, Innova Records 333 (2012), recorded, edited, mixed, mastered.

*Frank Ticheli: An American Dream; Lansing McLoskey: Prex Penitentialis*, Frost Symphony Orchestra, Leilah Ezra, Albany TROY 1258 (2011), recorded, edited, mixed, mastered (tracks 1-7).

*Jazz Nocturne: American Concertos of the Jazz Age*, Hot Springs Music Festival Symphony Orchestra - Richard Rosenberg, Conductor, Naxos 8.559647 (2011), recorded, edited, mixed (track 1), mastered (all).

*Brahms: The Complete Violin Sonatas*, Scott Flavin, Gregory Taylor, M&W Records (2011), recorded, edited, mixed, mastered.

*Permit Me Voyage*, Craig Morris, Valentina Lisitsa, Naxos 8.572506 (2011), recorded, edited, mixed, mastered.

*Symphony No. 1, XENIA, Six Arias for Cello – by Thomas Sleeper*, Frost Symphony Orchestra, Albany TROY 1212 (2010), recorded (tracks 5-10, all; tracks 11-16, cello soloist), edited, mixed, mastered.

*Acclamation*, Stanley Leonard, - self released - (2010), recorded, edited, mixed, mastered.

*Invocations*, Key Chorale, keychorale.org (2010), recorded, edited, mixed, mastered.

*Wolf Rounds*, Frost Wind Ensemble, NAXOS 8.572439 (2010), recorded, edited, mixed, mastered.

*Wild*, Bergonzi String Quartet, Bergonzi String Quartet (2010), recorded, edited, mixed, mastered.

*The Nearness of You*, Shelly Berg, Arbors Records ARCD 19378 (2009), recorded, edited, mixed, mastered.

*Cello Serenade*, Ross Harbaugh, - self released - (2009), recorded, edited, mixed, mastered.

*Landscapes*, Ney Rosauero, Pró Percussão CD-08 (2009), recorded (duets), edited, mixed, mastered.

*Piano Works / Obras Para Piano*, Nancy Luzko, Nancy Luzko (2009), recorded, edited, mixed, mastered.

*Miami String Project*, Miami String Project, miamistringproject.org (2009), recorded, edited, mixed, mastered.

*In Crossing the Busy Street*, JB Floyd, Thomas Buckner, Mutable Music 17535-2 (2009), recorded (tracks 1-8).

*For Bergonzi Four*, Bergonzi String Quartet, Bergonzi String Quartet (2009), recorded, edited, mixed, mastered.

*Premiere*, United Nations Piano Quartet, KWMM UNPQCD001 (2008), recorded, edited, mixed, mastered.

*Celestial Dreamscape: A Century of Music for Clarinet*, Scott Locke, everglade records EVG08-04 (2008), recorded (tracks 1,2).

*Great Violin Solos of the Opera and Ballet*, Scott Flavin, M&W Records (2008), recorded, edited, mixed, mastered.

*Fourtified*, Miami Saxophone Quartet, Fourtitude Records FR004 (2008), recorded, edited.

*Meeting of Minds*, Dick Hyman & Shelly Berg, Victoria Company VC4376 (2008), recorded, edited, mixed, mastered.

*Visions of the East: Music of Alan Hovhaness*, Chung Park, Centaur CRC 2954 (2008), recorded, edited, mixed, mastered.

*By Arrangement Only*, Bergonzi String Quartet, Bergonzi String Quartet (2008), mastered.

*One Water (film score)*, Russian National Orchestra – Thomas Sleeper, composer, (2007), edited, mixed (stereo and 5.1), mastered.

*Inner Sound Piano Solos*, Rachel Currea, Innersound Records (2007), recorded, edited, mixed, mastered.

*Sculpting Clouds: Ibis Camerata plays Eric Ewazen*, Ibis Camerata, Albany Records TROY984 (2007), recorded, edited, mixed, mastered.

*Louis Moreau Gottschalk: Complete Works for Orchestra*, Hot Springs Music Festival Symphony Orchestra - Richard Rosenberg, Conductor, NAXOS 8.559320 (2007), recorded, edited, mixed, mastered.

*Roberto Sierra: Sinfonias*, Frost (University of Miami) Symphony Orchestra, Albany Records TROY942 (2007), recorded, edited, mixed, mastered.

*Portrait of the Soul*, Frost (University of Miami) Chorale - Jo-Michael Scheibe, Conductor, Arsis Audio CD166 (2007), recorded (tracks 1-7,11-15), edited, mixed, mastered.

*Soul Prints*, Silvije Vidović, (2006), recorded, edited, mixed, mastered.

*Ney Rosauero: Concerti for Solo Percussion and Wind Ensemble*, Ney Rosauero and the University of Calgary Wind Ensemble, Pró Percussão CD-05 (2006), edited, mixed, mastered.

*Solos and Duos (1985-2002)*, John Van der Slice, Albany Records TROY870 (2006), recorded (tracks 1,4), edited, mixed, mastered.

*Glisten*, Ibis Camerata, Albany Records TROY886 (2006), recorded, edited, mixed, mastered.

*Universidad Navideña*, Frost (University of Miami) Chorale - Jo-Michael Scheibe, Conductor, EMI Televisa Music 094636720425 (2006), recorded (track 14), edited, mixed, mastered.

*Sing Me to Heaven*, Southwest Florida Symphony Chorus, SWFL Symphony Choruses (2005), recorded, edited, mixed, mastered.

*Ney Rosauero: Concerti for Solo Percussion and Percussion Ensemble*, Ney Rosauero and the University of Miami Percussion Ensemble, Cane Records CR1017 (2005), edited, mixed, mastered.

*Midnight Rumba*, Miami Saxophone Quartet, Fourtitude Records FR003 (2005), recorded.

*Dave Brubeck Songs*, Dave Brubeck, John De Haan, Jane Giering-De Haan, Cliff Jackson, NAXOS 8.559220 (2005), recorded, edited, mixed, mastered.

*Fragments del Pasado*, Orlando Jacinto Garcia, New Albion Records NA124 (2004), edited, mastered.

*Aeternalis - Voyage*, Laura Wilcox & José Raúl López, Société Nouvelle d'Enregistrement SNE-663-CD (2004), recorded, edited, mixed, mastered.

*Romances*, Frost (University of Miami) Concert Jazz Band, Summit Records DCD 368 (2004), recorded (tracks 6-8).

*What Dreams May Come*, University of Miami Chorale - Jo-Michael Scheibe, Conductor, Albany Records TROY707 (2004), recorded (tracks 5,7,8,9,11,13,19), edited, mixed, mastered.

*Celebrating Americans*, Kirk Whipple & Marilyn Morales, KWMM CD007 (2003), recorded, edited, mixed, mastered.

*Ticheli, Symphony No.1; Van der Slice, Specters; Sleeper, Horn Concerto*, University of Miami Symphony Orchestra, Albany Records TROY590 (2003), recorded, edited, mixed, mastered.

*Thomas Sleeper: Aceldama, an Opera in One Act*, University of Miami Chorale, Jo-Michael Scheibe, Conductor – Shanghai Broadcasting Symphony, Thomas Sleeper, Conductor, Albany Records TROY541 (2003), recorded (voices), edited, mixed, mastered.

*Welcome All Wonders*, Coral Gables Congregational Church Chancel Choir and Canticum Novum - Jo-Michael Scheibe, Conductor, Coral Gables Congregational Church (2003), recorded, edited, mixed, mastered.

*I Will Praise Him*, Kenon D. Renfrow, KDR4265 (2002), recorded, edited, mixed, mastered.

*Jerome Moross: Frankie and Johnny*, Hot Springs Music Festival Symphony Orchestra - Richard Rosenberg, Conductor, NAXOS 8.559086 (2002), recorded, edited, mixed, mastered.

*Favorite Cuban Music for Piano*, Conchita Betancourt, (2002), edited, mastered.

*Abrazame*, Calvary Chapel Miami: About Jesus, Calvary Chapel Miami (2002), recorded, mixed, mastered.

*Perlas Cubanas*, Rosa Vento, Roméo Records 7213 (2001), recorded, edited, mixed, mastered.

*Robert Xavier Rodríguez: Works for Chorus and Orchestra*, University of Miami Symphony Orchestra, University of Miami Chorale, Miami Children's Chorus, Albany Records TROY430 (2001), recorded, edited, mixed, mastered.

*Brazilian Music for Percussion Ensemble*, Ney Rosauero, Pró Percussão BR-USA (2000), recorded (track 7), edited, mixed, mastered.

*Latin Lovers*, Kirk Whipple & Marilyn Morales, KWMM CD004 (2000), recorded, edited, mixed, mastered.

*Danzas Para Dos Pianos*, Kirk Whipple & Marilyn Morales, KWMM CD003 (2000), recorded, edited, mixed, mastered.

*Louis Moreau Gottschalk: A Night in the Tropics*, Hot Springs Music Festival Symphony Orchestra - Richard Rosenberg, Conductor, NAXOS 8.559036 (2000), recorded, edited, mixed, mastered.

*Edmond Dédé: Orchestral Works*, Hot Springs Music Festival Symphony Orchestra - Richard Rosenberg, Conductor, NAXOS 8.559038 (2000), recorded, edited, mixed, mastered.

*Charles Lucien Lambert, Sr. - Lucien-Léon Guillaume Lambert, Jr.: Ouverture de Brocéliande and other works*, Hot Springs Music Festival Symphony Orchestra - Richard Rosenberg, Conductor, NAXOS 8.559037 (2000), recorded, edited, mixed, mastered.

*Hold Me Lord*, Calvary Chapel Miami, Calvary Chapel Miami (2000), mixed, mastered.

*Dennis Kam: All About Time*, Bergonzi String Quartet, Margaret Donaghue Flavin, Alan Ngim, Amy Tarantino, Living Artist Recordings Volume 7 (2000), recorded, edited, mixed, mastered.

*Four Hours*, United Musicians Project - Marienthal, Muzykant, Konopka, Głoński, WB Music 001P-WB (1998), recorded, mixed, mastered.

*15 Lat Bielskiej Orkiestry Kameralnej*, Various Artists, Janusz Kohut (1996), recorded, produced, edited, mastered.

*Muzyka w Bielsku-Bialej I*, Various Artists, Janusz Kohut (1996), recorded, produced, edited, mastered.

*Come into My Life*, Nanette Welmans, Raspberry Rock Records ICC 7430 (1993), recorded.

*The Best of Tomasz Żółtko*, Tomasz Żółtko, DEOrecordings DRC055 (1992), recorded, mixed.

*Music Narrations*, Janusz Kohut, BCK001 (1992), recorded.

*Dominika z wyspy poszukiwaczy prawd*, Tomasz Żółtko, DEOrecordings DR818 (1992), recorded, mixed.

*New Age*, Heavy Blues, Blue Records BR001 (1992), recorded, mixed, vocal performance.

*Bóg się rodzi*, Ewangelicki Chór Kościelny – Wisła-Jawornik, DEOrecordings DR773 (1991), recorded, produced.

*Jezus, najwyższe imię*, Anna Wieja, DEOrecordings DR772 (1991), recorded.

*Neopositive*, Stanisław Sojka, Janusz Janina Iwański, East Side Artists ESA-001 (1991), recorded.

*Radość i nadzieja*, Gaudium et Spes, DEOrecordings DR771 (1991), recorded, mixed.

*Twój dom wschodzącego słońca*, Józef Skrzek, DEOrecordings DR770 (1991), recorded, mixed.

*Bluish*, Tomasz Stańko - Arild Andersen - Jon Christensen, Power Bros 00113 (1991), recorded.

*Gdzie jesteś?*, Bogusław Haręza, DEOrecordings DR684 (1991), recorded, mixed.

*Listy do Karoliny*, Tomasz Żółtko, DEOrecordings DR665 (1991), recorded, mixed.

*Dzień dobry, dobranoc*, Grupa Studyjna, DEOrecordings DR627 (1991), recorded, mixed.

*Nakłoń ucha*, Bogdan Mizerski, DEOrecordings DR625 (1991), recorded, mixed.

*Teraz albo nigdy*, Grupa Muzyczna z Białegostoku, DEOrecordings DR624 (1991), recorded, mixed.

*Oddajcie Panu cześć*, Vang, DEOrecordings DR622 (1991), recorded, mixed.

*Warownym grodem*, Orkiestra i Chór Misyjny z Wisły, DEOrecordings DR620 (1991), recorded.

*Kolędowy czas*, Kiepurki i Józef Skrzek, DEOrecordings DR618 (1990), recorded, mixed.

*Oj, czarno widzę?*, Grupa Mojego Brata, DEOrecordings DR600 (1990), recorded.

*Bohater*, Heavy Blues, DEOrecordings DR599 (1990), recorded, mixed, produced, vocal performance.

*Panie, wierzę ci*, Hosanna, DEOrecordings DR573 (1990), recorded, mixed.

*Wędrujcie wzdłuż i wszerek*, Andrzej Tranda, DEOrecordings DR572 (1990), recorded, mixed.

*Ważne pytania*, Syløe, DEOrecordings DR530 (1990), recorded, mixed.

*Idź w stronę światłości*, Dobra Nowina, DEOrecordings DR523 (1990), recorded, mixed.

*...i stała się światłość*, Grupa Muzyczna z Białegostoku, DEOrecordings DR520 (1990), recorded, mixed.

*Pelengator*, Beata Bednarz, DEOrecordings DR509 (1990), recorded, mixed.

*W armii Chrystusowej*, Ostatnie Takie Trio, DEOrecordings DR508 (1990), recorded, mixed.

*Wspólne myśli*, Tomasz Żółtko, DEOrecordings DR507 (1990), recorded, mixed.

*Dobrze jest śpiewać Bogu naszemu*, Ben Chór, DEOrecordings DR505 (1990), recorded, mixed.

*Nie bój się*, Soli Deo Gloria, DEOrecordings DR486 (1990), recorded mixed.

*Niebo*, Piotr & Krzys, DEOrecordings DR472 (1990), recorded, mixed.

*Bóg moja pieśń*, Chór Męski z Goleiszowa, DEOrecordings DR428 (1989), recorded, produced.

*Czego chcesz od nas, Panie*, Chór Mieszany z Goleiszowa, DEOrecordings DR427 (1989), recorded, produced.

*Kolędy i pastoralki*, Grupa Mojego Brata, DEOrecordings DR390 (1989), recorded, mixed.

*Przyjdź*, Janusz Kohut, DEOrecordings DR388 (1989), recorded, mixed.