

GHOSTS BEFORE BREAKFAST  
FOR CHAMBER ENSEMBLE AND ELECTRONICS AND  
A HISTORY OF THE ELECTRONIC MUSIC STUDIOS OF  
THE UNIVERSITY OF IOWA (1964-2017)

by

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A thesis submitted in partial fulfillment  
of the requirements for the Doctor of  
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Thesis Supervisor: Professor Lawrence Fritts

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PH.D. THESIS

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## ABSTRACT

This dissertation is divided into two parts. Part 1 consists of the composition *Ghosts Before Breakfast* for chamber ensemble and fixed electronics. In this work I was interested in the creation of unity in the horizontal, vertical, and structural dimensions of a composition between the ensemble and the electronics and using electronic music techniques to gradually unify the ensemble and tape parts.

Part 2 consists of an investigation into the development of the Electronic Music Studios of the University of Iowa when James Cessna from the Department of Physics and Astronomy came up with a Master's Thesis project to design an Arbitrary Waveform Generator. An initial discussion with James Van Allen, James Cessna, Himie Voxman, and Philip Bezanson in 1964 led to the initiation of the program with the loan of equipment from the Department of Physics and Astronomy, the Collins Radio Company, and homemade devices. The outcome of this interdisciplinary project between the Department of Physics and Astronomy and the School of Music led to a transformation of the Composition Program, and the studios evolved into a nationally recognized center for the study of electronic music. Its legacy lives on through its students who have reaped the benefits of the program and made successful careers throughout the country from the development of studios at other colleges and universities to work for film industries in Hollywood and New York. A history of the Electronic Music Studios shall be discussed, through the professors who have directed this program, its facilities, its assistants who maintained the facilities, its students, its guests, and its performances.

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Part 2 consists of an investigation into the development of the Electronic Music Studios of the University of Iowa, when James Cessna from the Department of Physics and Astronomy came up with a Master's Thesis project to design an Arbitrary Waveform Generator. An initial discussion with James Van Allen, James Cessna, Himie Voxman, and Philip Bezanson in 1964 led to the initiation of the program with the loan of equipment from the Department of Physics and Astronomy, the Collins Radio Company, and homemade devices. The outcome of this interdisciplinary project would transform the Composition Program, and the studios would evolve into a nationally recognized center for the study of electronic music. Its legacy lives on through its students who have reaped the benefits of the program and made successful careers throughout the country from the development of studios at other colleges and universities to work for film industries in Hollywood and New York. A history of the Electronic Music Studios shall be discussed, through the professors who have directed this program, its facilities, its assistants who maintained the facilities, its students, its guests, and its performances.

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PART II: A HISTORY OF THE ELECTRONIC MUSIC STUDIOS OF  
THE UNIVERSITY OF IOWA (1964-2017)

## CHAPTER 1

### INTRODUCTION

The Electronic Music Studios (EMS) of the University of Iowa, located since 2016 in the basement of the Voxman Music Building in Iowa City, has been an essential component of the Composition Program since 1964. A part of the first wave of studios that were founded at universities throughout the Western Hemisphere in the 1950s, its program over the last fifty years has provided successes for numerous student composers, whose works have been performed at international, national, and regional conferences, including the International Computer Music Conference, the Society for Electro-Acoustic Music in the United States (SEAMUS), and Electronic Music Midwest (EMM). The program provides opportunities for students of the University of Iowa to stage performances of their compositions on a number of concerts presented each year. It is directed by a faculty member with considerable experience in the field of electronic music and is managed by two assistants from the Composition/Theory Area. They maintain a website that contains the Music Instrument Samples Database, which hosts recordings of instrument sounds that have been downloaded and used by countless numbers of composers, researchers, audio engineers, and scientists for the past twenty years. Through their expertise both the professor and the assistants work together to ensure that the old and new equipment in the Studios remain operational and usable for students and faculty who work there. They are the guardians of a legacy that has lasted more than half a century and continues to grow with the evolution of the program.

In spite of the successes that have resulted from this program only a handful of articles have been published concerning its development. A comprehensive paper has yet to be published concerning details of its history since 1976 when Peter Tod Lewis published an article for the *Interface* journal. The contents of its story have been mostly scattered with only fragments that can be found in newspaper articles, letters, and memories of the alumni who attended the University of Iowa. An historical overview of the development of these studios becomes necessary, not just to reconstruct the events that unfolded from this program, but also to preserve the memories of the students who studied here, so that their contributions may not be forgotten, especially if there is to be any comprehension of what the program represented to its students, what it has meant to those who are no longer present, and what it can reveal to those who may continue to write this story, however many years later that may be. Therefore, a study of this scope and depth is vital to the preservation of the history of this program for future generations.

To cover more than fifty years of its ongoing developments, this study on the Electronic Music Studios will begin with two chapters on the background on the affairs of electronic music in Iowa before 1964 and the origins of the Electronic Music Studios, which will include a discussion of the studio's first technical assistant, James Richard Cessna. This discussion proceeds with a chapter on the lives of each of the four main faculty members who have directed this studio and achieved the rank of associate professor or higher, in chronological order: Frank Robert Shallenberg (1964-69), Peter Tod Lewis (1969-82), Kenneth Louis Gaburo (1983-1991), and Lawrence Neil Fritts (1994-present). An additional chapter is included on visiting faculty members whose appointments lasted two years or less. Three chapters follow concerning the facilities

that housed the program, the accomplishments of the assistants who worked at the EMS, and an overview of the classes that were taught as part of this program. Chapter 12 focuses on the successes of the alumni and students who attended this program and an overview of the careers they have developed. This is followed by a discussion of the guest composers who have visited the University of Iowa and the SEAMUS 2002 National Conference, which the University of Iowa hosted. Chapter 14 on funding explores the means by which the program has maintained some semblance of a budget since 1996 to acquire new equipment and keep the program running smoothly. The final chapter is a critique of the impact that electronic music has had on the Composition Program and the Iowa City community, which includes discussions into the music, concerts, ensembles, and events that have shaped the direction of the Electronic Music Studios.

## CHAPTER 2

### HISTORICAL BACKGROUND

The dawn of electronic music came to Iowa City after World War II with the visits of two European giants in electronic music: Karlheinz Stockhausen and Luciano Berio. When Stockhausen came to the university on November 17, 1958, he discussed electronic music in his lecture “New Developments in Instrumental and Electronic Music” in North Hall of the Old Music Building.<sup>3</sup> His focus was on the “problems of mechanical reproduction of musical sound.”<sup>4</sup> The composer had spent two weeks since his arrival to the US at universities such as Columbia, Harvard, Juilliard, MIT, Syracuse, Princeton, and Michigan. By the time he came to Iowa City, he was on his fifteenth lecture and was moving on to colleges and universities in Los Angeles, San Francisco, the Pacific Northwest, and Canada. The composer spoke of symphonic and operatic literature, in general, as an outdated form of musical expression, a remnant of “bourgeois society...living on an old age pension.”<sup>5</sup> He played excerpts of the works of several composers, including three of his own: *Gruppen*, *Studie II*, and *Gesang der Jünglinge*.<sup>6</sup>

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<sup>3</sup> “German Composer to Lecture,” *The Daily Iowan*, October 30, 1958, <http://dailyiowan.lib.uiowa.edu/DI/1958/di1958-10-30.pdf>.

<sup>4</sup> “Electronic Music Advocate to Lecture at SUI Monday,” *The Daily Iowan*, November 13, 1958, <http://dailyiowan.lib.uiowa.edu/DI/1958/di1958-11-13.pdf>.

<sup>5</sup> Ted Rasmussen, “Stockhausen Music Lecture – Audience Surprised, Amused,” *The Daily Iowan*, November 18, 1958, <http://dailyiowan.lib.uiowa.edu/DI/1958/di1958-11-18.pdf>.



His lecture and the audience's reception to his lecture made such an impression on Ted Rasmussen, writer for the *Daily Iowan*, that it inspired him to write a second article on Stockhausen a week later. Only this time, he criticized his audience for their overenthusiastic acceptance of his music as art, for he claimed that they had "applauded him enthusiastically in a manner strikingly similar to the way today's socially motivated connoisseurs of the visual arts flock to acclaim the gimmicks of the paint-splashing modern artist."<sup>7</sup> Rasmussen was not the only reporter to be touched by Stockhausen's presentation. Another writer, Ogden Dwight, although more objective in his report of Stockhausen's lecture, noted how the young composer made some people in his audience uncomfortable:

A few persons, students and faculty members, were in one corner, ill at ease, watching the quivering needles and spinning reels of a magnetic tape recording unit.

Occasionally they looked up at the big grill covering the hidden loud – speakers above the piano on the front recital stand, glancing about nervously as if unable to absorb the unearthly sounds beating at their ears, sounds of the damned in hellish torture, sounds of madmen hammering a munitions factory to pieces with insane glee, sounds of technicians wrecking an electronic brain.<sup>8</sup>

Berio's visit to Iowa City two years later did not create as much of a stir as Stockhausen's, but his presentation of electronic music revealed that a number of people throughout the world were not yet ready to welcome electronic music with open arms. It

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<sup>6</sup> Ogden Dwight, "Are Noises of Today Music of the Future?," *The Des Moines Register*, November 23, 1958, 5.

<sup>7</sup> Ted Rasmussen, "Growing Piles of Obscure Driftwood: Are Exhibitionists Taking Over Art?," *The Daily Iowan*, November 26, 1958, <http://dailyiowan.lib.uiowa.edu/DI/1958/di1958-11-26.pdf>.

<sup>8</sup> Ogden Dwight, "Are Noises of Today Music of the Future?," *The Des Moines Register*, November 23, 1958, 1.

was during his lectures over a four-month period at a number of universities across the United States when the composer, who was then composer-in-residence at Tanglewood, made his first visit to Iowa City on May 17, 1960 with a presentation entitled “Form and New Musical Experiences.” His presentation focused on his approach to the creation of music for tape and included a performance of one of his own works: *Thema (Omaggio a Joyce)*. In his lecture he spoke of the different reactions people were making to electronic music and was in favor of strengthening in the future the connection between “synthetic and natural sounds.”<sup>9</sup> Anne Stearns for the *Daily Iowan* recorded his explanations for the various reactions people were making towards this new development in music:

The public reaction to electronic music has varied with the type of audiences, [Berio] said. “Music is subjected to the law of cultural development, like any other field. So when we go in a highly developed culture, we get a good reaction.

“But if the day before they have been playing only accordions, it is hard for them to accept.”

In Berio’s native Italy, the home of grand opera, audiences have often been offended by electronic music, he said. “There is a certain incompatibility between the two musical forms.” Musically there is not such a break, but a definite split appears on another level, that of ethics.

“Most opera-goers go not to listen to the opera—they know it by heart. They go to see if the tenor sings the high note well, or if the staging uses real swans,” he said.<sup>10</sup>

While many people in the US and Europe may not have been ready to embrace electronic music in the mid-20<sup>th</sup> century, its influence could be neither ignored nor dismissed. Iowa City as a bastion of liberalism in the state was no exception to this as its residents became increasingly exposed to electronic music. Electronic music could no

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<sup>9</sup> Anne Stearns, “Electronic Music Reactions Vary with Type of Audience,” *The Daily Iowan*, May 21, 1960, <http://dailyiowan.lib.uiowa.edu/DI/1960/di1960-05-21.pdf>.

<sup>10</sup> Ibid.

longer be regarded simply as a curiosity mentioned in newspapers or journals,<sup>11</sup> for it was gradually becoming absorbed into the city's progressive culture. Radio stations in Iowa City were providing opportunities for listeners to hear electronic music. In 1961 the WSUI station played music from the 1960 International Composers' Conference in Stratford, Ontario, which included electronic music by Berio, John Cage, Vladimir Ussachevsky, Henk Badings, and Otto Luening.<sup>12</sup> Electronic music was becoming a part of the contemporary music performed in concerts at the University of Iowa. Mario Davidovsky's "Synchronisms no. 1" was one of the earliest instances of a live performance of electronic music in Iowa City, which was performed in a concert by the Columbia Trio in July 1963, which included Iowa's alumnus Harvey Sollberger (BA 1960), Charles Wuorinen, and Joel Krosnick.<sup>13</sup> Other departments outside of the School of Music were giving presentations that incorporated electronic music. The Department of Dance gave a presentation that featured it during the Midwestern Dance Symposium in March 1964.<sup>14</sup> The students of the University of Iowa were coming into contact with the

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<sup>11</sup> One example of this was an article was published in 1955 by the *Iowa Alumni Review* on the RCA Electronic Music Synthesizer that had been built under the supervision of Iowa's alumnus in electrical engineering Harry F. Olson at the Acoustical and Electromechanical Research Laboratory at Princeton, New Jersey. One should refer to "This Engineer Makes Music By Machine," *Iowa Alumni Review* 8, no. 4 (1955): 7.

<sup>12</sup> "Good Listening – Today on WSUI," *The Daily Iowan*, January 31, 1961, <http://dailyiowan.lib.uiowa.edu/DI/1961/di1961-01-31.pdf>.

<sup>13</sup> "Columbia Trio to Appear Here," *The Daily Iowan*, July 23, 1963, <http://dailyiowan.lib.uiowa.edu/DI/1963/di1963-07-23.pdf>. This piece was also featured in a concert on October 20, 1965 in Iowa City. For more information, see "Classic and Modern Sounds to Be Heard in Flute Recital," *The Daily Iowan*, October 20, 1965, <http://dailyiowan.lib.uiowa.edu/DI/1965/di1965-10-20.pdf>.

<sup>14</sup> "Dance Symposium Here Friday; 200 to Attend," *The Daily Iowan*, March 4, 1964, <http://dailyiowan.lib.uiowa.edu/DI/1964/di1964-03-04.pdf>.

curious new medium and began to experiment with electronic equipment and produce musical results from it. In 1963 University of Iowa undergraduate student in music composition Charles Dodge and a friend of his built a small electronics lab that included two audio generators and tape recorders that were borrowed from the Department of Physics and Astronomy and the Department of Psychological and Brain Sciences to make sound effects for a play at the university theater.<sup>15</sup>

When the electronic music program was established at the University of Iowa, the medium of electronic music was relatively new to the United States and Canada. Only a handful of studios devoted to the study and advancement of electronic music had been in existence throughout North America as permanent official studios, permanent private studios, improvised official studios, or improvised private studios.<sup>16</sup> The permanent official studios to be installed in North America included the University of Illinois Experimental Music Studios in 1958, the Columbia-Princeton Electronic Music Center

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<sup>15</sup> Ed M. Thieberger and Charles Dodge, "An Interview with Charles Dodge," *Computer Music Journal* 19, no. 1 (1995): 13.

<sup>16</sup> The terms described above are borrowed terms from the *International Electronic Music Catalog* published in 1967 to categorize the number of studios that were in operation by the end of 1966. Hugh Davies's definition of "improvised" is used to describe the "equipment normally used for other purposes (such as in a radio station or recording studio), and is collected together into a 'studio' just for the realization of a composition." In such cases, the connotation of "improvised" is used to imply those studios that had only the bare minimum of equipment (such as a microphone and tape recorder) to operate. This term can be ambiguous especially when the question of the continuity of creative work in such a studio has to be considered. It is further complicated by the fact that composers have composed electronic music at studios that can be considered to have been realized in an "improvised" way that would lead up to a studio's "permanent" establishment. In some instances experimentation was the first activity before the production of real compositions occurred. The year attributed to each studio in this paragraph is given for the year in which it was permanently established. Improvised studios of particular note are also mentioned. For more information, one should refer to Hugh Davies, *International Electronic Music Catalog* (Trumansburg, New York: The Independent Electronic Music Center, Inc., 1968), xiii.

(CPEMC) in 1959,<sup>17</sup> the Electronic Music Studio of the University of Toronto (1959), the Brandeis Electro-Acoustics Music Studio (1961), and the Yale Electronic Music Studio (1962). Other studios, such as the Louis & Bebe Barron Studio (1948-1961) in Greenwich Village of Manhattan and the San Francisco Tape Music Center (1962-1966) were permanent private studios in the United States that moved to Los Angeles in 1962 and Mills College in 1967 respectively. Another private permanent studio, the Cooperative Studio for Electronic Music (1958-1966) in Ann Arbor, was founded by Gordon Mumma and Robert Ashley, who were also co-founders of the ONCE Festival (1961-1966), one of the earliest festivals to include electronic music in the Western Hemisphere. Its creation could be seen as the fulfillment of Stockhausen's 1958 visit to Ann Arbor when he urged the composition students at the University of Michigan to make the presentation of their music their responsibility.<sup>18</sup> This message seemed to take root in Ashley, Mumma, Roger Reynolds, and George Cacioppo (1926-1984), who left the international composers' conference in Stratford, Ontario in 1960 with the motivation to bring to fruition a festival of their own, which would attract guest composers such as Berio, John Cage, Eric Dolphy, Morton Feldman, Lukas Foss, Alvin Lucier, Pauline

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<sup>17</sup> Vladimir Ussachevsky and Otto Luening had begun their research project on electro-acoustic music in 1951, but they worked in an independent studio in various locations at Columbia University from late 1951 to 1959. The official Columbia-Princeton Electronic Music Center was not permanently established until 1959 through a Rockefeller Foundation Grant. One should refer to Nick Patterson, "The Archives of the Columbia-Princeton Electronic Music Center," *Notes: Quarterly Journal of the Music Library Association* 67, no. 3 (2011): 483-489. Additionally, though the CPEMC established in 1959 is a year younger than the Experimental Music Studios developed under Lejaren Hiller, in 1984 Hiller gave credit to Vladimir Ussachevsky and Otto Luening for developing the first electronic music studio in the Western Hemisphere in 1953-54. One should refer to Albert Dale Harrison, "A History of the University of Illinois School of Music, 1940-1970" (PhD diss., University of Illinois, 1986), 227.

<sup>18</sup> Kyle Gann, *Robert Ashley* (Champaign, IL: University of Illinois Press, 2012), 22.

Oliveros, David Tudor, LaMonte Young, and others.<sup>19</sup> The electronic music program at the University of Iowa was about to become part of the nationwide establishment of permanent studios that would be managed by numerous universities throughout the country.

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<sup>19</sup> Mark Clague, "ONCE. MORE.: an introduction by Mark Clague," *University of Michigan*, <http://ums.org/2010/10/28/once-more-an-introduction-by-mark-clague/>.

## CHAPTER 3

### THE ORIGINS OF THE EMS

The Electronic Music Studios at the University of Iowa were born neither from the womb of the Composition Program nor the School of Music. Rather, their creation was the consequence of the activities of the Department of Physics and Astronomy, its many programs emerging from the growth and development of technologies geared towards the advancement of the Space Race. The Department of Physics and Astronomy was one of the top programs in the country with James Van Allen, the discoverer of the Van Allen Belts in 1958, as its leader. The many astronomers and physicists working for the institution were designing scientific instruments to be used by many of the earliest unmanned spacecraft. As a leader in the study of radiation in interplanetary space, with satellites such as Pioneer 4 studying lunar radiation and Mariner 2 measuring radiation levels at Venus, the University of Iowa became a formidable contender for the proposed site of NASA's Electronics Research Center, a federally funded electronics expertise center for the Apollo program.<sup>20</sup> The Department of Physics and Astronomy was not alone in this fight, for within 20 miles of Iowa City the Collins Radio Company, one of the nation's largest electronics facilities in the 1960s, was developing communications equipment that would be used by US astronauts in Project Mercury, Project Gemini, and

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<sup>20</sup> "The Iowa City Area as a site for the proposed NASA Electronics Research Center," December 11, 1963, James Van Allen Papers, box 53, folder 10, University of Iowa Archives, Iowa City.

the Apollo program.<sup>21</sup> The Department of Physics and Astronomy also became a close neighbor of the School of Music when its newer larger building was completed in 1965 on the corner of North Dubuque Street and East Jefferson Street, next to the Electrical Engineering Building and within two blocks of the Old Music Building.

### **James Cessna**

Had the Department of Physics and Astronomy not been such an influential part of the space program in the 1960s, and had Van Allen not been such a towering presence at the University of Iowa, James Richard Cessna (b. 23 May 1939, Des Moines, Iowa – d. 11 March 1989, Los Alamos, New Mexico), an MFA physics student of Van Allen, may never have realized his interest in designing a synthesizer, a project that would put the university's electronic music program in motion. A native of Indianola, Cessna was a trombone player in high school and received the Arion Music Award.<sup>22</sup> As an undergraduate student at the University of Iowa, he remained connected to music as a concert band and marching band member. The young physics student attended the University of Iowa throughout his entire academic studies, first as an undergraduate student from the fall of 1958 to the summer of 1963, when he graduated with his Bachelor of Arts. As Cessna continued his studies as a Master's student in physics, James Van Allen noticed the quality of his work with electronics systems at the

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<sup>21</sup> Grant McLaren, "Rockwell Collins celebrates 80 years in the aircraft electronics business," *Pro Pilot*, [http://www.propilotmag.com/archives/2012/December%2012/A3\\_Rockwell\\_p2.html](http://www.propilotmag.com/archives/2012/December%2012/A3_Rockwell_p2.html).

<sup>22</sup> James R. Cessna, "Application for Admission to the Graduate College," *State University of Iowa*, June 16, 1963, James Van Allen Papers, box 363, folder 10, University of Iowa Archives, Iowa City.



Department of Physics and Astronomy, some of which was being used to decode data from satellites.<sup>23</sup> Prior to the academic year 1964-65 Cessna had acquired plenty of experience with electronics through several jobs, including in the summer of 1959 the Collins Radio Company.<sup>24</sup> In addition, he worked at the University of Iowa's Cosmic Ray Lab for several years from the summer of 1960 to 1963, where he produced a CDS detector under John W. Freeman's supervision and created digital electronics for several satellites, including Explorer 7, Injun 1, 2, and 3.<sup>25</sup> Cessna's interest to develop a digital synthesizer led to a conference on April 1, 1964 between James Van Allen, Himie Voxman, Philip Bezanson, James Cessna, and others to develop a joint music-physics project in the field of electronic music composition.<sup>26</sup>

### **Hiring a New Professor**

An opening for an assistant professor of music in the Music Theory Area, which coincided with Cessna's interest to build a synthesizer, was an opportune moment for the Composition Program to search for someone with the qualifications to lead the newborn program. At that time the Composition Program was separate from Music Theory. Both programs had separate heads until the 1970s. Thomas Sample Turner had been head of

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<sup>23</sup> James Van Allen, Letter to John C. Weaver, June 3, 1964, James Van Allen Papers, box 363, folder 10, University of Iowa Archives, Iowa City.

<sup>24</sup> James R. Cessna, Application for Graduate Appointment, *State University of Iowa*, September 18, 1962, James Van Allen Papers, box 363, folder 10, University of Iowa Archives, Iowa City.

<sup>25</sup> Ibid.

<sup>26</sup> James Van Allen, "Professional Journals and Diaries," James Van Allen Papers, Box 373, Folder 7, University of Iowa Archives, Iowa City.

the Music Theory Area since the 1940s.<sup>27</sup> Bezanson, Professor of Music at the University of Iowa, who had been Head of the Composition Program since 1954, was resigning his position in August 1964 to assume his new position as chair of the Department of Music at the University of Massachusetts,<sup>28</sup> and Richard Hervig took his place.<sup>29</sup> Hervig, better known as the founder of the university's Center for New Music, was faced with the daunting challenge of assembling an electronic music studio that could be directed by someone possessing the following two qualifications: 1) a PhD in theory and/or composition, and 2) "unqualified scholarship and teaching ability," with preference given to someone with proficiency in electronic music.<sup>30</sup> Bezanson's departure opened a position in music theory, and there were expectations that the new employee would teach theory courses, particularly graduate analysis.<sup>31</sup> Like Van Allen and Bezanson, Hervig was in favor of developing a new electronic music studio, not only as a means to stimulate creativity in his composition students, but also to foster possible research into "musical aesthetics and psychology, and even in the field of communications theory."<sup>32</sup> The April 1965 article of *The Daily Iowan* noted that Van

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<sup>27</sup> "Local News Shorts," *Adams County Free Press*, March 3, 1955, <https://www.newspapers.com/image/51884619>.

<sup>28</sup> "Farewell with Music Salutes Dr. Bezanson," *Iowa Alumni Review* 17, no. 6 (1964): 19.

<sup>29</sup> Hervig, Letter to Gunther Schuller, April 7, 1964, Richard Hervig Papers, box 1, University of Iowa Archives, Iowa City.

<sup>30</sup> Richard Hervig, Letter to Milton Babbitt, April 7, 1964, Richard Hervig Papers, box 1, University of Iowa Archives, Iowa City.

<sup>31</sup> Hervig, Letter to Gunther Schuller, April 7, 1964.

Allen and Bezanson<sup>33</sup> both believed electronic music was an important part of contemporary music and should be included in the composition curriculum.<sup>34</sup> Hervig described the initiation as a “modest program” in his letters to a number of composers across the United States in early April 1964.<sup>35</sup>

Before the fall semester of 1964, Hervig noted that Iowa’s Composition Program was “more or less in the dark” with respect to electronic music.<sup>36</sup> No one in the composition faculty had any previous experience in the medium.<sup>37</sup> Hervig sent letters in April 1964 to Gunther Schuller, Milton Babbitt, Vladimir Ussachevsky, Charles Wuorinen, Gordon Binkerd, and Lejaren Hiller for recommendations for 1) a qualified person to direct the new studios, 2) equipment, and 3) books. Only three candidates with previous experience in electronic music were known to have applied, expressed interest,

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<sup>32</sup> Richard Hervig, Letter to Albert T Luper, July 29, 1964, Richard Hervig Papers, box 1, University of Iowa Archives, Iowa City.

<sup>33</sup> In a conversation with Robert Shallenberg, Lawrence Fritts recalled that funding for the studios came about when James Van Allen made a request to the School of Music so that his student, James Cessna, could build a synthesizer as a realization of his thesis. See Charity Nebbe and Lindsey Moon, “Electronica’s Roots: the First Digital Synthesizer Built on Iowa Campus,” *Iowa Public Radio* Sep. 24, 2014. <http://iowapublicradio.org/post/electronicas-roots-first-digital-synthesizer-built-iowa-campus#stream/0>.

<sup>34</sup> “Composers Use Electronics For Music of the Space Age,” *The Daily Iowan*, April 27, 1965, <http://dailyiowan.lib.uiowa.edu/DI/1965/di1965-04-27.pdf>.

<sup>35</sup> Richard Hervig, Letter to Gunther Schuller, April 7, 1964, Richard Hervig Papers, box 1, University of Iowa Archives, Iowa City. This is the earliest date in which Richard Hervig mentions the electronic music program directly.

<sup>36</sup> Richard Hervig, Letter to Milton Babbitt, April 7, 1964, Richard Hervig Papers, box 1, University of Iowa Archives, Iowa City.

<sup>37</sup> Richard Hervig, Letter to Vladimir Ussachevsky, April 7, 1964, Richard Hervig Papers, box 1, University of Iowa Archives, Iowa City.

or to be recommended for the position: Bülent Arel, Robert Ceely, and Robert Shallenberg. These three men were all former students of Babbitt. However, only Shallenberg had a PhD in composition. Babbitt praised Shallenberg with “the highest personal and professional regard” as “a very strong-minded and strong-willed musician, whose conscientiousness and sense of responsibility...deeply impressed me.”<sup>38</sup> However, Babbitt gave his highest praise to Arel, “probably the greatest virtuoso of the tape medium as well as a first-rate technician and studio executive.”<sup>39</sup> A composer, Arel had been involved with the development of the electronic music program at Yale University in 1961. Ussachevsky too endorsed him and regarded his compositions to be of “the highest workmanship and imaginative quality.”<sup>40</sup> Incidentally, in the same letter, Ussachevsky wrote lightheartedly that he would have considered himself as a possible contender for the position if he were “not considered so old-fashioned by such people as Mr. Cage and Co.”<sup>41</sup> Following his meeting with Hervig at the Midwest Composers Symposium at Urbana, Illinois on April 17, 1964, Shallenberg was appointed as the first professor to direct the Electronic Music Studios. Ceely was never given serious consideration as he mentioned his interest in the program months after Hervig made his decision to consider Shallenberg as the studio’s first director,<sup>42</sup> who accepted the position

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<sup>38</sup> Milton Babbitt, Letter to Richard Hervig, April 19, 1964, Richard Hervig Papers, box 1, University of Iowa Archives, Iowa City.

<sup>39</sup> Ibid.

<sup>40</sup> Vladimir Ussachevsky, Letter to Richard Hervig, April 17, 1964, Richard Hervig Papers, box 1, University of Iowa Archives, Iowa City.

<sup>41</sup> Ibid.

with the understanding that he would assist Cessna with the development of his synthesizer.<sup>43</sup> The selection of a graduate from the University of Illinois Urbana-Champaign for this position helped to forge a link between the electronic music programs at Iowa and Illinois in the 1960s. Hervig considered the program at Illinois to be a model for Iowa. In fact, Hervig compared the equipment from the Department of Physics and Astronomy to the equipment used in Illinois and explicitly mentioned that the work of Lejaren Hiller at Illinois' Experimental Music Studios and an article that Hiller wrote inspired partly the idea of creating an electronic music studio.<sup>44</sup>

### **The Arbitrary Waveform Generator and the Assistantship**

The interaction between the Department of Physics and Astronomy and the School of Music was significant in that it was one of the first collaborations between the two programs. The byproduct of this collaboration of the program in its first years was the Arbitrary Waveform Generator (AWG), which Cessna developed from August 1964 to August 1965. This instrument was designed to be a real-time waveform device that could “synthesize any periodic waveform with a very good accuracy” and contained circuitry that would enable “the period of this synthesized waveform to be the same as the period of a controlling source.”<sup>45</sup> It was a waveform converter that could manipulate

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<sup>42</sup> Richard Hervig, Letter to Robert Ceely, August 25, 1964, Richard Hervig Papers, box 1, University of Iowa Archives, Iowa City.

<sup>43</sup> “History,” *University of Iowa Electronic Music Studios*, <http://theremin.music.uiowa.edu/history.html>.

<sup>44</sup> Richard Hervig, Letter to Lejaren Hiller, April 9, 1964, Richard Hervig Papers, box 1, University of Iowa Archives, Iowa City.

the waveform of an external sound source, not just a synthetic sound device, such as a square wave or sine wave generator. When it received an input signal, the AWG took a period of the waveform, divided it into 96 equal parts, and stored the waveform values of the amplitude at each of the 96 time points into a memory bank. A 96-element sequence generator then converted the data that was stored into a memory bank, and the output of that data became a close approximation of the chosen waveform. The waveform was subsequently filtered so that a smooth curve of the waveform could be drawn from one time point to another without creating any noticeable gaps in the sound. This time-sampling technique was used to create harmonics. With this synthesizer Cessna was able to work with up to 16 harmonics and fundamental frequencies in the range of 40 – 4000 Hz. In the conclusion of his thesis Cessna wrote that his synthesizer had limitations that could only be addressed by a computer:

The Arbitrary Waveform Generator in its present form...has obvious limitations in that waveforms cannot be changed rapidly. It does, however, provide very accurate numerical control over waveshape parameters for the steady state while still remaining a relatively simple piece of equipment. This was the objective of this project and herein lies its value. The only other instrument (known to the author) capable of synthesizing arbitrary waveforms with equal accuracy is the digital computer itself.<sup>46</sup>

This level of sophistication was comparable to two technological developments in the United States that preceded Cessna's synthesizer: the MUSIC IV by Max Mathews in 1962 and James Beauchamp's Harmonic Tone Generator in 1964. MUSIC IV was fourth in a series of Music-N computer programs produced by Mathews at Bell Labs to synthesize sound by a computer. Developed on the IBM 7094, it was capable of creating

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<sup>45</sup> James R. Cessna, "The Design of a System for the Generation of Arbitrary Periodic Waveforms in the 40 cps to 4 kc Range," MA Thesis, University of Iowa (1965), 16.

<sup>46</sup> Ibid., 52.

an instrument with unit generators that could be programmed to include oscillators, mixers, and envelope generators to create an output with a complex waveform.<sup>47</sup> In comparison James Beauchamp's Harmonic Tone Generator, which was developed at the University of Illinois in 1964 as his PhD project in electrical engineering, was a synthesizer built on the idea of having greater timbral control. It used additive synthesis and allowed a composer to control independently the amplitude of a waveform up to six harmonics for any given tone, and the fundamental frequency range of the instrument spanned from 0 to 2400 Hz.<sup>48</sup> His synthesizer was based on a radio signal processing technique known as heterodyning by mixing two input signals resulting in the production of two frequencies that are the sum and difference of the input signals.<sup>49</sup> The Harmonic Tone Generator was also designed so that a keyboard could be used at the composer's discretion for pitch control, which Cessna's synthesizer did not have.<sup>50</sup>

Although quite sophisticated for its time, the AWG suffered from two particular problems. A composer could not control the phase or amplitude of any waveform in real time. Adjusting either of the two parameters required the composer working with the synthesizer to alter all 96 of the Fourier components that had been stored in its memory banks.<sup>51</sup> The more fatal problem was the instrument's delicacy. The synthesizer was

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<sup>47</sup> Hubert S. Howe, Jr., "Music and Electronics: A Report," *Perspectives of New Music* 4, no. 2 (1966): 72.

<sup>48</sup> James Warren Beauchamp, "Electronic Instrumentation for the Synthesis, Control, and Analysis of Harmonic Musical Tones" (PhD diss., University of Illinois, 1965), 49.

<sup>49</sup> *Ibid.*, 36.

<sup>50</sup> Beauchamp, "Electronic Instrumentation for the Synthesis," 60.

easily susceptible to damage if any input voltage to the instrument exceeded its specifications. Because of this vulnerability its life in the early years of the EMS was cut short. Peter Tod Lewis attributed the synthesizer's demise to a student's faulty judgment when it was connected accidentally into a 220V outlet.<sup>52</sup> When he wrote *The Composer's Manual* as a guidebook for EMS students in 1970, the synthesizer was no longer mentioned in any equipment list, which would suggest that it was damaged beyond repair. The ultimate fate of the synthesizer is unknown. It was known to have been in the Studios when the Harper Hall dedication at the Voxman Music Building took place on September 30, 1972. Peter Elsea recalled that the synthesizer was no longer in the Studios when he returned to the University of Iowa in 1972.<sup>53</sup>

While the Electronic Music Studio at the University of Iowa was under development, a research assistantship was granted by the University of Iowa's Graduate College. In the 1960s the duties of the research assistant included "maintenance and repair of existing studio equipment, and possibly development of new devices, as well as consultation regarding technical matters with composers...beginning work in the studio," as well as an interest in the ongoing developments of contemporary music.<sup>54</sup> The assistant could register for up to 12 credit hours per semester at in-state tuition rates. These positions were at first maintained by students with experiences in physics and/or

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<sup>51</sup> Cessna, "The Design of a System for the Generation of Arbitrary Periodic Waveforms," 18.

<sup>52</sup> Peter Tod Lewis, "Electronic Music at the University of Iowa," *Journal of New Music Research* 5, no. 3 (1976): 151.

<sup>53</sup> Peter Elsea, e-mail message to author, July 24, 2016.

<sup>54</sup> F. Robert Shallenberg, Letter to Lejaren Hiller, April 29, 1968, University of Iowa Electronic Music Studios Archives, Iowa City, Iowa.



electrical engineering. The original request for this assistantship appeared to be the cooperative work of Voxman and Van Allen, who wrote to Dean John C. Weaver to request a half-time assistantship at 20 hours per week for James Cessna. Van Allen's proposed assistantship included a stipend of \$3000, which would be dispersed at \$250 per month to cover two months of the 1964 summer and the academic year 1964-65.<sup>55</sup> The assistantship Cessna received was originally a half-time assistantship jointly granted by the Department of Physics and Astronomy the School of Music. This required Cessna to apply for two research assistantships, one from the Department of Physics and Astronomy and the other from the School of Music, to which he applied on April 28, 1964, approximately two weeks after the School of Music deadline for all assistantships.<sup>56</sup> Cessna was awarded ultimately \$2250 from the Graduate College for a 9-month research assistantship from September 1, 1964 to June 1, 1965 due to funding limitations.<sup>5758</sup>

Once James Cessna successfully defended his Master's Thesis on July 23<sup>59</sup> and graduated with his Master of Science degree in August 1965, he continued to work at the

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<sup>55</sup> James Van Allen, Letter to John C. Weaver, June 3, 1964, James Van Allen Papers, box 363, folder 10, University of Iowa Archives, Iowa City.

<sup>56</sup> James R. Cessna, "Application for Graduate Appointment," *State University of Iowa*, April 28, 1964. The deadline for an assistantship application in the School of Music in 1964 was April 15.

<sup>57</sup> John C. Weaver, Letter to James Van Allen, June 10, 1964, James Van Allen Papers, box 363, folder 10, University of Iowa Archives, Iowa City.

<sup>58</sup> James R. Cessna, "Employment Record," *State University of Iowa*, James Van Allen Papers, box 363, folder 10, University of Iowa Archives, Iowa City.

University of Iowa from 1966 to 1970 as a PhD student in electrical engineering. In the summer of 1966, he was appointed full-time as a design engineer in the Department of Physics and Astronomy and the Department of Electrical Engineering. In 1970 he successfully defended his dissertation called “Steady State and Transient Analysis of a Class of Digital Phase-Locked Loops Employing Coarse Amplitude Quantization and Sequential Loop Filters,” which was inspired by his work on the “development of a satellite telemetry detection system” for Injun satellites I, II, and III.<sup>60</sup> He left the University of Iowa in August 1970 to take a position with the US Environmental Science Services Administration (ESSA) at the Space Disturbances Laboratory in Boulder, Colorado.<sup>61</sup> He was later considered for promotion to “a senior position in the NOAA Environmental Research Laboratories.”<sup>62</sup> Near the end of his life Cessna worked on the Galileo Spacecraft and developed the original time-of-flight circuitry for the Energetic Particles detector composition telescope.

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<sup>59</sup> “Candidates for Advanced Degrees at the 1965 August Convocation,” *University of Iowa*, James Van Allen Papers, box 363, folder 10, University of Iowa Archives, Iowa City.

<sup>60</sup> James R. Cessna, “Steady State and Transient Analysis of Digital Phase-Locked Loops Employing Coarse Amplitude Quantization” (PhD diss., University of Iowa, 1970), iii.

<sup>61</sup> James R. Cessna, Letter to James Van Allen, June 4, 1970, James Van Allen Papers, box 363, folder 10, University of Iowa Archives, Iowa City.

<sup>62</sup> Wilmot N. Hess, Letter to James Van Allen, March 30, 1972, James Van Allen Papers, box 363, folder 10, University of Iowa Archives, Iowa City.

## CHAPTER 4

### FRANK ROBERT SHALLENBERG

The first director of the Electronic Music Studios, Frank Robert Shallenberg, born on May 26, 1930 in the small town of Guthrie, Oklahoma, was the son of Frank Felix and Mollie D (née Nicholson) Shallenberg. His father, a German immigrant from Mühlhausen, was a World War I veteran and the manager of a filling station in Guthrie, while his mother was a public schoolteacher. He received his first degrees from Phillips University at Enid, Oklahoma in 1953, where he earned a Bachelor's in Music Education with a specialization in woodwinds and a Bachelor's in composition and theory. He earned his Masters at the University of Illinois, Urbana-Champaign in 1957 and his DMA in 1963. While at the University of Illinois, he studied electronic music and was a contributor to the development of the Experimental Music Studios in the late 1950s,<sup>63</sup> where in 1959 he realized "Three Electronic Studies," an 8-minute composition in collaboration with composer James A. Hoffman. As a student he had studied composition with Milton Babbitt at Tanglewood in the summer of 1958 and at the Princeton Seminar for Advanced Study, Eugene Ulrich at Phillips University, and Robert Kelly and Kenneth Gaburo at the University of Illinois Urbana-Champaign.

Before his arrival to Iowa City, Shallenberg had amassed a diverse teaching portfolio. He had been an instructor for the United States Naval School of Music in

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<sup>63</sup> "Composers Use Electronics," 5.

Washington, DC.<sup>64</sup> From 1959 to 1960 he worked at Phillips University teaching woodwind instruments and other music classes and was conductor of the Enid Symphony Orchestra.<sup>65</sup> From 1960 to 1962 he was an Instructor of Music at Lincoln University in Jefferson City, Missouri.<sup>66</sup> At this time he was also listed in the *Jefferson City Post-Tribune* as the director of woodwinds.<sup>67</sup> After two years of work in Jefferson City, the composer was appointed Assistant Professor of Music at Illinois Wesleyan University in the fall of 1962<sup>68</sup> and taught classes in composition and music literature until 1964.

### **University of Iowa (1964-69)**

When Shallenberg arrived as an Assistant Professor of Music Theory in the fall of 1964, he had a number of responsibilities involving teaching and supervising. He taught courses in undergraduate music theory, graduate analysis, and electronic music, including 25:190 “Special Studies” in the summers, which was a seminar on set theory.<sup>69</sup> Through

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<sup>64</sup> Frank Robert Shallenberg, “Aspects of Pitch Emphasis in Twelve-Tone Works of Arnold Schoenberg” (DMA diss., University of Illinois Urbana-Champaign, 1963), 117.

<sup>65</sup> “State Briefs,” *The Daily Oklahoman*, August 17, 1959, <https://newspaperarchive.com/oklahoma-city-daily-oklahoman-aug-17-1959-p-22>.

<sup>66</sup> *The Archives (Lincoln University Yearbook - 1961)*, (Jefferson City, MO: Lincoln University, 1962), 16.

<sup>67</sup> “Clarinet Choir in Sunday Concert,” *Jefferson City Post-Tribune*, February 16, 1962, <https://www.newspapers.com/image/23685609>.

<sup>68</sup> “15 Professors Join Wesleyan’s Faculty,” *The Argus*, September 21, 1962, [http://collections.carli.illinois.edu/cdm/ref/collection/iwu\\_argus/id/13388](http://collections.carli.illinois.edu/cdm/ref/collection/iwu_argus/id/13388).

<sup>69</sup> Richard Hervig, Letter to Ernesto Pellegrini, May 13, 1965, box 1, University of Iowa Archives, Iowa City.

his interest in computers he taught computer language and the musical coding process.<sup>70</sup> This course, during the 1966-67 academic year, was a seminar called “Music Research and the Computer,” a 3-semester-hour course that focused on “current applications of high-speed digital computers to research in music theory, history, and composition.”<sup>71</sup> This seminar was divided into two courses in the 1968-69 academic year with the beginning course taught by Shallenberg and the advanced course taught by musicologist Frederick Crane. Crane’s class emphasized individual research projects.<sup>72</sup> Shallenberg’s students learned SNOBOL-4 and focused on the analysis of music using an IBM 360/67 computer that was located at the Physics Research Center (now known as Van Allen Hall). He earned tenure and was later promoted to Associate Professor in the spring semester of 1967.<sup>73</sup>

His most important and perhaps challenging role at the University of Iowa was to develop the first program of electronic music in the state. Shallenberg designed and taught two classes of electronic music, one as an introduction to electronic music and the other as an advanced course for students to do creative work. His years at the studios were described by Peter Tod Lewis to have been spent mostly in the form of acoustic research with limited composition making.<sup>74</sup> However difficult it may have been for composers to do creative work, Iowa’s Electronic Music Studio, Shallenberg explained in

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<sup>70</sup> Joyce McDonald, “Computer Center,” *Iowa Alumni Review* 21, no. 1 (1967): 12.

<sup>71</sup> *University of Iowa General Catalog: 1967* (Iowa City: University of Iowa, 1967), 161.

<sup>72</sup> *University of Iowa General Catalog: 1969* (Iowa City: University of Iowa, 1969), 191.

<sup>73</sup> “87 UI Faculty Members Promoted,” *The Daily Iowan*, May 16, 1967, <http://dailyiowan.lib.uiowa.edu/DI/1967/di1967-05-16.pdf>.

<sup>74</sup> Peter Tod Lewis, “Electronic Music,” 150.

1965, had become “a kind of musical instrument in itself. Our instruments can produce sounds that neither the composer nor the listener has ever heard before.”<sup>75</sup> In his classroom, care for the equipment was everything, as his former student Will Parsons recalled in one of the written messages on a chalkboard: “Maintenance takes precedence over all.”<sup>76</sup> Besides assisting Cessna with his thesis, he was giving presentations of electronic music to the community of Iowa City. On January 9, 1967, he gave a 3-hour lecture/program of electronic music at the Unicorn Coffee House<sup>77</sup> and another lecture on electronic music entitled “New Music” on February 12, 1969 for the Music Study Club.<sup>78</sup> Shallenberg was also the first advisor for electronics at the Center for New Music from its inaugural season in the fall of 1966. When he was assisting the ensemble with the tape recording and playback of a concert of electronic music in 1967, he pointed out that electronic music was providing composers a new way of looking at, creating, and shaping music, as quoted in an issue from the *Iowa City Press-Citizen*:

“Electronic music is no longer a curiosity,” says Shallenberg, “but a new method of working with the traditional materials of music. Just as a non-objective sculptor works with the old materials in a new way, so the electronic music composer uses the basic principles of music – balance, unity, and variety – in creating an entirely new form.”<sup>79</sup>

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<sup>75</sup> Tim Callan, “A Sweet Rasp-ody,” *Iowa Alumni Review* 18, no. 4 (1965): 10.

<sup>76</sup> Dave Olive, Michael Lytle, and Will Parsons, interview by Lawrence Fritts, September 15, 2015.

<sup>77</sup> “Roll Call,” *Iowa City Press-Citizen*, January 5, 1967, 7.

<sup>78</sup> “New Music Lecture Scheduled,” *Iowa City Press-Citizen*, February 8, 1969, 16.

<sup>79</sup> “Electronic Music Concert Scheduled Here on Feb. 10,” *Iowa City Press-Citizen*, February 2, 1967, 7.

## Indiana University (1969-72)

In the summer of 1969, Shallenberg left Iowa City with an understanding that he would assist Iannis Xenakis with the development of the Center for Mathematical and Automated Music (CMAM) at Indiana University in the fall of 1969. Charles Wolcott Turner explained in his dissertation *Xenakis in America* that Peter DeLone, who was chair of the Department of Music Theory at Indiana University, recruited Shallenberg in the spring of 1969.<sup>80</sup> He began his three-year appointment as Associate Professor of Music in the School of Music in September 1969.<sup>81</sup> Turner further explained that Shallenberg was listed as Assistant Director of the CMAM in a brochure possibly dated to the spring of 1970 and took Xenakis's place in "certifying grades from the T400 'Introduction to Electronic Music Techniques,'" which was taught by Xenakis's teaching assistant Wilson Allen.<sup>82</sup> Another teaching assistant Tom Wood, who had been a graduate student at Indiana University, took over this teaching responsibility in 1970 when Allen was not rehired.<sup>83</sup> In addition to his responsibilities to the CMAM, Shallenberg was teaching courses in music theory and acoustics.<sup>84</sup>

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<sup>80</sup> Charles Wolcott Turner, "Xenakis in America" (PhD diss., Indiana University, 2014), 126.

<sup>81</sup> "Minutes of the Board of Trustees of Indiana University, 25 July 1969," *Indiana University*, July 25, 1969, <http://webapp1.dlib.indiana.edu/iubot/view?docId=1969-07-25>.

<sup>82</sup> Turner, "Xenakis in America," 126-7.

<sup>83</sup> *Ibid.*, 130.

<sup>84</sup> "Robert Shallenberg," *Discogs*, <https://www.discogs.com/artist/5051329-Robert-Shallenberg>.

Xenakis had begun his appointment in 1967 as part-time Associate Professor of Electronic Music at Indiana University in the School of Music.<sup>85</sup> Within a year, he was reappointed to serve both as part-time Associate Professor of Electronic Music and as Director of the Center for Mathematical and Automated Music.<sup>86</sup> Xenakis taught music composition for five years at Indiana University. In a telephone interview with Bruce Duffie on March 25, 1997, Xenakis spoke of his indifference in the compositions of his students:

I was teaching and I did not care about what the students were doing. Of course I would tell them that is not important or that is more interesting and so on, but I did not want to put myself in between what they are doing and what the result was.<sup>87</sup>

Xenakis was developing his studies of computer music and was keenly interested in pursuing his theories of digital stochastic synthesis. His plan was to acquire a digital-to-analog converter, which only three universities possessed in the late 1960s: the Columbia-Princeton Electronic Music Center (CPEMC), the University of Illinois, and Stanford University. Possibly because there was anticipation that Yuji Takahashi, a pianist who collaborated with Xenakis in Europe in the mid-60s, would be joining the School of Music faculty as Assistant Director of CMAM and Teacher of Piano in the fall of 1971, the Dean of the School of Music Wilfred Bain decided not to renew

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<sup>85</sup> “Minutes of the Board of Trustees of Indiana University, 22 September 1967,” *Indiana University*, September 22, 1967, <http://webapp1.dlib.indiana.edu/iubot/view?docId=1967-09-22>.

<sup>86</sup> “Minutes of the Board of Trustees of Indiana University, 07 June 1968,” *Indiana University*, June 07, 1968, <http://webapp1.dlib.indiana.edu/iubot/view?docId=1968-06-07>.

<sup>87</sup> Bruce Duffie, “Composer Iannis Xenakis: A Conversation with Bruce Duffie,” *Bruce Duffie*, <http://www.bruceduffie.com/xenakis.html>.



Shallenberg's three-year appointment,<sup>88</sup> yet Takahashi's appointment was terminated at the conclusion of the spring 1972 semester. Although uncertain of what had transpired, Turner believed that Takahashi's brief career at Indiana was a consequence of budget cuts and a surprisingly low turnout of students to study with him.<sup>89</sup> His termination from Indiana dealt a sharp blow to Xenakis, and the inability of the School of Music to retain the pianist on the faculty was a significant reason for his resignation from Indiana University in May 1972, even if he could withstand the other shortcomings of the university that contributed to his decision: the failure of the university to provide him with a mathematician and programmer, insufficient funding for CMAM, inadequate studio maintenance, and not enough student representation from other disciplines.<sup>90</sup> James Harley, a composer and researcher on Xenakis, pointed out the opportunity that Xenakis received upon the obtainment of funds from Paris in 1972 to advance his research into digital stochastic analysis. Harley believed that this new money trail was highly influential for Xenakis to leave the comforts of the United States.<sup>91</sup> Xenakis had also received a commission worth 12,000 Francs that same year to write a 90-minute composition for the Festival d'Automne de Paris: *Le Polytope de Cluny*.<sup>92</sup>

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<sup>88</sup> Charles Wolcott Turner, "Xenakis in America" (PhD diss., Indiana University, 2014), 131.

<sup>89</sup> Ibid., 134-5.

<sup>90</sup> Ibid., 136.

<sup>91</sup> James Harley, *Iannis Xenakis: Kraanerg* (Farnham: Ashgate, 2015), 29.

<sup>92</sup> Turner, "Xenakis in America," 138.

## Later Years (1972-2005)

Nearing the end of his academic career, Shallenberg was slowly beginning to adopt a new way of life away from it, a path that he would follow for the remainder of his life. His presence in academic music waned when he could no longer obtain the same opportunities that he found at Iowa and Indiana. According to his son Kenneth Shallenberg, he worked for a year at the University of Western Ontario.<sup>93</sup> He never taught electronic music at the University of Western Ontario, but he taught courses in composition and music theory.<sup>94</sup> From 1973 to 1974, Shallenberg was a Lecturer in the Department of Music at the University of California, San Diego.<sup>95</sup> Kenneth Shallenberg wrote that his father was encouraged by Gaburo to come to UCSD and assist with the setup of the young Center for Music Experiment and Related Research (CME).<sup>96</sup> However, Roger Reynolds, the founding director of CME, stated that the composer taught Schenkerian analysis; he had “no substantive relationship” to the organization.<sup>97</sup> Gaburo and Shallenberg collaborated on two works in California: “Privacy two: My, My, My, What a Wonderful Fall”<sup>98</sup> and the 1976 publication of “The Flight of the sparrow”<sup>99</sup> from *Lingua I*. In both cases Shallenberg did not participate as a composer, but as a

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<sup>93</sup> Kenneth Shallenberg, e-mail message to author, March 10, 2017.

<sup>94</sup> Ann Hutchison, e-mail message to author, March 26, 2017.

<sup>95</sup> *UCSD 1973-1974 General Catalog*, (La Jolla, CA: UCSD, 1973), 221.

<sup>96</sup> Kenneth Shallenberg, e-mail message to author, March 10, 2017.

<sup>97</sup> Roger Reynolds, e-mail message to author, March 17, 2017.

<sup>98</sup> Kenneth Shallenberg, e-mail message to author, March 10, 2017.

<sup>99</sup> Library of Congress, *Catalog of Copyright Entries: Third Series, Dramas and Works Prepared for Oral Delivery, January-June 1976* (Washington, DC: GPO, 1977), 122.

photographer. He took still photographs of the dancers, which were incorporated into Gaburo's score. He wrote two articles that were published by the *Perspectives of New Music*, a review of Hubert Howe's *Electronic Music Synthesis* in 1975 and "For Kenneth Gaburo: A Personal Note" in 1979.

After leaving UCSD, Shallenberg adapted completely to a change of lifestyle by working a number of different jobs outside academia. When he lived near Mokelumne Hill around 1975, he and his wife ran a shop called "The Mother Lode" for tourists and cowboys, where he made stained glass windows and drove a mail route out of San Andreas. Around 1980, he moved to Oceanside, California, where he was a factory worker, photographer, and piano tuner and rebuilder.<sup>100</sup> In 1988 he was part of a group that tuned 88 pianos for the halftime show at Super Bowl XXII.<sup>101</sup> He lived out the rest of his life quietly and died in Oceanside, California on February 16, 2005.

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<sup>100</sup> Kara Shallenberg, e-mail message to author, March 8, 2017.

<sup>101</sup> Susan Shroder, "Piano team tunes up for Super Bowl," *San Diego Union-Tribune*, January 19, 1988, <http://infoweb.newsbank.com>.

## CHAPTER 5

### PETER TOD LEWIS

When Peter Tod Lewis became Director of the Electronic Music Studios, he oversaw a significant expansion for Iowa's electronic music program that came from his leadership, his dedicated students, and the acquisition of new equipment. Through his efforts he brought international recognition to the program and continued to meet its ever-growing needs.

#### **Early Years (1932-69)**

Unlike his predecessor, Lewis came from a more affluent and musical background. Although born in Charlottesville, Virginia on November 6, 1932, most of the composer's childhood was spent in Scotch Plains, New Jersey. Around the age of 13, in 1945, his family moved to Wrightwood, California. His father Donald Earle Lewis, a Baptist minister, was not a professional musician, but he had experience as an arranger and composer. His mother Mary Josephine (née Bond) Lewis worked primarily as a schoolteacher in San Bernardino, CA and Westerly, Rhode Island, and she performed as a semi-professional singer and cellist in the orchestras of Plainfield, the University of Virginia, and the San Bernardino Valley College. Together, they directed the Oak Knoll summer camp in California to train young children in music.<sup>102</sup> His paternal grandfather, Nathan Earle Lewis, a graduate of Hoboken's Stevens Institute of Technology, was a

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<sup>102</sup> "Snow Doesn't Worry Woman Member of Valley Orchestra," *The San Bernardino County Sun*, February 20, 1949, <https://www.newspapers.com/image/49461959>.

mining engineer for The Babcock & Wilcox Company, a boiler factory in Plainfield City, New Jersey and a co-inventor for safety improvements to an oil burning apparatus.<sup>103</sup> His paternal grandmother Elizabeth (née Allis) Lewis was an amateur pianist for the Seventh Day Baptist Church. Peter's maternal grandfather, the Rev. Ahva J. C. Bond, D. D., was dean of the Department of Theology and Religious Education at Alfred University in Albany, NY. His brother, Geoffrey Bond Lewis, was an actor who shared the screen with Robert Redford (*The Green Waldo Pepper*, 1975), Sean Connery (*The Wind and the Lion*, 1975), and Clint Eastwood (*High Plains Drifter*, 1973). Similarly, Geoffrey's daughter, Juliette Lewis, also joined the acting profession and was nominated for an Academy Award and Golden Globe for Best Supporting Actress in Martin Scorsese's 1991 remake of *Cape Fear*. Additionally, his sister, Nancy Peck, was a professional dancer in New York City, and her husband Richard Peck was a saxophonist and member of the Philip Glass Ensemble.

A fascinating point to be made of Lewis's place of residence in Scotch Plains was its proximity to the homes of Kenneth Gaburo and Donald Martino in the 1930s. At that time Lewis was living at 1018 Leland Avenue, while Gaburo lived only 15 miles away at 519 1<sup>st</sup> Avenue in Raritan, New Jersey. Martino's childhood home at 1236 Florence Ave in Plainfield, New Jersey was even closer, approximately 2.3 miles away, which made him and Lewis almost next-door neighbors.

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<sup>103</sup> Nathan E. Lewis and Thomas B. Stillman, Oil-burning apparatus, U.S. Patent 1492135 A filed March 30, 1922, and issued April 29, 1924.

Lewis attended a number of schools throughout his life. He studied at the highly competitive Phillips Academy in Andover, Massachusetts from 1947 to 1948.<sup>104</sup> He spent more than a year at the San Bernardino Valley College before he served as a corporal in the 4<sup>th</sup> Armored Division at Fort Hood, Texas between June 1953 and 1955.<sup>105</sup> When he returned from the army, Lewis studied composition at the University of California, Santa Barbara (B.A. 1958) with Roger Chapman, and at U.C.L.A. (M.A. in 1959) with Lukas Foss. He pursued post-graduate study of composition through a teaching fellowship at Brandeis University with Arthur Berger and Irvine Fine and at Westminster Choir College in Princeton, NJ. While Lewis himself acknowledged that he did a year of doctoral work at Brandeis, he made the decision not to continue the pursuit of his doctoral degree because he preferred to “go out on his own and compose than be a formal music scholar.”<sup>106</sup> According to the American Composers Alliance, he is also said to have studied with Morton Feldman. In 1961 he received the Margaret Lee Crofts Scholarship to study composition at Tanglewood<sup>107</sup> with Roberto Gerhard (a pupil of Arnold Schoenberg) and Wolfgang Fortner. His successes continued with his association with the Huntington Hartford Foundation in 1962, where he studied composition with John Nathaniel Vincent Jr., and his residence at the MacDowell Colony in 1963. After

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<sup>104</sup> *Catalogue of Phillips Academy* (Andover, MA: Phillips, 1947), 150, [https://archive.org/details/catalogueofphill00phil\\_12](https://archive.org/details/catalogueofphill00phil_12).

<sup>105</sup> “With County Men in Services,” *The San Bernardino County Sun*, February 27, 1955, <https://www.newspapers.com/image/49267057>.

<sup>106</sup> Mary Zielinski, “Different Kind of Sound: U of Iowan Creates Electronic Tones,” *The Cedar Rapids Gazette*, February 28, 1971, 4B.

<sup>107</sup> “Nationally-Known Composer Joins SIU at Edwardsville,” *Alton Evening Telegraph*, September 24, 1968, <https://www.newspapers.com/image/433295>.

his paternal grandfather died, Lewis used the funds left to him to travel to Europe upon the completion of his residency at the MacDowell Colony. For two years he lived abroad gaining experience that would further develop his work. His travels from 1963 to 1965 took him to France, Germany, England, and eventually the island of Mallorca, Spain, where he lived in the small village of Deià.<sup>[108][109]</sup> It was at Mallorca where Lewis found the quietude and isolation to compose, and he stated that the experiences from his stay in Mallorca enabled him to develop his craft as a composer more than he had anticipated.<sup>110</sup> With these compositions he returned to the United States because he had the feeling that these compositions were ready for public performance.<sup>111</sup>

Shortly after his return, Lewis began his teaching career at the Philadelphia Music Academy from 1966 to 1968. He served both as an instructor in theory/composition and as the academy's public relations coordinator. Additionally, he was a special consultant for the board of education for Philadelphia public schools. When Lewis arrived, the academy was designing its first electronic music studio with a Moog synthesizer. Lewis noted that it was at this academy where he first met Robert Moog,<sup>112</sup> He also met Andrew

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<sup>108</sup> "Peter Tod Lewis," *American Composers Alliance*, <https://composers.com/peter-tod-lewis>. This source cites 1962-3 as the years that he lived in Spain. This is in conflict with footnote 108 from the program notes of the *Tanglewood Music Center Yearbook* published in 1969.

<sup>109</sup> Boston Symphony Orchestra, "Program Notes," *Tanglewood Music Center Yearbook*, (Lenox, Mass: Boston Symphony Orchestra, 1969), 511, <https://archive.org/stream/tanglewoodmusicc1969bost#page/n509/mode/2up/search/%22peter+tod+lewis%22>.

<sup>110</sup> Mary Zielinski, "Different Kind of Sound," 4B.

<sup>111</sup> *Ibid.*

Rudin, one of the directors of this studio.<sup>113</sup> Although never the studio's director himself, Lewis had access to the studio and was able to compose his first electronic works with the Moog. The composer is also credited for establishing the academy's first jazz workshop, the Philadelphia Musical Academy Jazz Workshop.<sup>114</sup> A week after the first PMA jazz concert on January 15, 1967, he married Herminia "Pipina" Prieto, a native of Argentina, on January 23, 1967 in Philadelphia.<sup>115</sup>

Lewis's time was greatly occupied by his new responsibilities in the Midwest when he moved to Clayton, Missouri in 1968. He had two jobs lasting one year each. For his first job, the Metropolitan Education Center in the Arts (MECA) in St. Louis, Missouri appointed him to be its first composer-in-residence at the Metropolitan Education Center in the Arts. MECA, formed in 1967 through funding from the Elementary and Secondary Education Act, was created to foster programs that were in existence in the arts in schools within the metropolitan area of St. Louis, including public, private, and parochial schools. In its second year MECA launched a music composition

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<sup>112</sup> "Electronic concert tonight," *Iowa City Press-Citizen*, November 23, 1976, 8A, <https://www.newspapers.com/image/205000971>.

<sup>113</sup> Lewis acknowledged Andrew Rudin and Robert Moog at his 40<sup>th</sup> Annual Scorpio Celebration on November 6, 1972. More information on this can be found at Peter Tod Lewis, "The 40<sup>th</sup> Annual Peter Lewis Scorpio Celebration," *University of Iowa Electronic Music Studios* (6 Nov., 1972), <http://theremin.music.uiowa.edu/Archived%20Concert%20Programs/40th.Annual.Scorpio.Celebration.November.6.1972.pdf>.

<sup>114</sup> "Concert Chorale Set for SIU," *The Edwardsville Intelligencer*, April 17, 1969, <https://www.newspapers.com/image/2644704>.

<sup>115</sup> Nan Seelman, "An artist with a sense of humor," *Iowa City Press-Citizen*, November 4, 1982, 2A, <https://www.newspapers.com/image/206933901>.



program, and Lewis was hired to work there on a half-time basis.<sup>116</sup> His responsibilities included instructing junior high and high school students interested in music theory and composition in St. Louis and teaching a musicianship class on Saturday mornings at Washington University.<sup>117</sup> He traveled to two different universities and three high schools, including Southern Illinois University-Edwardsville, Washington University, the Community Music School, McKenzie High School, and McCluer High School.<sup>118</sup> For his second job he was appointed composer-in-residence at Southern Illinois University-Edwardsville, where he taught orchestration and 20<sup>th</sup> century music.<sup>119</sup> In addition, he was an art critic for the Alton Evening Telegraph. While mainly giving critiques on music concerts, he wrote about other disciplines, including a performance of the National Ballet of Canada.<sup>120</sup>

### **Lewis at Iowa City (1969-76)**

In the summer of 1969, Lewis moved to Iowa City to begin his work as Assistant Professor of Music Theory at the University of Iowa and to direct the Electronic Music

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<sup>116</sup> “End of Project Year Report, 1967-70,” *Education Resources Information Center*, <http://files.eric.ed.gov/fulltext/ED081676.pdf>.

<sup>117</sup> “Nationally-Known Composer Joins SIU at Edwardsville,” *Alton Evening Telegraph*, September 24, 1968, <https://www.newspapers.com/image/433295>.

<sup>118</sup> With 33 students initially enrolled in his classes, about 15 compositions and 50 exercises were created during Lewis’s residency. One should refer to “End of Project Year Report, 1967-70,” *Education Resources Information Center*, <http://files.eric.ed.gov/fulltext/ED081676.pdf>.

<sup>119</sup> “SIU Composer’s Work to be Given Premiere,” *The Edwardsville Intelligencer*, November 14, 1968, <https://www.newspapers.com/image/26518526>.

<sup>120</sup> Peter Lewis, “Dance: National Ballet of Canada,” *Alton Evening Telegraph*, December 9, 1968, <https://www.newspapers.com/image/454708>.

Studios. His arrival in Iowa City coincided with the creation of the Center for New Performing Arts (CNPA), a project to foster greater interdisciplinary relationships within the Division of Performing Arts, which included the School of Music, as well as the areas of art, theater, film, dance, and creative writing. Initiated as a pilot project in September 1969, the CNPA enabled the Center for New Music to play a greater role in the realization of interdisciplinary activities and productions that were of interest to university faculty and individual artists who desired interdisciplinary collaborations as a means to enhance their artistic visions. Within the first year of its existence, the Center for New Performing Arts received a \$25,000 grant from the Rockefeller Foundation.<sup>121</sup> The success of this program in its first year persuaded the Rockefeller Foundation to award an additional \$440,000 grant that would continue the project from September 1970 to 1975.<sup>122</sup> Lewis would end up touring with the Center for New Music throughout the Midwest to demonstrate the Moog Synthesizer and represent the capabilities of the electronic music program throughout the state of Iowa.

As a teacher, Lewis did not follow a strict outline in terms of his curriculum. His focus was on the students. He was guided by the belief that “beyond a certain point, the direction of a class is determined by its students.”<sup>123</sup> He was also known for his sense of humor, as Lowell Cross with praise recalled:

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<sup>121</sup> “Center for New Performing Arts Planned at Iowa,” *Iowa City Press-Citizen*, August 25, 1969, <https://www.newspapers.com/image/206352109>.

<sup>122</sup> “Performing Arts Center Receives \$440,000 Grant,” *Iowa City Press-Citizen*, April 17, 1970, <https://www.newspapers.com/image/205619788>.

<sup>123</sup> Peter Tod Lewis, Letter to Edouard Forner, November 22, 1974, University of Iowa Electronic Music Studios Archives, Iowa City, Iowa.

Most of his humor came out as one-liners... They were very spontaneous, and dealt usually with the immediate situation. Most of the really keen, penetrating examples of his humor would have been only something you could appreciate right on the spot.<sup>124</sup>

Former students of Lewis remembered him spending his Monday evenings recording, composing, and editing in the studios. Dave Olive, who studied with him at the School of Music in the late 1970s, recalled that he would sit in his office thinking for a considerable period of time and then abruptly run into the studios and begin working. With this nightlong work habit Lewis would spend his Tuesdays at home resting and then resume his teaching duties the very next day.<sup>125</sup> Another former student, Michael Farley, had similar observations of his working methods as a composer:

As Peter became engrossed in a composition, the entire studio became his personal instrument. Through several days and nights he would refine the instrument until it began to take on its own momentum. He sought an instrument which would continually unfold new materials on its own, responding only in a limited manner to the control of the composer. Recording constantly, he would generate a vast amount of material; then he would edit in order to create the sudden, seemingly non-rational changes which he sought in his music.<sup>126</sup>

Another student, Peter Elsea, recalled that he was accommodating to a variety of musical styles, but he also had very high expectations of audio quality:

Peter was accepting of a wide range of styles (he played jazz piano), but was a stickler for quality—and not just audio quality. He was always looking for something within the music he couldn't quite elucidate. He asked for evolution of material, and stressed rhythmic and tuning accuracy (but hated quantizing of any kind). He didn't teach any serialism (students brought that from [William] Hibbard), but he was a real Stockhausen fan. We all studied *Kontakte* and *Aus*

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<sup>124</sup> Nan Seelman, "An artist with a sense of humor," *Iowa City Press-Citizen*, November 5, 1982, 2A, <https://www.newspapers.com/image/206933901>.

<sup>125</sup> Dave Olive, Michael Lytle, and Will Parsons, interview by Lawrence Fritts, September 15, 2015.

<sup>126</sup> Michael Farley, "Notes for 'Music of Peter Tod Lewis'," *DRAM*, <https://www.dramonline.org/albums/music-of-peter-tod-lewis/notes>.

*den sieben Tagen*...he described his own music as a series of gestures, and encouraged a moment-to-moment structure. He had no interest in pop music...<sup>127</sup>

Farley's recollection of the composer's teaching methods were similar to Elsea's: that Lewis would encourage his students to listen and to be open to experimentation, which played an important role in his music:

His works are open-ended and expansive as was his teaching. I remember the excitement I felt as he turned to the ancient Moog synthesizer and began to demonstrate a patch he had just discussed. I remember him once mugging while pretending to file his fingertips like a safecracker, and the loving manner in which he touched the instrument. As he began to refine and shape a sound, he drifted away, listening carefully and marveling at where his experiments took us. The point of the lesson was the method, the necessity of diving in and getting your hands dirty, and the necessity of hearing the intricate details of the sound you create.<sup>128</sup>

His favorite device in the Studios was the Bode Ring Modulator, and his favorite synthesizer was the Moog. Elsea recalled how he treated the instrument:

His approach to using the Moog was to start patching things. You'd think he was patching at random. Basically, he'd patch a couple of cords so he could get a basic sound and then he'd start modifying that sound by moving the cords around...and then pretty soon you got to the point where you couldn't see the instrument because of the patch cords. And, at that point, he would listen to it for a while because it always involved the sequencer and things were cooking along like crazy, and then he'd start to look at it, listen to it for a while, and then he'd stare at it, and then he'd begin to remove patch cords. His goal was to remove it in such a way that the sound did not shut off until he removed the last patch cord.<sup>129</sup>

One of Veronica Voss Elsea's (M.A. composition, 1977) fondest memories of Lewis was a composition for tape, which was remembered for its use of a particular chair in the Studios:

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<sup>127</sup> Peter Elsea, e-mail message to author, March 18, 2017.

<sup>128</sup> Michael Farley, "Notes for 'Music of Peter Tod Lewis'," *DRAM*, <https://www.dramonline.org/albums/music-of-peter-tod-lewis/notes>.

<sup>129</sup> Peter Elsea and Veronica Voss Elsea, interview by the author, May 9, 2017.

One of my favorite sessions in class – this was really famous at the time – that Peter Lewis was really known for was the chair, and he had this piece based on a squeaky chair that was in Studio 1 that got so much play, and everybody was trying to recreate it, and nobody could do what Peter Lewis could do with that chair.<sup>130</sup>

Of the many interests that Lewis had in music, he had one long-term goal: to move the studios from the analog to the digital world. He had a considerable interest in the digital control of all operable parameters. The first step towards this goal was the acquisition of the Moog Complement B (the 960 Sequencer, 961, and 962 modules) in the fall of 1970. However, this alone was insufficient. The computer was something that Lewis strongly felt was needed for the music program. He wrote of his desire to acquire a small computer while discussing one of his earliest inspirations for the progression to the digital control of electronics from a visit in 1972 to the University of Illinois:

We are embarking presently on a very heavy program of instrument and circuit design, and building, all digitally controllable. I have just recently returned from the University of Illinois where I saw and heard Ed Kobrin's impressive "music machine." We are presently using a Moog Sequencer Complement B to do (almost) all of what Mr. Kobrin's system will do—and more—but further exploration gets us into computers.<sup>131</sup>

This interest in digital control came from Lewis's research into a technique he called "sound-in-motion," which he described in a letter to Charles Mason, Dean of the Graduate College at the University of Iowa, as a means by which "a variable-speed sequencer coordinates the movement of an audio signal (music) through a series of speakers."<sup>132</sup>

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<sup>130</sup> Ibid.

<sup>131</sup> Peter Tod Lewis, Letter to Digital Equipment Corporation, March 16, 1972, University of Iowa Electronic Music Studios Archives, Iowa City, Iowa.

His residence in Western Europe in the second half of 1975 was one of his most productive and rewarding trips during his lifetime. The prolonged stay in Europe was made possible in February 1975 with an invitation from the Institute of Sonology in Utrecht to conduct research in electronic music. In addition, he was awarded a faculty research assignment used towards his projects in Utrecht.<sup>133</sup> Beginning in May of 1975, the composer was travelling for performances of his works at a number of festivals, including, just before his trip to Europe, the *Semaine de musique nouvel* in Montreal in May and the 5<sup>th</sup> International Festival of Experimental Music in Bourges for two weeks in June, during which he gave a paper on Iowa's Electronic Music Studios and his compositions, which was subsequently published in *Faire 4/5*. From mid-September to early December, while at the Institute of Sonology, he was able to realize three compositions for 4-channel tape: "The Call," "Screen" study, and "Perpertusa." In addition, he gave class presentations to students and conducted a "research project with a PDP-15 computer and hybrid sound generation program."<sup>134</sup> He visited the Studio for Electronic Music of the West German Radio, the Institute for Psychoacoustics and Electronic Music in Ghent, Belgium, and later the *Groupe de recherches musicales* (GRM) in Paris. Beginning December 12, he spent a month-long residency at the *Groupe de musique experimentale de Bourges* (GMEB), where he was able to realize an

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<sup>132</sup> Peter Tod Lewis, Letter to Charles Mason, June 29, 1972, University of Iowa Electronic Music Studios Archives, Iowa City, Iowa. This Charles Mason should not be confused with composer Charles Norman Mason, who is Professor of Music Composition and Theory of the Frost School of Music at the University of Miami.

<sup>133</sup> Duane C. Spriestersbach, Letter to Professor Peter Lewis, February 14, 1975, University of Iowa Electronic Music Studios Archives, Iowa City, Iowa.

<sup>134</sup> Peter Lewis, Letter to Duane C. Spriestersbach, March 1, 1976, University of Iowa Electronic Music Studios Archives, Iowa City, Iowa.

additional three compositions for tape: “Objets,” “Farben” (for which he also adapted to text), and “...dessus de noun, autour de nous.”<sup>135</sup> When he returned to the University of Iowa in January 1976, he had completed four of the five moments of “Perpertusa.” Lewis noted that he realized the first, third, and fourth movements at the Institute of Sonology. He later completed the second movement at the GMEB and the final movement at the University of Iowa.<sup>136</sup> The completion of this work was unexpected for Lewis, who later recounted that he came to the Netherlands with very different expectations:

I had not expected to finish a composition at the Institute. At best I planned to generate source material for later assemblage at home. I had brought some work produced in the studio at the University of Iowa, and intended to experiment with various kinds of control and modification. I was interested, especially, to derive control voltages from a single source—perhaps constructing a control tape—with which to modify parameters of another.<sup>137</sup>

Lewis’s fondness of a warmer climate remained with him throughout his life.

When opportunity for a teaching position further south presented itself, he would seize it. One of his reasons was the compositional productivity that a warmer climate provided.<sup>138</sup> In fact, he and his wife, who shared his predilection for a warmer climate, had their own

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<sup>135</sup> Ibid.

<sup>136</sup> Peter Tod Lewis, “The Electronic Music Studios and the Center for New Performing Arts present *Perpertusa*,” *University of Iowa Electronic Music Studios*. (11 Dec., 1976), <http://theremin.music.uiowa.edu/Archived%20Concert%20Programs/EMS.Concert.12.11.1976.pdf>.

<sup>137</sup> Peter Tod Lewis, *Perpertusa: Genesis, Articulation, Obsessions* (San Gabriel Etla, Oaxaca, Mexico), July 5, 1978, University of Iowa Electronic Music Studios Archives, Iowa City, Iowa.

<sup>138</sup> Peter Tod Lewis, Letter to Robert J. Werner, February 21, 1976, University of Iowa Electronic Music Studios Archives, Iowa City, Iowa.

summer and winter retreat in Oaxaca, Mexico.<sup>139</sup> Once, in 1976, when the University of Arizona sent out a Faculty Vacancy for a composer specializing in experimental and electronic music, he applied for that position and designed a 5-year proposal for two electronic music studios, largely inspired by his experiences with equipment at the University of Iowa, such as the ARP 2600, the Quad RV-10s, and a one-third octave equalizer for his proposed studio 1, and a Buchla Electric Music Box and Buchla interface that would connect to a small computer or microprocessors in his proposed studio 2.<sup>140</sup> In his correspondence with Robert J. Werner, Director of the School of Music at the University of Arizona, some tentative visiting arrangement for Lewis seemed to be in progress for 1977,<sup>141</sup> but his plans to leave Iowa ultimately came to a halt. Even with his complaints about “the relative isolation of living in the sticks...unable to establish or nurture useful connections in the Marketplace, especially as regards recordings,” the University of Iowa’s new music community and program kept him tied to his teaching position in the Midwest.<sup>142</sup>

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<sup>139</sup> Peter Tod Lewis, Letter to Kenneth Gaburo, May 15, 1978, University of Illinois Sousa Archives.

<sup>140</sup> Peter Tod Lewis, “EM at UA,” Summer, 1976, University of Iowa Electronic Music Studios Archives, Iowa City, Iowa.

<sup>141</sup> Peter Tod Lewis, Letter to Robert J. Werner, November 4, 1976, University of Iowa Electronic Music Studios Archives, Iowa City, Iowa.

<sup>142</sup> Peter Tod Lewis, Letter to Atlantic Records, October 16, 1973, University of Iowa Electronic Music Studios Archives, Iowa City, Iowa.



## Later Years (1976-82)

His successes at the University of Iowa continued to build in the later years of his career. He was a visiting composer at Yale University and was awarded the Sanford Fellowship in November 1976.<sup>143</sup> Lewis's efforts to gain national recognition for the Electronic Music Studios and the successes of his compositions and his students aided him in his promotion to full professor in February 1979.<sup>144</sup> Through a grant awarded by the University of Iowa Foundation, he attended Electronic Music Week hosted by the Conservatorium Sweelinck at Amsterdam in May 1980 for the opening of its new electronic music studio, where he gave an hour-long presentation of his works and a discussion of Iowa's Electronic Music Studios and Cross's VIDEO/LASER system. Based on what he was told, Lewis claimed his presentation to have the largest turnout of the week with approximately 600 people in attendance.<sup>145</sup> Shortly after this event, he was invited as guest composer at the Oberlin Conservatory for a week with performances of his works. Alongside Max Mathews of Bell Labs and John Chowning of Stanford University, Lewis was one of three selected to evaluate and make recommendations as a consultant for the school's new Technology in Music and Related Arts Program.<sup>146</sup> In 1981 he was awarded 2<sup>nd</sup> place in the Fourth Annual Kennedy Center Friedheim Awards

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<sup>143</sup> Peter Tod Lewis, "Resume of Professional Activities from 1976 to present," ca. Nov 1978, Peter Tod Lewis Papers, box 1, University of Iowa Archives, Iowa City.

<sup>144</sup> Himie Voxman, Letter to Howard Laster, February 13, 1979, Peter Tod Lewis Papers, box 1, University of Iowa Archives, Iowa City.

<sup>145</sup> Peter Tod Lewis, Letter to Larry Eckholt, May 8, 1980, Peter Tod Lewis Papers, box 1, University of Iowa Archives, Iowa City.

<sup>146</sup> Ibid.

for his solo piece “Bricolage,” which was premiered by solo percussionist Steven Schick.<sup>147</sup>

In the spring of 1981 Lewis went on sabbatical to Ossabaw Island, an artist’s colony on the coast of Georgia, to finish a commission he had received from the Da Capo Players in New York City.<sup>148</sup> He had also been invited to the Annual Bowling Green State University music festival from April 24 to April 25, 1981.<sup>149</sup> By the fall of 1981, he returned to Iowa City, where, according to Cross, he underwent operations and “other medical ‘treatments’.”<sup>150</sup> By June 1982 he and his wife moved to La Jolla, California to continue his recovery from cancer.<sup>151</sup> In the last few months of his life, Lewis described the toll that his cancer was having upon his physical condition:

...I’m nearly overwhelmed by the sheer amount of recovery I have ahead of me. In the past months I had lost over 50 pounds, OK? I look like a ghost, what little hair remains is snow-white. When the Salibians visited me in the hospital, it was really difficult to talk; they were, I’m sure, so appalled by my appearance.<sup>152</sup>

He died of cancer on Wednesday, November 3, 1982 in La Jolla, California. He realized more compositions at the Electronic Music Studios at the University of Iowa than any

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<sup>147</sup> “Professor is first,” *The Day*, October 5, 1981, 14.

<sup>148</sup> John Hill, ed., “Electronic Music.” *Segue: The University of Iowa School of Music Newsletter* 22, no. 1 (Spring 1981): 3.

<sup>149</sup> “Annual BG music festival this month,” *Defiance Marketeer*, April 13, 1981, 17.

<sup>150</sup> Lowell Cross, Letter to Kenneth Gaburo, December 28, 1982, University of Iowa Electronic Music Studios Archives, Iowa City, Iowa.

<sup>151</sup> Peter Tod Lewis, Letter to Richard Hervig, June 6, 1982, Richard Hervig Papers, box 1, University of Iowa Archives, Iowa City.

<sup>152</sup> Peter Tod Lewis, Letter to Richard Hervig, June 29, 1982, Richard Hervig Papers, box 1, University of Iowa Archives, Iowa City.

other composer with an output of 47 compositions in the span of 11 years, including “Manestar” (1969), “Sound-messe III” (1972), and “Bricolage” (1979-80).

## CHAPTER 6

### KENNETH GABURO

At the time Kenneth Gaburo was offered to direct the Electronic Music Studios, while Peter Tod Lewis was still alive, he initially accepted a position as a visiting professor for the spring semester of 1983. His appointment was perceived at first to be a temporary, rather than a permanent, position, for hope of Lewis's recovery from cancer remained. Nevertheless, the two composers shared this discussion in the summer of 1982 and were in agreement that a stronger form of leadership was necessary while Lewis convalesced in La Jolla, California. Gaburo conveyed his interest in the position in his letter to Marilyn Somville, Director of the School of Music at the University of Iowa:

Peter Lewis has spoken to me recently regarding his deep-felt concerns for the Electronic Music Studio at Iowa. I am informed that he has spoken to you and Dick Hervig, and has proposed that I "stand in" for him during his absence. It is my understanding that this would be for the second semester of this coming academic year. Peter has suggested that I write to you and Dick concerning my interest.

To be sure, I would be most pleased to be of service. Peter and I are quite agreed that the integrity of the studio, thus far established, as well as its further development, be maintained and advanced.<sup>153</sup>

He was offered the position in the summer of 1982<sup>154</sup> and began his appointment in January 1983.<sup>155</sup>

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<sup>153</sup> Kenneth Gaburo, Letter to Marilyn Somville, July 6, 1982, Richard Hervig Papers, box 1, University of Iowa Archives, Iowa City.

<sup>154</sup> Kenneth Gaburo and William DeFotis, "Excerpts from a Correspondence with Kenneth Gaburo and William DeFotis," *Perspectives of New Music* 33, no. 1 (1995): 74.

Apart from his reputation as a composer and conductor, Gaburo's familiarity to Iowa's School of Music was indisputable, and his accomplishments as a composer, writer, and choral director unquestionable. He had been acquainted with Iowa City since the 1960s. In one of his earliest visits to Iowa City in 1967, his New Choral Music Ensemble I gave a concert of works by a number of 20<sup>th</sup>-century composers.<sup>156</sup> During the month of March 1970, while Richard Hervig was on a semester leave of absence, he assumed the composer's teaching responsibilities during the school's composer-in-residence program.<sup>157</sup> He returned to the University of Iowa a year later to direct a concert with his New Music Choral Ensemble III in late March 1971<sup>158</sup> and as a visiting composer to the Electronic Music Studios in late April 1981.<sup>159</sup> Of equal importance for Gaburo's appointment at Iowa was his friendship to Lewis and the strength of their friendship, to the degree that it motivated the composer to make a plea to Gaburo to take over his position. In particular, they had been acquainted for more than twelve years, and they had known each other by the time of Gaburo's visit to Iowa in March 1970.

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<sup>155</sup> Deborah A Millsap, e-mail message to author, May 3, 2017.

<sup>156</sup> "Ensemble to Present Experiments in Music," *The Daily Iowan*, November 11, 1967, 6, <http://dailyiowan.lib.uiowa.edu/DI/1967/di1967-11-11.pdf>.

<sup>157</sup> "Composers Wuorinen and Gaburo to Teach Here," *The Daily Iowan*, February 17, 1970, 6. Wuorinen took over for Gaburo the month of April 1970.

<sup>158</sup> "Gaburo's New Work Will Be Presented at Museum," *Iowa City Press-Citizen*, March 18, 1971, <https://www.newspapers.com/image/205550227>.

<sup>159</sup> "Multimedia music presentation will feature composer Gaburo," *The Daily Iowan*, April 24, 1981, <http://dailyiowan.lib.uiowa.edu/DI/1981/di1981-04-24.pdf>.

## Early Life

Kenneth Louis Gaburo, the Somerville, New Jersey native born to Amedio and Isabelle (née Bernardi) Gaburo of Italian heritage on July 5, 1926, was a man of eclectic tastes from a young age. Growing up in Raritan, Gaburo was fluent in multiple languages and had a penchant for literature. He was exposed to music early on through his mother, who was a soprano and church organist at the Church of Our Lady of Lourdes in Whitehouse Station. In addition to the piano, he was involved in a large number of activities, including his high school's Dance Band and orchestra, wrestling, football, honor society, student council, debate, fireman, and Hi-Y (local chapter of Y.M.C.A.).<sup>160</sup> Shortly after his June 16, 1943 graduation from Somerville High, he began his studies at the Eastman School of Music studying composition with Bernard Rogers, but he could not avoid the call to active service in World War II for long. In less than a year, in June 1944, he was drafted into the air force for two years. While he was initially trained to be a tail gunner for a B-17 Flying Fortress,<sup>161</sup> his skills as a musician became noticed, and he subsequently toured with opera companies of the United Service Organizations (USO) in the Philippines and Japan and made jazz band arrangements.<sup>162</sup>

Following two years of military service, Gaburo returned to his studies at Eastman and earned his Master of Music degree in composition and piano in 1949. He continued his studies in composition from 1954 to 1955 with Goffredo Petrassi at the Accademia di Santa Cecilia in Rome on a Fulbright Scholarship. When he returned to

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<sup>160</sup> *Pioneer*, (Somerville, NJ: Somerville High School, 1943), 19.

<sup>161</sup> "Begins Gunnery Study," *The Courier-News*, March 12, 1945, 2.

<sup>162</sup> "Composer Joins Music Department," *The Kent Stater*, January 25, 1950, 1.

the United States, he attended the University of Illinois from 1955 to 1962 and studied composition with Burrill Phillips and Hubert Kessler, and he earned his Doctor of Musical Arts degree with his dissertation on “Studies in Pitch Symmetry in Twentieth Century Music.”<sup>163</sup> He also studied composition at Tanglewood in the summer of 1956 and at the Princeton Seminar in Advanced Music Studies during the summer of 1959.<sup>164</sup>

Before the University of Iowa, Gaburo held a number of positions at various schools. He first taught two summer sessions at the Grunewald School of Music in New Orleans in 1948 and 1949, during which a music publications firm in New Orleans commissioned him to write several textbooks on advanced harmony, counterpoint, and band arranging.<sup>165</sup> His first university position was a brief stint as visiting instructor at Kent State University in 1950, where he taught piano, theory, counterpoint, and composition.<sup>166</sup> He later became Assistant Professor in Fine Arts at McNeese State College<sup>167</sup> (1950-54), Associate Professor of Music at the University of Illinois (1955-

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<sup>163</sup> Kenneth L. Gaburo, “Studies in Pitch Symmetry in Twentieth Century Music (with Original Compositions by Author)” (DMA diss., *University of Illinois*, 1962).

<sup>164</sup> “Vita,” *Kenneth Gaburo*, <http://www.angelfire.com/mn/gaburo/CV1-4.html>.

<sup>165</sup> “Writes Book On Harmony,” *The Courier-News*, January 31, 1951, 21.

<sup>166</sup> “Composer Joins Music Department,” *The Kent Stater*, January 25, 1950, 1. Numerous sources note that he worked at Kent State University from 1949 to 1950, but Gaburo could not have taught at Kent State in 1949. From mid-October to early December 1949, Gaburo and his first wife Yvonne Stevens had been visiting his parents in Somerville, New Jersey, and it was reported that they were not leaving for Ohio until January. The couple spent December 1949 with her family in New Orleans. One should refer to “Visit New Orleans After Somerville Stay,” *The Courier-News*, December 1, 1949, 3.

<sup>167</sup> This institution is known today as McNeese State University.

68), and Professor of Music at the University of California, San Diego (1968-75), from which he resigned.

His resignation from UCSD happened at a time when a number of composers were leaving their jobs at universities for a variety of reasons. Many of the other composers left in pursuit of another job. Xenakis, as mentioned in Chapter 4, resigned from Indiana University for the Université de Paris in 1972. In 1975 Robert Ashley resigned from his career at Mills College to pursue his interest in working with television.<sup>168</sup> Gaburo's colleague Pauline Oliveros later resigned from UCSD in 1981 to pursue an independent career as a composer, performer, and teacher.<sup>169</sup> One composer, Ralph Shapey, even withdrew all performances of his music from 1969 to 1976 "due to his feeling that lack of its comprehension by all audiences...rendered its presentation useless, and in fact injurious to the work."<sup>170</sup> Gaburo described his own resignation from UCSD as an "abandonment" of the position,<sup>171</sup> and he mentioned in an interview with Hervig in March 1986 that his departure was made for "horrendously political reasons."<sup>172</sup> Gaburo explained in a letter to Ron Jeffers that one of his reasons was to

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<sup>168</sup> Robert Ashley, interview by Warren Burt, *Robert Ashley*, December 4, 1979, <https://soundcloud.com/innovadotmu/robert-ashley?in=innovadotmu/sets/interviews-from-the-archives>.

<sup>169</sup> Martha Mockus, *Sounding Out: Pauline Oliveros and Lesbian Musicality*, (New York: Routledge, 2008), 1.

<sup>170</sup> Robert Carl, "Ralph Shapey: Radical Traditionalism," *Dram*, <https://www.dramonline.org/albums/ralph-shapey-radical-traditionalism/notes>.

<sup>171</sup> Kenneth Gaburo, interview by Warren Burt, *Kenneth Gaburo on Kenneth Gaburo*, December 29, 1979, <https://soundcloud.com/innovadotmu/kenneth-gaburo-on-kenneth>.

<sup>172</sup> Richard Hervig, interview by Kenneth Gaburo, *Kenneth Gaburo interviews Richard Hervig Composing and Teaching*, Iowa Center for the Arts, WSUI Radio, March 1986.



commit himself more fully to his work, even at the risk of great financial and professional hardship.<sup>173</sup> One such project was the formation of Lingua Press in 1975 to promote his work and the experimental works of other composers, including Harry Partch. With this publishing company he was interested in eliminating the kind of censorship he saw in the editorial and deadline policies that publishing companies had at that time. Furthermore, his vision was that the creative act of composition did not end with the double bar line, and that certain visionary artists needed a platform to bring their scores and outputs into realizations as unique as the thoughts they contained. By 1983 Gaburo's company had published up to 115 works by numerous composers throughout the United States.<sup>174</sup> He also used Lingua Press to develop the Harry Partch Publishing Project in 1978, which was the beginning of an attempt to publish a multivolume series of Partch's materials,<sup>175</sup> a project that exchanged his use of Danlee Mitchell's Harry Partch Estate Archives in return for producing the touring production of *The Bewitched*.

Other reasons for Gaburo's resignation from UCSD are contradictory. Scott Siegling considered his departure to have been the result of "departmental politics, and a temperament that made artistic and ethical compromise impossible."<sup>176</sup> Writing about Gaburo's break from university life in 1987, Peter Ellingsen of the Melbourne Australian

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<sup>173</sup> Ron Jeffers, "Letters Gaburo," *Perspectives of New Music* 18, no. 1/2 (1979): 141. The year of this letter, given as 1974, is likely erroneous.

<sup>174</sup> David Dunn and Kenneth Gaburo, *Collaboration Two: David Dunn and Kenneth Gaburo discuss: Publishing as Eco-System*, (Ramona, CA: Lingua Press, 1983), 2.

<sup>175</sup> Bob Gilmore, *Harry Partch*, 392.

<sup>176</sup> Scott Alan Siegling, "Intermedia at Iowa 1967-2000: the Cultural Politics of Intermedia in Performing and Event-based Arts" (PhD diss., University of Iowa, 2015), 267.

newspaper *The Age* had a similar understanding of his departure, but added that it may have also stemmed from a mid-life crisis. “All he knew,” Ellingsen wrote, “was that he was sick of university politics and, despite an international reputation as a composer and musician, unsure of his direction.”<sup>177</sup> Roger Reynolds, on the other hand, explained that Gaburo’s relationship to UCSD to have been more agreeable. He recalled that Gaburo was only known at the time to have had a strong disagreement with composer Robert Erickson on the matter of teaching composition. While Erickson believed that a group approach through a seminar was the ideal way to teach composition, Gaburo remained steadfast to his belief in a one-on-one approach for a long period of time with a student (though he was in full support of both approaches).<sup>178</sup> Reynolds further recalled that he had announced his resignation unexpectedly in the middle of a party in January 1975 for the conference “the Serial Concept and Schoenberg,” which included guests Leonard Stein, Allen Forte, and Milton Babbitt. The announcement had surprised everyone, including Gaburo’s second wife Virginia Gaburo, who had no prior knowledge of his intention to resign.<sup>179</sup>

After his resignation from UCSD, Gaburo taught composition privately at his home in La Jolla, California while writing a few books and continuing his publishing company *Lingua Press* in the late 1970s.<sup>180</sup> To make ends meet, he had to forfeit his

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<sup>177</sup> Peter Ellingsen, “Out of the desert comes a musical prophet who finds art and peace inseparable,” *The Age*, August 8, 1987, 3.

<sup>178</sup> Roger Reynolds, e-mail message to author, March 18, 2017.

<sup>179</sup> *Ibid.*

<sup>180</sup> David Charles Ferreira, “Choral Compositions of Kenneth Gaburo” (PhD diss., University of Cincinnati, 1978), 1.

property on Vashon Island and La Jolla, and he was barely surviving with private students and visiting residencies at universities in the United States. After he sold his property in La Jolla, he lived for three years in the Anza-Borrego desert from 1980 to January 1983, where he continued to work and to teach his students, some of them driving out from UCSD on the condition that they did not reveal the fact to their professors. While he enjoyed his residence in the desert, his isolation from the “interactive life” of academia was becoming too much for him, in spite of his “general disdain for the University machinery as currently ‘oiled.’”<sup>181</sup> This separation from the intellectual rigors of academic life was another important factor for his return to the university. Gaburo recalled that, even within a year of leaving UCSD, he did not feel quite satisfied being away from the academic world. He did not have access to ensembles as he once did at UCSD or the peers and colleagues that were undergoing similar experiences and problems in their careers.<sup>182</sup>

### **Gaburo, the Composer and Teacher**

An early proponent of compositional linguistics (the concept of language as music and music as language), Gaburo had a lifelong interest in the organization of spoken language as music. He described his inspirations for compositional linguistics from his love for the voice, one of the most basic phenomena, which he considered to be the “transmitter of signals,” and was motivated, to an extent, by his poor performances in

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<sup>181</sup> Kenneth Gaburo and William DeFotis, “Excerpts from Correspondence with Kenneth Gaburo and William DeFotis,” 74.

<sup>182</sup> Richard Hervig, interview by Kenneth Gaburo, *Kenneth Gaburo interviews Richard Hervig Composing and Teaching*, Iowa Center for the Arts, WSUI Radio, March 1986.

English composition, at least in the eyes of one of his high school teachers.<sup>183</sup> The composer elaborated on his ideas of compositional linguistics in an interview with Warren Burt, Gaburo's student from UCSD, in late December 1979:

...any utterance in any form—an utterance means that a signal is issued forth and can be observed—is a linguistic thing. If we observe and if we need language to describe what we observe, then our descriptions are, and the quality of those descriptions are, imperatives. Insofar as we are trying to describe what we observe and that there is in fact a relationship between what we observe and how we describe it, then it's the description that is the imperative. I cannot talk to you about a tree unless I can describe it to you, and your image of a tree based on my language is what helps or doesn't help you to understand my image of a tree, so that the reality for me is in the description, not in the thing that the language describes. If that's the case, and I believe it is the case, then it is the description, in order for it to be as accurate as possible, since the description also creates a reality in my mind, [that] has to be compositional. Then to make something with language, which is in sync, is congruent with, is consistent with that which is observed, is a compositional act. Hence the term compositional linguistics: that language can be—it isn't necessarily the case that it is—but language can be if we look at it not as a device, not as a mechanism, not as a vehicle, but as a substantial phenomenological thing which we are, then there is an incredible responsibility to language and the functions of language; that it is important to me, for instance, that I not only use language to articulate something, such as I'm doing now, but that I actually compose the language which I articulate.<sup>184</sup>

A few years later, in an interview with Nicholas Zurbrugg, Gaburo explained another one of his inspirations behind compositional linguistics, which came from a performance at the University of Illinois:

One night (1959) I got a gig as a pianist with a band in Champaign-Urbana where I was doing graduate study. During intermission I learned that the bandleader was a linguist, doing special studies in phonetic analysis and phonetic transcription. I was fascinated by this and, all of a sudden, the whole matter of music, the voice, and language began to vibrate in me! Shortly thereafter, circa 1961-62, I formulated the expression "Compositional Linguistics."<sup>185</sup>

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<sup>183</sup> Kenneth Gaburo, interview by Warren Burt, December 29, 1979.

<sup>184</sup> Ibid.

For his students in composition lessons time itself seemed to be suspended under Gaburo's instruction. Matters of the external world were left behind and what remained in the room was the inquiring mind of Gaburo, the inquisitive student, and the music to serve as the essence of all discussion. Paul Paccione, who studied privately with Gaburo while at UCSD, described his composition lessons in this manner, as nothing less than the investigation into the self and the emancipation of the self from all worldly affairs:

Gaburo talked about how everything was composition. Everything you did, experienced, observed. Everything he said was punctuated by a hand gesture (*Roman Italian*), projecting toward you. It was assumed that every statement would require a response, argument, question... There was no time limit on lessons—anywhere from two to four hours. We knew it was time to end the lesson when the room was so full of smoke we couldn't see each other... What was important was the continual questioning—why this and not that, what other alternatives were there to be considered... Gaburo's great gift as a teacher was that, no matter what you showed him or what he heard, he always listened and reacted as if he had just seen or heard it for the first time. And certainly he had seen or maybe heard it all before.<sup>186</sup>

Gaburo was uncompromising towards apologetic student composers, those who were worried about their own music and were lacking esteem in their writings. Burt recalled the kind of lecture that the composer would give in such a situation:

Anyone who knew Gaburo knows that presenting things to him with uncertainty was a very very bad move. To Kenneth, one should never ever have said, "It's not very good, but..." "Well if it's not very good, why should I listen to it?" would be his inevitable reply.<sup>187</sup>

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<sup>185</sup> Kenneth Gaburo and Nicholas Zurbrugg, "Two Interviews with Kenneth Gaburo," *Perspectives of New Music* 33, no. 1 (1995): 11.

<sup>186</sup> Paul Paccione, "Gaburo—Notes on..." *Perspectives of New Music* 33, no. 1 (1995): 99-101.

<sup>187</sup> Warren Burt, "My History with Technology Part 2: San Diego," *Warren Burt*, <http://www.warrenburt.com/my-history-with-music-tech2/>.

Of great interest to Gaburo as a composer was multidimensionality. He was concerned with the degree to which the various arts interacted with each other. According to the composer, the collection of a group of different disciplines working together was highly appealing for the:

...integrating, interactive sense of developing a work which wants to become whole, such that the multidimensional parts cannot be separated from each other—a wholeness, rather than putting forth pieces of pieces. Clearly, the necessary integration that I work with must include endless questioning, research, and change—a transformation from that which was, into a circumstance not yet experienced.<sup>188</sup>

The synthesis of language by conflation of various disciplines was essential to his compositional vision. He was “disenchanted with the conventional notion of finding a style, a technique, a concept, which satisfies a compositional process,” upholding that position for the remainder of one’s life, and having that train of thought “beat them to death in the name of development.”<sup>189</sup> He was more interested in the way that language was internalized by the audience and how the audience reacted to it, these artistic matters being important to his beliefs regarding “audience participation and insinuation.”<sup>190</sup> Gaburo believed in the advantages that multidimensionality had to the benefit of his students’ futures. In an interview with Bruce Duffie, Gaburo explained that this would augment his students’ potential to be successful in their careers:

...we graduate fifteen or so each year, and when I was at California it was probably about the same. They wait two or three years just to get a job, and then it’s usually some half-assed job someplace, a part-time kind of thing. So there are not enough situations that can absorb all of that. What I’ve been doing as a kind

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<sup>188</sup> Kenneth Gaburo and Nicholas Zurbrugg, “Two Interviews with Kenneth Gaburo,” 16.

<sup>189</sup> *Ibid.*, 17.

<sup>190</sup> John Voland, “Shock of the new fails to frighten UI’s Gaburo,” *The Daily Iowan*, June 28, 1983, 8D.

of a beginning of an answer...is to get involved in multi-dimensional stuff...so that a kid doesn't have to rely on having just one string to his bow. I have lots of my composing students who are really good enough to do programming, so they can program for half a week and then are free half a week. And they make good money. Some have aptitudes in drawing, or in doing layouts, or in doing sound tracks for video.<sup>191</sup>

His interest in multidimensionality was based not necessarily on Wagner's belief of *Gesamtkunstwerk*, but more on the influences of his late colleague Harry Partch (1901-1974). Gaburo was a champion of Partch's works and received high acclaim for his production of *Bewitched* at San Diego (SDSU) and The Berlin Festival in 1980, the fourth time it had been produced since 1957, and the first time it had been done according to the composer's highest ideals. Partch, known for his use of microtonality and custom-built instruments based on just intonation and microtonal scales, was acquainted with Gaburo during his residency at the University of Illinois from 1956 to 1957 and from 1959 to 1962. Their relations continued when he was appointed a residency at the University of California, San Diego from 1966 to 1969. In the act of composition, Partch was creating his own kind of *Gesamtkunstwerk*, a practice that composer Ben Johnston, who worked with Partch in California in the early 1950s and helped him to receive commissions from the 1957 Festival of Contemporary Arts at the University of Illinois,<sup>192</sup> defined as corporealism:

a vehement protest against what [Partch] considered the negation of the body and the bodily in our society. It resulted specifically in an attack on *abstraction*. What that meant to him was first of all that music should not be separated from

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<sup>191</sup> Bruce Duffie, "Composer Kenneth Gaburo: A Conversation with Bruce Duffie," *Bruce Duffie*, <http://www.bruceduffie.com/gaburo.html>.

<sup>192</sup> Bob Gilmore, "'A Soul Tormented': Alwin Nikolais and Harry Partch's 'The Bewitched'," *The Musical Quarterly* 79, no. 1 (1995): 91-2.

words or visible actions, whether theatrical, choreographic, or simply musically functional. He directed us to see *people doing things*.<sup>193</sup>

When Partch moved to San Diego, California, other composers soon joined the West Coast experimental music hub, each for their own reasons, including Reynolds, Oliveros, Burt, and Shallenberg. What Gaburo lauded the most in him was his handling of all the participants in his ensembles. They were viewed as being equally important to the execution and realization of his works. Gaburo was insistent on taking Partch's socio-political decision at face value, to take the musicians out of the pit and put them on the stage.<sup>194</sup>

Gaburo had a considerable legacy in electronic music before he began to teach at the University of Iowa. His total output in electronic music (both concrete and synthesized) before 1983 included five complete Antiphonies that were compositions for voice and/or instruments with tape (I-IV and VI),<sup>195</sup> six compositions for tape alone, and eight compositions where tape was integrated into his large theatrical works with actors and/or dancers. Once, Gaburo had an opportunity to write electronic music for film in 1970 for Virgil Thomson, who offered him a commission to write for a light show in the middle and at the end of "The Baby Maker."<sup>196</sup> However, when Thomson was dropped

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<sup>193</sup> Ben Johnston, "The Corporealism of Harry Partch," *Perspectives of New Music* 13, no. 2 (1975): 85-6.

<sup>194</sup> Kenneth Gaburo, interview by Warren Burt, *Kenneth Gaburo on Kenneth Gaburo*, December 29, 1979, <https://soundcloud.com/innovadotmu/kenneth-gaburo-on-kenneth>.

<sup>195</sup> Antiphony V (for piano and tape) was never finished, although he began on this composition around 1972.

<sup>196</sup> John Rockwell, "Virgil Thomson, 73, Joins Now Generation for Film," *The Los Angeles Times*, May 28, 1970, <https://www.newspapers.com/image/165694198>.



from the role of musical supervisor for the film and replaced by composer Fred Karlin, Gaburo was no longer a consideration for the music of the film, even in part.<sup>197</sup>

Once in Iowa City, Gaburo was able to realize four more tape pieces at the EMS. *Re-run*, written in 1983, utilized the Buchla 400 synthesizer and several tape recorders as an accompaniment for a dance choreographed by Lou Blankenburg. In this work Gaburo used a compositional process that involved a sensory deprivation exercise. Warren Burt wrote many years later how Gaburo applied this to his work:

[Gaburo] sat in the studio with a Buchla digital synthesizer that was actually damaged and he sat in the studio with this machine and gazed at it for hours and hours and hours. Only after he was right on the point of exhaustion did he begin in recording some sound by just doing a particular gesture which was moving his finger in-out-in-out with the keyboard. Apparently he recorded it without listening to the output and rewound and made four tracks working without listening to the output and then he went home and went to sleep and a day or two later he came back to the studio and listened to it and was amazed at how well the four tracks related to each other. That tape, pretty much unaltered[,] became the piece RE-RUN.<sup>198</sup>

In another tape piece called *Few* from April 1985 the composer improvised on the Moog synthesizer in collaboration with Henri Chopin, who was a guest visitor to the university. In two other compositions for tape he recorded noise from an old mixer in the studios for *Hiss* (1992) and illustrated a dysfunctional family based on one of his experiences at the Mill Restaurant in *Mouthpiece II* (1992).<sup>199</sup> The noise from that mixer was amplified and

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<sup>197</sup> John Rockwell, "Claremont Festival Starts Friday," *The Los Angeles Times*, June 28, 1970, <https://www.newspapers.com/image/165956685>.

<sup>198</sup> Nate Wooley, "Opening the Argument: the Critical Theory of Kenneth Gaburo," *Wolf Notes* 1, no. 1 (2011): 31.

<sup>199</sup> There are two other 4-channel tape compositions that were left unfinished at the time of his death, including *Of Metal* (1983) and *Tapestry* (1986). One should refer to "Vita," *Kenneth Gaburo*, <http://www.angelfire.com/mn/gaburo/CV1-4.html>.

involved frequency shifting with the Bode Dual Ring Modulator.<sup>200</sup> He finished three more compositions from the Antiphony series, including *Antiphony VIII* (1985) for percussion and tape, which was premiered by Steven Schick at the CalArts International Festival of New Music on March 10, 1984; *Antiphony IX* (1984-5) for orchestra, children's choir, and tape, which had its premiere at the Electronic Music Festival at Kansas City Conservatory of Music on October 13, 1985;<sup>201</sup> and *Antiphony X* (1989-91) for organ and tape, which was commissioned by University of Iowa DMA student Gary Verkade.

### **Gaburo and Technology**

Gaburo's relationship to technology was a complex issue. On the one hand, he was a proponent of technological advances and championed the rise of computers for his students. However, Gaburo was not the sort of composer who would ever adopt the computer as his compositional approach, as an end in itself; he railed against those whose 'compositions' were merely demonstrations of the technology, a lexicon of effects. He had two particular aesthetic challenges in relation to technology that sharply influenced how he interacted with it. One of his greatest concerns with technology was the relationship between the computer and the composer. Who could be credited for the creation of a work in this relationship between man and machine? Gaburo argued both:

Crucially, any output is not only the consequence of a process of interaction between and among its constituents, but includes them; that is, they comprise a set of interactions. Moreover, interaction not only is a dynamic, phenomenal "force" that enables a composer and computer to do something together by way of its

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<sup>200</sup> Alcides Lanza, "Reviews: Recordings," *Computer Music Journal* 25, no. 2 (2001): 76.

<sup>201</sup> "Vita," *Kenneth Gaburo*, <http://www.angelfire.com/mn/gaburo/CV1-4.html>.

constituent properties, but also resides in the nature of what is done; that is, interaction is a member of its own set. If what is done is a music, then what made it so cannot be attributed exclusive to either the composer or computer but only to both. Moreover, the music, thereby issued forth, resides *neither* in the one, the other, *nor* both.<sup>202</sup>

More broadly, he had considerable distrust of electronic music because of its seductiveness, but he argued that his distrust of its seductiveness was his strongest reason for being a proponent of the medium. Blackburn said that Gaburo was not into the “fetishization” of technology, but the “compositional creative thinking that could be applied to anything.”<sup>203</sup> Its seductiveness, Gaburo argued, came from the medium’s lack of resistance, where a composer could walk away from a machine and let it regurgitate yards of material recorded onto a tape without any assessment or any intervention on the part of the composer. Maintaining a constant awareness of what is heard was one of the greatest challenges for a composer of electronic music. Human intervention was paramount to him, out of concern that a composer could not abandon his sense of presence and responsibility to the sounds coming from a machine while realizing a composition.<sup>204</sup> He argued that this abandonment of responsibility would cause a composer to lose his sense of control over the material, which would go against what he believed to be the very premise of being a composer in the first place: the search for and the development of the self.<sup>205</sup>

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<sup>202</sup> Kenneth Gaburo, “The Deterioration of an Ideal, Ideally Deteriorized: Reflections on Pietro Grossi’s *Paganini AI Computer*,” *Computer Music Journal* 9, no. 1 (1985): 42.

<sup>203</sup> Philip Blackburn, interview by the author, January 15, 2017.

<sup>204</sup> Kenneth Gaburo, interview by Richard Hervig, *Collaboration: a series of six interviews between Richard Hervig and Kenneth Gaburo*, WSUI/KSUI, 1986.

<sup>205</sup> *Ibid.*

### **Gaburo at Iowa (1983-91)**

His responsibilities at the University of Iowa initially were solely to teach all classes associated with the Experimental Music Studios, the name by which Iowa's electronic music program would be referred to from 1983 to 1994. These classes included the two courses of electronic music, the electronic music seminar that was under Lewis's instruction in the 1970s, and his Special Studies classes. The seminar was integrated into Gaburo's Institute for Cognitive Studies, which encouraged exploration into creativity and forged deeper connections between other arts-related (and non-arts, such as engineering) programs.<sup>206</sup> Despite his new appointment, he was still not allowed to give composition lessons to students. Philip Blackburn recalled that it was only when he asked if he could study with the older composer (with whom he had already studied privately in Ramona before going to Cambridge University) that Gaburo was permitted to teach composition at the University of Iowa.<sup>207</sup> Once allowed to do so, he continued the long one-on-one sessions that he did at UCSD, cigarette smoke and all. He was also forging deeper connections with the Intermedia program in collaboration with its director Hans Breder. Scott Alan Siegling mentioned that their collaboration was "artistic, with Gaburo creating sound pieces for Breder's video art, and also institutional."<sup>208</sup>

For the next eight years, Gaburo was balancing his time between composing, teaching, writing, publishing, and visiting universities in the United States, Canada, and

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<sup>206</sup> A deeper discussion of the Experimental Music Studios and the Institute for Cognitive Studies will be given in Chapter 11.

<sup>207</sup> Philip Blackburn, interview by the author, January 15, 2017.

<sup>208</sup> Scott Alan Siegling, "Intermedia at Iowa 1967-2000: the Cultural Politics of Intermedia in Performing and Event-based Arts" (PhD diss., University of Iowa, 2015), 267.

Australia as guest composer. During his visits he gave seminars on compositional linguistics, composition lessons with students, performances of his works, and even lectures on electronic music. One of these visits was a month-long residency in early 1985 as recipient of the Darius Milhaud Chair in Composition at Mills College. In 1987 the Australian Arts Council sponsored his residencies at five different universities from July to August, including La Trobe University, Victorian College of the Arts, the Canberra School of Music at Australian National University, Sydney University, and the University of Tasmania. A year later, in 1988, he traveled with the Fresno State University Concert Choir on its tour to Poland, Sweden, and the Soviet Union, where they gave performances of his work “ENOUGH! ---(not enough)---,” (1987-88) for forty voices and percussion, a skeptical celebration of the US Bicentennial.<sup>209</sup>

### **Later Years (1991-93)**

In spite of his affection for academic teaching and devotion to his students for the past forty years, Gaburo’s view of academic life had become one of growing dissatisfaction and the idea of independence he could obtain from living off his own work increasingly favorable. In the late 1980s, he began to champion the idea of living within his means off the income of his own works. In his 1987 interview with Bruce Duffie, the composer spoke of the positive aspects of this lifestyle:

Artists have never had any problem about putting price tags on their work. Composers...feel that it is beneath their dignity to charge. They’d rather send scores out free. They’re so delighted to have somebody be interested in their work that they’ll do just that, and as long as you buy into that, then you’re always going to be impoverished. We should be able to make a reasonable living at what

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<sup>209</sup> Ken Robison, “Choral Work Challenges Musical Tradition,” *Fresno Bee*, May 15, 1988, F15.

we do without having to compromise it, and more and more people are doing that. It's no longer just the Coplands who are able to do it. I'm beginning to. It really is possible for me now, if I live modestly, to actually live off my work and not have to compromise.<sup>210</sup>

He further predicted the possibility of going half time in 1988, "and then gradually reduce that until it's nonexistent" due to the increasing amount of work he was receiving each year.<sup>211</sup> The awards he continued to receive for his work may have also justified his idea of independent living, especially when he received a \$19,000 composer fellowship grant in 1990 from the National Endowment for the Arts, as one of 19 composers in the United States to earn the award, in support of the creation of music,<sup>212</sup> and the ASCAP cash award that he had been receiving annually for his work since 1970.<sup>213</sup> However, his plan to gradually filter out of academic life, however, cannot adequately explain why he left the University of Iowa rather abruptly. Although Gaburo's appointment records at the University of Iowa state his official date of retirement to have been June 30, 1991,<sup>214</sup> a couple of local Iowan newspapers report his retirement to have occurred at the end of 1990.<sup>[215][216]</sup>

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<sup>210</sup> Bruce Duffie, "Composer Kenneth Gaburo: A Conversation with Bruce Duffie," *Bruce Duffie*, <http://www.bruceduffie.com/gaburo.html>.

<sup>211</sup> *Ibid.*

<sup>212</sup> "Gaburo fellowship," *The Des Moines Register*, February 11, 1990, 9F.

<sup>213</sup> "UI composer wins ASCAP Award," *Iowa City Press-Citizen*, September 5, 1990, 2C.

<sup>214</sup> Deborah A Millsap, e-mail message to author, May 3, 2017.

<sup>215</sup> "University Symphony," *Cedar Rapids Gazette*, January 25, 1991, 12W.

<sup>216</sup> "UI Symphony Orchestra opens concert season with pianist Rowe," *Iowa City Press-Citizen*, January 24, 1991, 8D.

When he left the University of Iowa, Gaburo made plans to take residence with a group that included Muller in Santa Fe, New Mexico for the production of a multidimensional theater.<sup>217</sup> However, his physical condition was worsening and likely thwarted many of his plans. In the last years of his life Gaburo was said to have been increasingly confrontational and in continuous pain as he tried to diagnose his dizziness with macrobiotic diet and craniosacral manipulation.<sup>218</sup> In spite of his pain the composer made a couple of trips, including one to New Mexico in early 1991, another to Zurich, Switzerland for the world premiere of Antiphony X in September 1991, and one more to Macomb, IL as the featured guest composer for the New Music Festival at Western Illinois University in March 1992. Gaburo spent the remainder of his life in Iowa City. In mid-January 1993, he did a recording session during his hospice period with Blackburn that would be used for the latter's composition "P.P.S." for organ and tape. Within a couple of weeks he died of bone cancer<sup>219</sup> in Iowa City on January 26, 1993. Three of his works were performed at his funeral at the Zion Lutheran Church on the 30<sup>th</sup> of January: "Kyrie (Orbis Fact/or) a very odd do" (1975), "Fat Millie's Lament" (1964), and "Countdown" from his *Twenty Sensing Compositions*. He was buried the next day at the Rosaria Catholic Cemetery in Santa Fe, New Mexico.

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<sup>217</sup> Gaburo, "Two Interviews," 26.

<sup>218</sup> "Opening the Argument," 34-36.

<sup>219</sup> "Kenneth Gaburo, 65; Composer and Teacher," *The New York Times*, January 29, 1993, A17.

## CHAPTER 7

### LAWRENCE FRITTS

On August 22, 1994, a doctoral candidate from the University of Chicago named Lawrence Fritts began his appointment as Visiting Assistant Professor at the University of Iowa. His appointment would complete the transition from the analog to the digital age of electronics and lead to the creation of a website for the Electronic Music Studios, which features the Music Instrument Samples Database.

#### **The Early Years**

Fritts pursued his love and interest in electronics from a very young age. Born in Richland, Washington on December 31, 1952, he was the eldest son of Dorance Elmer Fritts (1925-1999), an instrument technician who specialized in water engineering at the Hanford Site, a nuclear power plant located along the Columbia River in Washington, and Janet (nee Hillier) Fritts, secretary for a detective in the Richland Police Department. Fritts recalled that his hometown was a living vault of electrical knowledge. It was the dwelling place for a profusion of engineers, which allowed him plentiful opportunities to acquire knowledge on electronics. From his father he learned how to connect wires together. In one story passed down from his family the young Fritts built a “heater,” his first device with electricity when he nailed an A.C. electrical cable to a board and



plugged it into an outlet at the age of three.<sup>220</sup> With his father's guidance, he "built an alarm for his bedside clock and an illuminable calculator as a boy."<sup>221</sup> His love for electronics would continue to grow throughout his life, especially during the 1960s, at a time he was acquiring a considerable breadth of knowledge on tube amplifiers, speakers, and microphones through experimentation and *viva voce*.

His love for music thrived from a young age. Unlike Peter Tod Lewis and Kenneth Gaburo, who had minimally one parent with some degree of professional experience in music, his parents did not have any considerable musical training or experience. His early training came through a combination of music lessons and self-education. His first instrument was the piano, which arrived at his household one day when he was eight or nine. From the day it arrived its effect on him was irresistible. The next day, he began to teach himself how to read traditional notation from a sheet of music left by one of his next-door neighbors.<sup>222</sup> The young aspiring musician followed his interests to the doorstep of Kortzen's music, where his first lessons with Fred Grazzini Sr. took place. There he learned to play from song collections in piano books while becoming interested in boogie-woogie. Within a couple of years, he was taking drum lessons. Fritts and his friends would play songs together in their garages while making unforgettable memories:

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<sup>220</sup> Lawrence Fritts, "Narrative," *Internet Archive Wayback Machine*, <http://web.archive.org/web/20080615152324/http://www.lawrencefritts.com/narrative.html>.

<sup>221</sup> Maggie Anderson, "Finding the electricity of the music," *The Daily Iowan*, September 1, 2005, <http://dailyiowan.lib.uiowa.edu/DI/2005/di2005-09-01.pdf>.

<sup>222</sup> Lawrence Fritts, "Narrative."

Nello and I would alternate on piano and percussion, while Fred played bass drum, using a baseball bat against a cardboard box. This sent me into an ecsta[s]y I had never experienced before. Such power...I can still remember the rush of excitement I felt whenever he went “bam” on beat one.<sup>223</sup>

At 13 Fritts picked up the guitar and began his studies with Ron Jones at Harris-Morgan, who was a band member of the Pastels. By the late 1960s he became very interested in the kinds of guitar sounds that Jimi Hendrix created, as well as the use of feedback noise.<sup>224</sup> He liked to be part of the musical scene, not as the result of fame, but as a working musician who contributed to his Richland community. He participated in a number of guitar bands from 1966 to 1975 in performances around Richland, Washington and Beaverton, Oregon, to which Fritts and his family moved in 1970. Those bands included Days of Grace (1966-68), Lightnin’ Slim and the Rangers (1968-69), the Dog Years (1969-70), Bittersweet Jam (1970-71), Saturday Miles (1971-72), Cowboys and Indians (1972-73), and the Straight Arrow (1973-75).<sup>225</sup> It was through the guitar that many of his lessons about composition remained a part of his life. One such lesson was the importance of silence and playing with the audience’s expectations, as he recalled when he had to play a jazz solo in high school:

Performing in the round, with the audience virtually onstage with us, I thought I heard my cue to begin soloing. But, unlike in rehearsals, there was no preceding drum solo. The passage comes to a climactic halt. Is this the ending? I don't remember it sounding like this. Is this my solo? If so, what happened to the drum solo? Near panic. Three seconds of silence went by as I raced through the possibilities. If the song is over, but I launch into a solo, how in the world can I

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<sup>223</sup> Ibid.

<sup>224</sup> “Music from a random place,” *Iowa City Press-Citizen*, March 1, 1997, <https://www.newspapers.com/image/206908474>.

<sup>225</sup> Lawrence Fritts, “Other Music,” *Internet Archive Wayback Machine*, <http://web.archive.org/web/20080615152324/http://www.lawrencefritts.com/othermusic.html>.

end the piece? On the other hand, if everyone is expecting a guitar solo, what will they do if I don't play at all? Panic. With the tiniest movements possible, I mouth to Fred Sauter, the conductor, "Do I play?" His response was an equally minimal nod of the head. Excellent, all systems go. I pluck a note with the volume control at 0, then swell it up, bringing the note into feedback...I cut the note off, and sat there basking in the silence. Then again, another swell then off into a run of notes. A hint of silence, but not much since I wanted to trick the audience, and now into a full-scale barrage of notes. As I ramped it up, in came the band, drum solo, and gloriously climactic conclusion, with the audience apparently thinking the silence was part of the act. The problem, as I learned afterward, was that the conductor re-ordered the solos.<sup>226</sup>

Besides playing at gigs, he spent 4-8 hours daily practicing and taught guitar lessons. His guitar career came to an abrupt halt with the diagnosis of tendinitis in his right wrist at the age of 24.<sup>227</sup>

The onset of tendinitis greatly influenced his decision to pursue music composition at Portland State University. His interest in music composition increased as he wrote songs for his rock band performers. For Fritts it seemed like the right step to take as his songwriting for his rock band was becoming increasingly complex. "People couldn't dance to it," he said, "and they'd go away scratching their heads."<sup>228</sup> He found a strong attraction to the academic environment and joy in the motivations and intensities of the very people that he interacted with daily. While at Portland State, he studied composition with Tomas Svoboda and Eric Funk, and he wrote instrumental and electronic music compositions for PBS television, theater, short films, and art installations.

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<sup>226</sup> Lawrence Fritts, "Narrative."

<sup>227</sup> Scott McCallum, "Eclectically, and electrically, musical," *The Daily Iowan*, April 27, 2005, <http://dailyiowan.lib.uiowa.edu/DI/2005/di2005-04-27.pdf>.

<sup>228</sup> Ibid.

After receiving a B.S. with honors in 1983, his love of university life never dimmed, and he continued to pursue his studies in music composition at the University of Chicago under Ralph Shapey, John Eaton, and Shulamit Ran. He became acquainted with many of the pioneers in synthesizers in the 1980s and 1990s, including Robert Moog and Don Buchla. In addition, he studied electronic and computer music with Howard Sandroff and microtonality and intonation systems with Easley Blackwood, as well as making acquaintances with Leonard Meyer and Eugene Narmour. By 1995, he earned his PhD in composition from the University of Chicago with his dissertation on Milton Babbitt's "Three Compositions for Piano" (1948). Fritts was known for his complex patches in his work with analog synthesizers. While completing his dissertation at the University of Chicago, he held two teaching positions in the state of Illinois, first as an instructor in the Department of Sciences and Mathematics at Columbia College from 1988 to 1992 and in the School of Music at DePaul University from 1989 to 1995, where he taught students music theory and electronic music.

At the University of Iowa, Fritts served as Director of Conferences for SEAMUS from 2004 to 2006. He was a co-founder of the Journal of Mathematics and Music in 2005, for which he continues to serve on the editorial board. He was Head of the Composition/Theory area at the University of Iowa from 2004 to 2006. His work with his EMS assistant Chris Shortway led to the creation of a plug-in for Sibelius in 2009 known as the "Fritts Transformation Plug-in" and the "M5 Transformation Plug-in."

## Lawrence Fritts, the Composer

Fritts's approach to composition comes from his attention to detail, a variety of techniques acquired from his work with acoustic and electronic music, and an imagination that has remained a strong creative force in his life. To realize his compositions, he has considered the advantages of possessing a large library of compositional materials. One such advantage for composers with such libraries is the ease of finding material and having the flexibility to divert from a plan whenever necessary or motivated:

To this day, as a composer, I am never, ever stuck for ideas. The notion of writer's block is completely foreign to me. At the drop of a hat I can begin [to] compose any kind of music that I can imagine. While this doesn't mean the music will be of high quality, it does mean that I can carry an idea forward without hesitating. When I compose using a deeply structured set of principles, I usually allow myself to break off from those whenever my inner ear carries those ideas ahead on its own. Thus, I have come to understand the need to internalize the systems of a composition, instead of following the plan initially set forth.<sup>229</sup>

Important to his work as a composer is the role of mathematics in the manipulation of sounds. Fritts has incorporated group theory into his use of transformations and permutations of sounds for the generation of a large quantity of material. Even with a large quantity of material, he will copy that material and perform some kind of variation on it. The value of variation, however subtle, is his way of fulfilling his self-proclaimed role as "the duke of non-repeatability." The idea of non-repeatability corresponds to his belief in the importance of performing micro-variations on the copies of sounds, so that no two sounds can be perceived as identical iterations of each other. He has emphasized the use of pitch shifting, time scaling, EQ, and gain as transformational processes to

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<sup>229</sup> Lawrence Fritts, "Narrative."

differentiate copies of sounds, so that they cannot be perceived as duplicates of another sound.

Composition lessons with Fritts focus on the roles of the listener. Composers come with a realization of a work-in-progress. They listen and evaluate. He teaches a student composer to evaluate throughout the listening process. He demonstrates when to deviate from the plan in place and embrace the importance of the ear as an arbiter. Of additional value is his emphasis of choice. When Fritts asks a student composer to “consider” something, the student can take it or leave it, and he describes to the composer the advantage of his consideration. He warns against the use of square rhythms and scalar runs. With the former he encourages variety and fluidity of rhythm. His approach to the latter is to vary the contour of a line such that it minimizes one’s recognition of a scalar pattern and to consider working with aggregates.

### **Lawrence Fritts, the Director**

Fritts was a hardworking and ambitious arrival to the University of Iowa, with many plans in the back of his mind to expand the electronic music program. He came with a very high impression of the program:

It was obvious that great things had taken place in the studios in past years. The equipment was at the cutting edge in the analog domain, and I could see that a fair amount of it was built or modified by EMS staff, some of whom were from other departments (possibly engineering). I could see how serious things had been and how professional everything was in terms of design and execution. It was all tape-based...we also had two 8-track machines, a Tascam unit and an Ampex 1" that stood 5-feet tall (since the electronics were basically 4 discrete stereo pre-amps and recording systems that were connected to the 8-track tape heads).

Virtually everything worked, with the exception of a 4-buss Quantum mixer that was very noisy. The room and cabling were covered with cigarette smoke...

I spent 2 years...cleaning up the place. I cleaned the Moog and Arp with Q-tips, sanded and re-painted the racks, and painted the walls in all three studios, as well as my office.<sup>230</sup>

While praising the condition of the analog equipment, Fritts believed immensely in the potential of computer technologies that were rapidly developing during the 1990s. He was able to acquire new computers and software for the studios, including Max in 1996, Kyma, Pro Tools, and Sibelius, most of which are still in use today (in more updated versions). In the summer of 2002 Fritts had Studios 1 and 2 upgraded to an 8-channel configuration with a subwoofer, a 4-channel configuration in Studio 3 with a subwoofer, and a 24-speaker concert sound system using a combination of JBL Eon and Mackie C300 monitors. He reconfigured the studio's Moog into a single unit to prevent anyone from stealing it and acquired sufficient funding for its restoration through the Instructional Improvement Award in 2003. He was also responsible for acquiring a large and diverse catalog of high-quality microphones that are frequently used by student composers and EMS students.

### **EMS Website**

One of his largest and earliest projects during his appointment was to provide free accessible recordings of instruments at a very high quality in the earliest years of the Internet, as it was becoming widespread throughout the United States. After he became Assistant Professor in the fall of 1996, Fritts had conceived the idea of creating a website with real instrument sounds that could be accessed globally. Before the creation of this new website, McGill University had its own popular CD set of note-by-note samples of

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<sup>230</sup> Lawrence Fritts, e-mail message to author, August 12, 2016.

sounds, but they were not recorded in an anechoic chamber. In addition, the cost for the CD set at that time was \$600 US dollars. A discussion with Michael O'Donnell, a computer science professor at the University of Chicago, and his teaching assistant Matthew Hallaron, led to the idea to design a website that contained recorded instrument samples from the Wendell Johnson Speech and Hearing Center's anechoic chamber. Fritts had attended Michael O'Donnell's seminars on sound when he was a student at the University of Chicago. Fritts further elaborated:

When I started my tenure-track appointment in 1996, it happened that Mike O'Donnell was going to be teaching here that year. Dean Joseph Kearney was in the Iowa CS [Communication Sciences] department and had invited Mike for the year as a look-see visiting professor. Mike came over to the studios. My new assistant, Matt Hallaron, and I were talking with Mike, when he suggested that we record instruments in the anechoic chamber and put the recordings online for free.<sup>231</sup>

The anechoic chamber, designed by Paul S. Veneklasen,<sup>232</sup> located at the Wendell Johnson and Hearing Speech Center, was designed in 1967 as a "free acoustic field" for all frequencies above 60 Hz.<sup>233</sup> It is used for tests requiring minimal reverberation, such as the effectiveness of hearing aids. It has also been the primary site used by the Electronic Music Studios to record music instruments for the Musical Instrument Samples Database (MISD). This anechoic chamber succeeded a previously existing anechoic chamber that was based on Professor James F. Curtis's designs, which was

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<sup>231</sup> Lawrence Fritts, e-mail message to author, August 11, 2016.

<sup>232</sup> Deanne Ottaway, "UI has 'quiet place,'" *Iowa City Press-Citizen*, September 29, 1977, <https://www.newspapers.com/image/205054531>.

<sup>233</sup> "Hearing Aid Lab: Facilities," *The University of Iowa*, <https://clas.uiowa.edu/comsci/research/hearing-aid-lab/facilities>.



completed in March 1951.<sup>234</sup> It was migrated in the spring semester of 2016 to another server at the University of Iowa. The website became popular within a few years of its existence. By 1999 the website was being mentioned in journals such as the *Computer Music Journal*.<sup>235</sup> The MISD continues to be visited by a vast number of audio engineers and composers. The website contains recordings of more than 23 instruments, including flute, oboe, clarinet, bassoon, saxophone, horn, trumpet, trombone, tuba, violin, viola, cello, double bass, piano, guitar, marimba, xylophone, vibraphone, crotales, gongs, tam-tam, cymbals, and hand percussion.

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<sup>234</sup> “You Can Hear Your Blood Flow in Special Room At University of Iowa,” *Iowa City Press-Citizen*, November 27, 1951, <https://www.newspapers.com/image/22983343>.

<sup>235</sup> “Products of Interest: Instrument Samples from the University of Iowa,” *Computer Music Journal* 23, no. 1 (1999): 95-96.

## CHAPTER 8

### OTHER FACULTY MEMBERS

Besides Shallenberg, Gaburo, Lewis, and Fritts, a few other faculty members were hired or asked to teach the studio classes. The circumstances of these appointments varied, as well as their durations, which lasted from one semester to two years. Two individuals were hired as Visiting Assistant Professors at the University of Iowa, while an additional three individuals were asked to teach classes at the studios under special circumstances.

#### **Robert Paredes (1991-93)**

Composer, clarinetist, saxophonist, flutist, writer, painter, and drawer “Bob” Paredes (b. February 10, 1948 in San Diego, CA – d. August 20, 2005 in Coralville, IA) was a Visiting Assistant Professor at the University of Iowa when he was hired to teach classes and direct the studios. He had studied composition and compositional linguistics with Gaburo from 1980 to 1983 privately in Ramona, California and from 1987 to 1990 at the University of Iowa as a graduate student with additional studies in recording techniques with Lowell Cross and intermedia with Hans Breder. Through Gaburo he developed a strong friendship with composer/essayist Benjamin Boretz. In his youth he had studied clarinet with Robert Osborne, Robert Marr, and notably Daniel Magnusson, principal clarinetist for the San Diego Symphony Orchestra, as well as piano with W. Allan Oldfield. When he attended San Diego State in pursuit of his interests in music and

sociology, he further developed his abilities on clarinet under the tutelage of Norman Rost. While he received some lessons in composition with Oldfield and later David Ward-Steinman at San Diego State, Paredes considered himself to have been self-taught before he studied with Gaburo. His own recollection of his studies was one of dedication and self-study:

I started out as an autodidact. I was a very poor student at an undergraduate level and for a long time plodded along after I left the university the first time after having had an unsuccessful bout with it. I started a lot of studying, libraries, and I had a job as a baggage dispatcher. I used to drive bags of checks up and down the coast to various places. Wherever there was a little library that had a musical section and I had a couple-of-hour layoff, I'd stay there and do some reading of scores, and I was already in my 30s when I had decided that it would really have been nice to have had some composition instruction...<sup>236</sup>

Paredes was an accomplished performer of jazz, Klezmer, classical, and avant-garde repertoire.<sup>237</sup> He had performed in the Harry Partch Ensemble<sup>238</sup> and was under Gaburo's direction in the acclaimed production of Partch's *The Bewitched* in 1980.<sup>239</sup> For two years, from 1984 to 1986, he lived in Australia and was engaged in both the performances of his compositions and the clarinet in a variety of settings in contemporary chamber music from free improvisation to the performance of Balkan and Greek

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<sup>236</sup> Robert Paredes, interview by Philip Blackburn and Preston Wright, 2002, <https://soundcloud.com/innovadotmu/interview-with-bob-paredes>.

<sup>237</sup> Robert Paredes, *Collected Writings of Robert Paredes*, Matthew Marth, ed. (San Francisco, CA: Pont Du Gard Press, 2007), v, [http://bobparedes.com/pdf/paredes\\_c\\_w\\_ebook.pdf](http://bobparedes.com/pdf/paredes_c_w_ebook.pdf).

<sup>238</sup> "Organist Will Honor Late UI Faculty Member on March 9 Recital," *University of Iowa News Release*, February 24, 2006. <http://news-releases.uiowa.edu/2006/february/022406verkade-organ.html>.

<sup>239</sup> Robert Paredes, *Collected Writings of Robert Paredes*, v.

repertoire.<sup>240</sup> One of those ensembles was the Schieve/Paredes Duo with his first wife Catherine Schieve on accordion. His performances in ensembles extended to the Big Jewish Band of San Diego, the Leadbelly Legacy Band of Austin, Texas, the La Jolla Playhouse Theater Company, and the Playbox Theater of Melbourne, Australia.

His studies at the University of Iowa happened almost by chance in 1987. That April, when the Midwest Composers Symposium was being hosted at the Oberlin Conservatory, Philip Blackburn's duet for clarinet and piano "Air: Air, Canary, New Ground" (1985) was scheduled for one of the concerts, but he had no luck recruiting anyone in Iowa City who was willing to play it. He contacted Paredes (whom he had known as a fellow Gaburo student in 1981), who was back from Australia and then living with his wife Catherine Schieve in Austin, Texas, and paid for his train fare to come to Iowa City. Blackburn recalled that he "blew everyone away" at Oberlin with his performance with John D. White at the piano, who was a stand-in for the faculty unwilling to learn and perform new works.<sup>241</sup> A few months later, in November 1987, Paredes and Schieve performed together at the Midwest Composers Symposium in Iowa City, a performance that University of Illinois graduate student Kirk Corey recalled was one thing that attracted him to the campus:

...I remember on that Composer's Symposium there was a piece that they did. It was this enormous canvas that was draped from a kind of metal frame that they had in Harper, and it was a canvas that was painted on both sides, and Bob and Catherine (on flute) each played the graphic score from opposite sides of it. It was just visually so compelling and so different from the piano trio that preceded it and the woodwind quintet that followed it.<sup>242</sup>

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<sup>240</sup> Ibid.

<sup>241</sup> Philip Blackburn, e-mail message to author, February 22, 2017.

<sup>242</sup> Kirk Corey, interview by the author, March 6, 2017.

Schieve had been a graduate student at UCSD who studied with Gaburo privately in Ramona in 1981 around the time Paredes was working at a downtown copy shop and also making the trip there for weekly lessons. Gaburo then persuaded Paredes to continue his studies in composition at Iowa and apply for a minority-funding grant for the Master's program because he didn't finish his studies at San Diego State and lacked a Bachelor's degree.<sup>243</sup> After agreeing to come to Iowa, reluctantly, Paredes became a graduate student in composition in Iowa City, while his wife studied for an MFA in Multimedia, Video Art, and Drawing with Hans Breder.<sup>244</sup> He earned his Master's (1989) and his PhD in composition (1990).

One of his distinct contributions to the EMS was the infusion of his virtuosity on clarinet with his studio craft. His craft did not come from the top-down MIDI controllers of the day but from a deep desire to explore the boundaries and connections between his physicality, breathing motions, body, and what the transformational studio technology could bring to it. This differed greatly from the thematic approach he used to compose for tape in an earlier work *Forgetting and Remembering* (1986) at the Melbourne Studios of Australian Broadcasting, but this was an idea that he became dissatisfied with at Iowa. Paredes was focusing more closely at the level of the sound. He recalled how this approach took hold of him in his work at the Studios:

What I think I liked was the possibility of tactility: the possibility of treating sound as one would a material for shaping and moulding. To work as a sculptor; hearing a sound and shaping [it] with my hands... In the very beginning, I thought about the studio as I would think about a piece of paper with staves on it, i.e., I

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<sup>243</sup> Philip Blackburn, e-mail message to author, February 22, 2017.

<sup>244</sup> Schieve was hired as Sound Designer for the university's Theater Department and later as a Visiting Assistant Professor in Theater Arts.

would compose a sound at a time, one impulse after another, developing motives; thinking thematically. Soon, however, I discovered that I was not going to arrive at a work in this fashion. It is too easy to sink roots into the difficulty of a new situation, i.e., thinking about one sound for six weeks. I wanted a work, I needed a work in order to say to myself, one more time, that I was, indeed, a composer. I particularly needed to say that to myself at that time. My strategy was to attack the Moog and make it generate the acoustical equivalent of a garbage dump of sounds out of which I might just salvage something (filth as a metaphor), something which might trigger a poetic resonance. I found it in the mass of sounds which became the twittering globule of penguin-cum-fear and high blood pressure sounds becoming my work Bass Strait (rhythm) Balance.<sup>245</sup>

When Paredes took over for his teacher and was appointed Visiting Assistant Professor of Music in August 1991, he continued his teacher's legacy. He kept all of the courses that Gaburo taught while pushing for newer technologies that would meet the needs of incoming graduate and undergraduate students and faculty projects, which included replacing outdated equipment, acquiring Csound and the HMSL program for the computer, and MIDI upgrades. He had taken Lowell Cross's recording techniques classes and was interested in the technological aspects of it, perhaps to a greater extent than Gaburo, who was more interested in the idea of the technology and its possibilities. Not counting the faculty and guest recitals in which its resources were being increasingly used, the EMS was predicted to be serving as many as 60 students per year, with undergraduates constituting the majority.<sup>246</sup> However, because he was a recent UI graduate and did not have previous teaching experience elsewhere, Paredes was not hired for a permanent position,<sup>247</sup> and he left the university subsequently in July 1993.

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<sup>245</sup> Robert Paredes, Letter to Dave Muller, ca. 1992, University of Iowa Electronic Music Studios Archives, Iowa City, Iowa.

<sup>246</sup> Robert Paredes and Kirk Corey, Letter to Composition/Theory faculty, September 18, 1992, University of Iowa Electronic Music Studios Archives, Iowa City, Iowa.

<sup>247</sup> Philip Blackburn, e-mail message to author, June 30, 2017.

For the remainder of his life, Paredes lived in Coralville and worked as an instrument technician at West Music while composing, performing, teaching privately, and writing on the side. He and his first wife divorced, and he later married Melody Scherubel, a nurse at the VA Health Care System and former UI music librarian in Iowa City. In 2000 he returned to the University of Iowa and taught improvisation as an Adjunct Assistant Professor in Jazz Studies until his death from cancer in Coralville, Iowa on August 20, 2005.

### **Elizabeth Hinkle-Turner (1993-94)**

Elizabeth Hinkle-Turner directed the EMS for a one-year appointment as Visiting Assistant Professor from August 1993 to July 1994. A DMA graduate in music composition from the University of Illinois at Urbana-Champaign, she had studied with Scott Wyatt and Herbert Brün. Hinkle-Turner furthered her studies in musicology with Bruno Nettle and Tom Turino and in electroacoustic music at the West Deutscher Rundfunk in Köln. She had previously directed the Electronic Music Studios at Florida International University, which was one of the leading MIDI studios at that time, and had taught at the Oberlin Conservatory. The author of the book series *Women Composers and Technology: Crossing the Line*, she was on the SEAMUS Board of Directors for ten years as Secretary.

Hinkle-Turner's interests at Iowa concerned the exploration of the use of digital interactive technology. She devised a CD-ROM text that was to be used as an instruction manual for the Experimental Music Studio I class. Collaboration was also an important element of her work. She created a class of 20 students that came from the music, art,

and communications departments where the students, both individually and in groups, devised “computer-based audio visual projects.”<sup>248</sup> These projects were realized with the help of Joan Huntley from the university’s Instructional Technology Center (ITC), Hans Breder, and Anita Lowry, a former director of the university’s Library Information Arcade.<sup>249</sup> In her attempt to further her research into computer music she acquired a Macintosh Quadra 840AV computer that was used for the realization of *Full Circle*.<sup>250</sup>

Since she left the University of Iowa, Hinkle-Turner has taught 20<sup>th</sup> century music and multimedia applications in music theory at the University of North Texas in Denton.<sup>251</sup> She continues to work at the University of North Texas as UIT Assistant Director and Director for Instructional Information Technology Services.<sup>252</sup>

### **Nelson Mandrell (1982)**

Before Gaburo’s appointment, when Lewis was recovering from his surgeries, the Composition Program conducted a search for someone who could teach the EMS classes for the fall semester of 1982. Scott Wyatt, who was Director of the Experimental Music Studios at the University of Illinois, learned about the opening and recommended DMA candidate Nelson Mandrell to apply for the position. Mandrell had studied composition

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<sup>248</sup> Elizabeth Hinkle-Turner, “Coming Full Circle: a Cathartic Experience with CD-ROM Technology,” *Leonardo* 32, no. 1 (1999): 49.

<sup>249</sup> *Ibid.*, 52.

<sup>250</sup> *Ibid.*

<sup>251</sup> Renée McBride, “Women Composers and Music Technology in the United States: Crossing the Line,” *Notes* 63, no. 3 (2007): 619-620.

<sup>252</sup> “UIT Leadership: Staff Directory,” *University of North Texas*, <https://it.unt.edu/uit-leadership-staff-directory>.



with Scott Wyatt, Salvatore Martirano, John Melby, and Paul Zonn, and he had helped Wyatt and Carla Scaletti to build Studio D.<sup>253</sup> He teaches theory, composition, and music technology at Northeastern Illinois University.<sup>254</sup>

### **Scott Wyatt (2007)**

When Fritts was on medical leave in the spring semester of 2007, he asked his friend and colleague Scott Wyatt, Professor of Music Composition at the University of Illinois, who was on sabbatical at that time, to teach Electronic Media II at the old Voxman Music Building with the assistance of Jean-Paul Perrotte, who was then a PhD student in composition at the University of Iowa. His classes at Iowa focused on the use of spatialization and multi-component design of sounds. The CIME Grand Prize award recipient at the festival of the International Confederation for Electroacoustic Music in Bourges in 1984, he became head of the University of Illinois Experimental Music Studios in 1976.<sup>255</sup> After a forty-year career, he retired from the University of Illinois in May 2016.

### **John Eaton (2008)**

In the fall semester of 2008, when the Electronic Music Studios moved to the Becker Communication Studies Building, Fritts was on sabbatical and asked his former

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<sup>253</sup> “University of Illinois Experimental Music Studios,” *Unidentified Sound Object*, <http://usoproject.blogspot.com/2009/10/university-of-illinois-experimental.html>.

<sup>254</sup> “Nelson Mandrell,” *Northeastern Illinois University*, <http://www.neiu.edu/academics/college-of-arts-and-sciences/faculty/nelson-mandrell>.

<sup>255</sup> “U of I composer wins French prize,” *The Pantagraph*, May 22, 1984, <https://www.newspapers.com/image/73482413>.

teacher John Eaton to act in a supervising capacity for Israel Neuman, who taught Electronic Media I for one semester. While Eaton never taught electronic music at the university, he assigned the final grades for student projects. A pioneer in electronic music, the microtonal composer was the first performer of Syn-Ket, a synthesizer invited by Paul Ketoff in 1963, with which he performed more than 1000 times throughout the world between 1966 and 1974.<sup>256</sup> He was hired at the Indiana University School of Music in the 1970-1971 academic year, first as Teacher of Composition (Electronic Music), then a year later as Associate Professor of Music.<sup>257</sup> He continued to teach at Indiana until 1992 when he accepted a teaching position at the University of Chicago,<sup>258</sup> where he worked until his retirement in 1999.

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<sup>256</sup> “The ‘Syn-ket’ (or ‘Synthesizer-Ketoff’),” *120 Years of Electronic Music*, <https://120years.net/tag/synket/>.

<sup>257</sup> “Minutes of the Board of Trustees of Indiana University, 14 August 1971,” *Indiana University*, August 14, 1971, <http://webapp1.dlib.indiana.edu/iubot/view?docId=1971-08-14>.

<sup>258</sup> “Minutes of the Board of Trustees of Indiana University, 28 September 1991,” *Indiana University*, September 28, 1991, <http://webapp1.dlib.indiana.edu/iubot/view?docId=1991-09-28>.

## CHAPTER 9

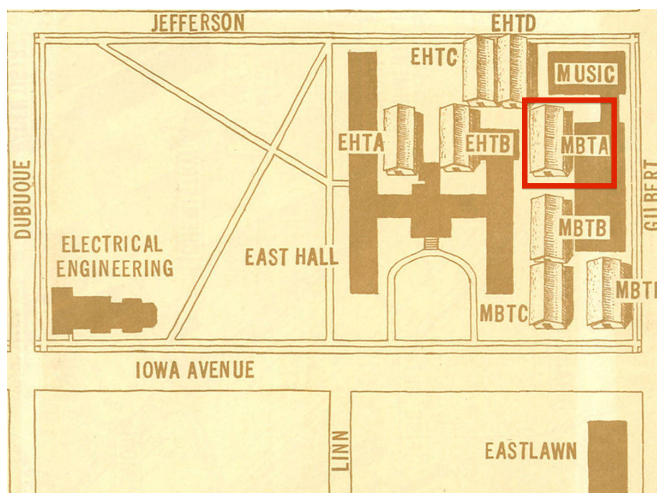
### THE FACILITIES

From its inception the Electronic Music Studios have been located in five different buildings throughout the University of Iowa: MBTA-N, Eastlawn, the old Voxman Music Building, Becker Communication Studies Building, and the new Voxman Music Building.

#### MBTA-N (1964-66)

The original studio was housed in a Quonset hut known as MBTA-N. It was a temporary music building next door to North Rehearsal Hall of the Old Music Building (see Figure 1).

**Figure 1: MBTA-N, 1964-66**<sup>259</sup>



<sup>259</sup> “University of Iowa campus map, 1946,” University of Iowa Archives, Iowa City, <http://digital.lib.uiowa.edu/cdm/compoundobject/collection/ucm/id/249/rec/306>.

The studio had a partition that divided the space into two smaller rooms: one for the studio and the other for a theory tape laboratory.<sup>260</sup> In the space allotted to the electronic studio this room was filled with equipment lined up against all four walls from floor to ceiling. Only a few photographs of the first studio are known to survive. This studio was furnished mostly with “test equipment” that the Department of Physics and Astronomy loaned to the School of Music as a means to build the studio with minimum expenses.<sup>261</sup> Some of the original equipment was built at the university, including a mixer, patch panel, and “several peripheral instruments.”<sup>262</sup> The University of Iowa School of Music also made several purchases, including two Ampex tape recorders.<sup>263</sup> The oldest surviving invoice in the archives of the studios contains a purchase on September 1, 1964 by the School of Music for an AS-2U, a Heathkit Speaker System Model, and a Heathkit AA-121, a stereo power amplifier.<sup>264</sup>

The MBTA-N studio in its earliest days operated as a “classic” electronic studio. While Cessna’s synthesizer was undergoing construction, the main instruments that composers had available for source material came from Hewlett-Packard Audio Oscillators, Heathkit Sine-Square Generators, and a Scott Random Noise Generator.<sup>265</sup>

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<sup>260</sup> Hervig, Letter to Luper, July 29, 1964.

<sup>261</sup> Lewis, “Electronic Music,” 150.

<sup>262</sup> Ibid.

<sup>263</sup> The April 27, 1967 *Daily Iowan* article describes these tape recorders more specifically as Ampex 350 two-track tape decks.

<sup>264</sup> Heath Company, University of Iowa Electronic Music Studios Archives, (1964), Iowa City, Iowa.

The sounds from this equipment could be modified with the Balanced Modulator and/or the Allison Variable Filter. The routing of signal was done through a patch panel and mixing panel in the studio. The patch panel had four rows of jacks. From the middle two rows of the panel connections could be made between items of equipment in the studio. The top row of jacks was used as multiples, which are groups of two-way jacks (able to function either as input or output jacks) that can be used to split a signal without modifying it. A composer at Iowa could send the signal to more than one jack for routing to the mixer and/or another item of equipment in the studio. The bottom row of jacks was used to output signal to the mixer panel, which had six channels of input. From the mixer panel a composer could mix each channel as desired by using input switches, adjusting the attenuators, and selecting the channel for output from a speaker. This studio only had a 2-channel stereo configuration available to composers. It also had a Berkeley Electronic Counter that could be used to analyze frequencies, VU meters for a comparison of frequency responses between tape recorders and amplifiers, and an oscilloscope to provide a visualization of waveforms. Two tape recorders were in use at this studio around this time: the Ampex 350 and Ampex 354. Two of the oldest devices from Shallenberg's years survive to this day: the Allison Variable Filter and Hewlett Packard Wide Range Oscillator 200CDR.<sup>266</sup>

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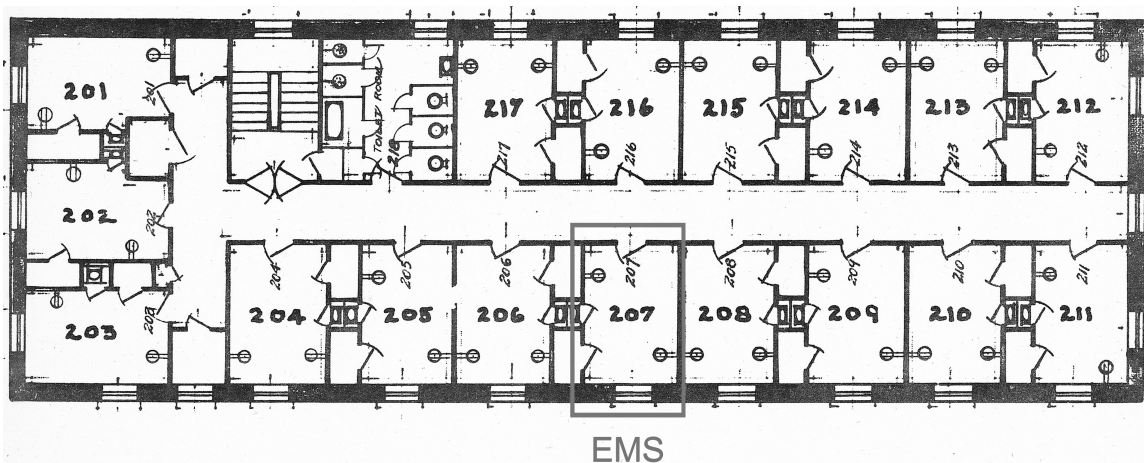
<sup>265</sup> "Studio Manual (1965)," *University of Iowa Electronic Music Studios*, <http://theremin.music.uiowa.edu/shallenbergmanual.html>.

<sup>266</sup> The Allison Variable Filter and Hewlett Packard Oscillator are mentioned in the oldest extant studio manual written in 1965.

## Eastlawn Studio (1966-71)

In the fall semester of 1966, the studio was moved to room 207 at Eastlawn, located at the corner of East Iowa Avenue and Gilbert Street, which was across the street from the Old Music Building (see Figure 2).

**Figure 2: Eastlawn Building, 2<sup>nd</sup> Floor, 1966-71<sup>267</sup>**



This room, for which only a few photographs survive, was formerly a practice room that had been converted into a studio for use by as many as 15 students in a semester.<sup>268</sup> One letter by Peter Tod Lewis, reproduced below, described some of the more intimate details surrounding the early days of the studio at 207 Eastlawn:

Our technician has a little workshop set up adjacent to the Studio, and if there are [no] problems pressing, he's free to work on projects of his own (or any the Director might cook up), but the important thing is that he's there on call, and performing the many little weekly chores—demagnetizing and cleaning tape heads, repairing patch cords, checking pots for static, etc.—that are essential.

Because our Studio is s[m]aller..., I'm able to check out potential users fairly quickly, and get them to twiddling knobs, the trial and error processes of learning

<sup>267</sup> "State University of Iowa Report of Facilities: An Inventory of Physical and Human Resources Available for National and Civil Defense Uses, February 1," 1951, Fred Ambrose Papers, box 17, folder 3, University of Iowa Archives, Iowa City.

<sup>268</sup> Charles Bullard, "Electronic Music: Just 'Beautiful,'" *The Des Moines Register*, March 29, 1970, <https://www.newspapers.com/image/8475905>.

the equipment. I teach courses in Electronic Music Studio I & II, both essentially composition courses. We established the rule that students of the course have, under normal circumstances, priority in the studio, they may sign up for 4 hours maximum per week; if they are more than 15 minutes late for their studio appointment, they forfeit that time; any time that is not signed-up for is available on a first-come, first-serve basis.

The Studio may be used from 8:30 A.M. to about 11:00 P.M. and sometimes later, after which the building is locked. All people using the Studio, whether enrolled in the studio courses or not, must pass a test, administered by the Director, before they are given keys.

So far, we have had no violations or mishaps, and I cross my fingers because the situation is not as securely controlled as one would like. The ideal situation (the moon!) would be a monitor on duty at all times who would open the studio for authorized people. (On one hand, I'm delighted the studio receives heavy use, but on the other—all that expensive equipment!)<sup>269</sup>

Unlike the previous studio, the studio at Eastlawn was centered more closely on a synthesizer and was more sophisticated than its predecessor. At first, this would have been Cessna's synthesizer. In the summer of 1968 the Studio acquired the Moog IIP Synthesizer. The earliest documented purchase for Moog parts occurred on August 16, 1968 with the purchase of 10 different parts, including the power supply and keyboard.<sup>270</sup> Further purchases for filter banks and the Sequencer Complement B were made for the Moog as late as the summer of 1970.<sup>271</sup> A composer could send signal from the Moog via its Trunk Lines to the Patch Panel. The Patch Panel at Eastlawn was an upgrade from the original at MBTA-N. The upgrade consisted of 5 racks, each rack containing 16 jacks. In addition, the completion of a custom-built quad mixer replaced the older 6-

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<sup>269</sup> Peter Tod Lewis, Letter to James Dunn, February 18, 1970, University of Iowa Electronic Music Studios Archives, Iowa City, Iowa.

<sup>270</sup> "Moog Modular Systems," *Moog Archives*, <http://moogarchives.com/module3.htm>.

<sup>271</sup> Peter Tod Lewis, Letter to Alan J. Padorr, June 18, 1970, University of Iowa Electronic Music Studios Archives, Iowa City, Iowa.

input, 2-output mixer, which enabled composers to realize works for 4-channel tape.<sup>272</sup>

The investment into a Scully 280 tape recorder also moved the studio one step closer from an “experimental” to professional studio. Michael Lytle shared one of his own experiences of that studio, when composers were standing up all of the time in the course of their work because there was no place to sit:

...going into that ‘68 studio was like a revelation to me...I went in there and started making sounds, and I was just in a world of magic...the oscillators were like the most incredible thing in the world...you could just run these ratios up and down the keyboard...and it was just great.<sup>273</sup>

Like MBTA-N, the studio’s residence at Eastlawn was certainly envisioned as a temporary facility. The first Voxman Music Building was beyond the planning stages in the middle of 1967<sup>274</sup> and was undergoing construction within a year.<sup>275</sup> Nevertheless, the studio had to wait several years for a new music building that would accommodate the ever-growing needs of the School of Music.

### **Voxman Music Building (1971-2008)**

Originally known as the Music Building, renamed Voxman Music Building in 1995 in honor of Himie Voxman, it was a considerable upgrade for the young electronic music program. The School of Music, upon moving to 300 North Riverside Drive in the

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<sup>272</sup> Peter Tod Lewis, “Composer’s Manual,” *University of Iowa Electronic Music Studios*, [http://theremin.music.uiowa.edu/documents/Composer's\\_Manual.pdf](http://theremin.music.uiowa.edu/documents/Composer's_Manual.pdf).

<sup>273</sup> Dave Olive, Michael Lytle, and Will Parsons, interview by Lawrence Fritts, September 15, 2015.

<sup>274</sup> “\$10 Million Music Center Planned,” *Iowa City Press-Citizen*, March 10, 1967, <https://www.newspapers.com/image/205542544>.

<sup>275</sup> “Life Ends for Long-Lived ‘Temporary’ Area,” *Iowa City Press-Citizen*, February 3, 1968, <https://www.newspapers.com/image/205606087>.



summer of 1971, left its overcrowded former dwellings at the Old Music Building and Eastlawn. The new music building designed by Max Abramovitz of New York City replaced many of the temporary barracks that were built for WWII veterans in 1945.<sup>276</sup> Once the Hancher Auditorium and Clapp Recital Hall were completed by the fall semester of 1972,<sup>277</sup> the first Voxman Music Building became a symbol of unity.<sup>278</sup> It was intended to be the permanent home for the School of Music and to provide recital halls for the university's largest ensembles. Arranging a concert for an orchestra or large concert band was difficult in the past because the School of Music did not have its own auditorium.<sup>279</sup>

While the move to the Voxman Music Building was certainly most welcome for the young EMS, its installation in the new building seemed to take longer than expected. When Lewis first mentioned the migration, there was an expectation that the move would occur sometime between May and June of 1971.<sup>280</sup> Subsequent letters, such as a letter from June 14, 1971<sup>281</sup> and a letter from September 27, 1971, suggested a considerable

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<sup>276</sup> "Toppling the Temporaries or Bye-Bye Barracks," *Iowa Alumni Review* 21, no. 4 (1968): 13.

<sup>277</sup> "Jazz, Dance Tickets Still Available," *Iowa City Press-Citizen*, September 27, 1972, <https://www.newspapers.com/image/16064996>.

<sup>278</sup> The Voxman Music Building was not named as such until May 2, 1995. See Michele Ann Bowen Hustedt, "The Life and Career of Himie Voxman" (PhD diss., University of Iowa, 2010).

<sup>279</sup> "Music Performance, Teaching Center," *Iowa Alumni Review* 20, no. 3 (1967): 6. Orchestra and band concerts before 1971 were commonly held in the Main Lounge of Iowa Memorial Union.

<sup>280</sup> Peter Tod Lewis, Letter to Gary Erickson, March 3, 1971, University of Iowa Electronic Music Studios Archives, Iowa City, Iowa.

delay in bringing both studios to full functionality. In the latter letter Lewis discussed his plans for the new studios and how he would breathe new life into the studios with the purchase of new equipment:

We will have 2 studios in operation: one with the Arp 2600, 3 Revoxes, and Sony 854-4, the other with a Moog III synthesizer (with Sequencer Complement B) and, hopefully, an Electric Music Box. Studio 2 has an Ampex AG-350 and 354, Scully 282-2 and 282-4; also on order is a B & K Model 125 1/3-octave spectrum shaper, Bode Dual Ring Modulator, and an EMT-140 FB-TS Stereo Reverb Unit.

Studio 2 will also be wired to the Master Recording Center, which has an Ampex 440-B, another EMT Reverb, and 6 professional Dolby units. Will have the possibility of remote quad playback in the yet-unfinished Recital Hall.<sup>282</sup>

With an additional studio for composers in the program to work, the electronic music program became known as the Electronic Music Studios. Having twice the space available for the creation and study of electronic music, along with Lewis's faculty office and a small room for the EMS Assistant to work, these studios were located on the 2<sup>nd</sup> floor of the music building in an area known informally as the "Electron Alley" for the Video-Laser experiments. At the end of "Laser Hall" was the newborn Recording Studios under the direction of Lowell Cross. When Lewis, Gaburo, and Paredes taught at the University of Iowa, the larger of the two studios was known as Studio 2, Room 2062. This was considered the professional studio for the advanced composer, while the smaller Studio 1, Room 2058, was a classroom setting that provided students an introduction to electronic music and the rigors of studio work. The faculty office for Lewis was Room 2059. Gaburo's office was in Room 2060, which became the office for subsequent

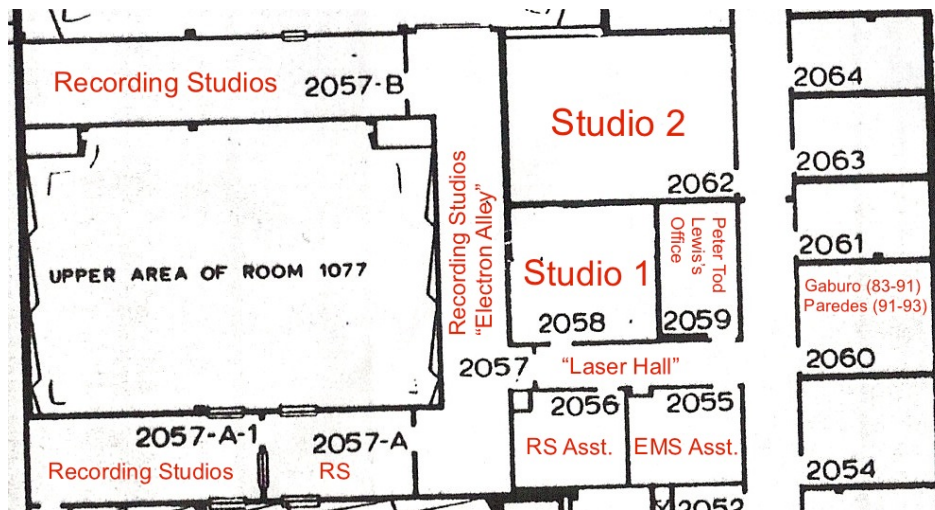
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<sup>281</sup> Peter Tod Lewis, Letter to Buchla Associates, June 14, 1971, University of Iowa Electronic Music Studios Archives, Iowa City, Iowa.

<sup>282</sup> Peter Tod Lewis, Letter to Don Buchla, September 27, 1971, University of Iowa Electronic Music Studios Archives, Iowa City, Iowa.

faculty members in charge of the EMS. The technician for the Recording Studios worked in Room 2056, while the EMS Assistant worked in Room 2055. The Recording Studios were behind the door to Room 2057 (see Figure 3).

**Figure 3: Old Voxman Building, 2<sup>nd</sup> floor (partial), 1971-93**



These new studios were the first to offer the program interconnectivity. Signals could be routed between Studio 1 and Studio 2, the Recording Studios, and even Clapp Recital Hall. This innovation was not present initially when the Electronic Music Studios moved into this building. Cross and Lewis had to request for this feature in the 1972-3 Budget.<sup>283</sup> Upon its completion, student composers could send signal from Studio 2 to Studio 1 or vice-versa.

Studio 1 in the 1970s had two particular synthesizers: the ARP 2600 and the EMS AKS Synthesizer. Of the two synthesizers, the ARP 2600 arrived shortly after the studios moved to the new building. The earliest known discussion of this synthesizer came from a letter dated May 5, 1970 by Gerald Shapiro, who was, at that time, directing the Studio

<sup>283</sup> "Budget Request for the Period 7/1/72 to 6/30/73," ca. 1972, University of Iowa Electronic Music Studios Archives, Iowa City, Iowa.

for Electronic Music at Brown University. He was travelling around the country during the summer on tour with Terry Riley, John Hassel, and David Rosenboom and was visiting many electronic music studios and demonstrating the new synthesizer whenever possible.<sup>284</sup> While Lewis replied to Shapiro's letter on June 22 and asked for a demonstration of the ARP, it is unclear if such a demonstration occurred. However, it would appear that such a demonstration did not take place in the summer, for Lewis sent another letter to Tonus Inc. on October 5, 1970 with an inquiry for a demonstration of the ARP.<sup>285</sup> It was not until September 9, 1971 that the ARP 2600 had been purchased.<sup>286</sup> The EMS AKS Synthi arrived later in March 1973. Lewis had expressed particular interests in acquiring this synthesizer two years before acquiring this synthesizer.<sup>287</sup> He had ideas of promoting the instrument through workshops and possibly through performances with the DeGroot Ensemble.<sup>288</sup> The synthesizer remained at the studios until sometime between December 11, 2001 and November 24, 2002 when it was no longer listed as part of the equipment for the studios.

Lewis oversaw the setup of Studio 2 as a professional electronic studio, which in the 1970s contained the Moog Synthesizer, tape recorders and other analog equipment

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<sup>284</sup> Gerald Shapiro, Letter to Peter Tod Lewis, May 5, 1970, University of Iowa Electronic Music Studios Archives, Iowa City, Iowa.

<sup>285</sup> Peter Tod Lewis, Letter to Tonus, Inc., October 5, 1970, University of Iowa Electronic Music Studios Archives, Iowa City, Iowa.

<sup>286</sup> ARP Instruments, University of Iowa Electronic Music Studios Archives (09 Sept., 1971), Iowa City, Iowa.

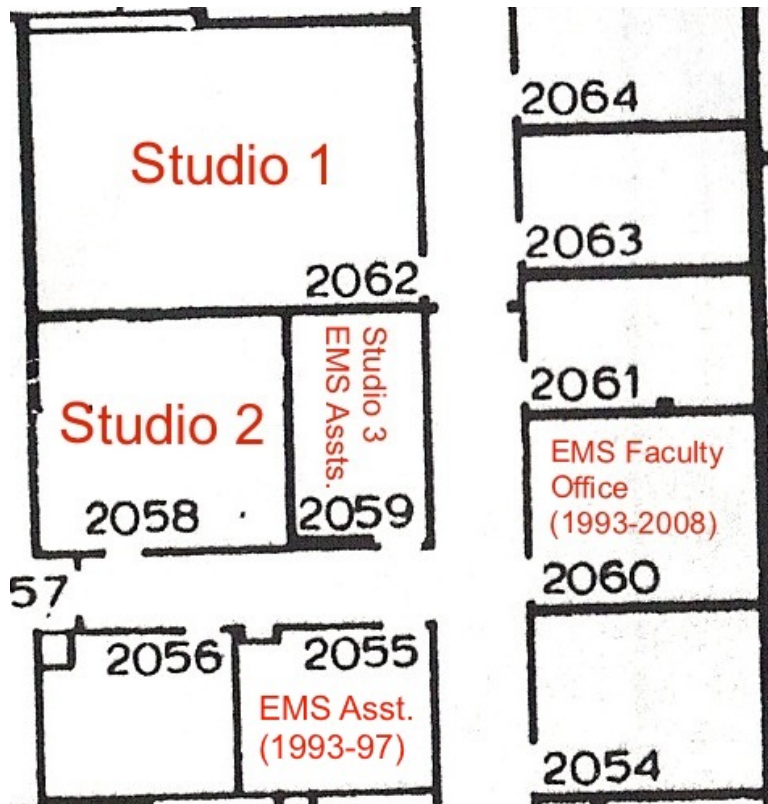
<sup>287</sup> Janice B. Andreas, Letter to Peter Tod Lewis, October 12, 1971, University of Iowa Electronic Music Studios Archives, Iowa City, Iowa.

<sup>288</sup> Peter Tod Lewis, Letter to Janice B. Andres, March 6, 1973, University of Iowa Electronic Music Studios Archives, Iowa City, Iowa.

generally considered to be of a higher quality than the equipment in Studio 1. The Moog was at the center of creative work done in this studio. In addition, this studio had a custom-built keyboard made by Cross that would send voltages to the Mintner-Elsea sequencer (to be discussed in chapter 10) and then to the B&K 1/3 Octave Equalizer, and the resultant signal could be sent to the speakers or to another interface for further modification. Guest composers, seminars, and advanced electronic music classes were taught in this room. Composers were able to realize 4-channel and 2-channel compositions for the remainder of the decade. As the studios increasingly shifted to digital technologies, the hybrid analog/synthesizer Buchla 400 was kept there, as well as the Amiga workstation in the late 1980s.

The Studios underwent many changes beginning in the 1980s. Lewis's office, Room 2059, was changed to the new Studio 3 and became a video-editing studio. When Hinkle-Turner was teaching at Iowa, the studio names switched. Room 2062 became Studio 1, while Room 2058 became Studio 2, with similar digital equipment to Studio 1, without any analog equipment. Room 2062 was the main studio for all of Lawrence's classes, while Room 2058 was used as an additional facility for creative work. Both studios were equipped with Apple computers, which were updated once every 3-7 years. They also featured Kyma interfaces. In 1997 Room 2059 became the office for the EMS Assistants, which continued to function as a video-editing studio and as the home of the Apple Xserve server for the EMS website (see Figure 4).

**Figure 4: Old Voxman Music Building,  
2<sup>nd</sup> floor (partial), 1993-2008**



In the summer of 2002 Studios 1 and 2 were upgraded for 8-channel playback systems with Alesis Monitor One speakers suspended on ceiling mounts around the room, and a year later, they were repainted and had new carpets installed. Each of these studios had an E-V Eliminator Sub-E Subwoofer. Studio 3, due to its smaller size, had a similar setup to Studios 1 and 2 with the only difference being that it had a 4-channel playback system due to its smaller size.

### **Becker Communication Studies Building (2008-16)**

On the west bank of the Iowa River, the School of Music endured two floods within 15 years, which are known as the Great Flood of 1993 and the Great Flood of

2008. These floods were one of the consequences of the agricultural practices and changes to the environment made by Iowan settlers since the 1830s. Farmers were introducing plows, natural fertilizers, and crop rotation to the area, and the Iowan lands were being drained of water and gradually stripped of their native prairies. After tractors and chemical pesticides became more commonplace in farming, agricultural output began to increase considerably, which led inadvertently to increases in erosion, pollution, and densification of the soil through compaction. A long-term consequence of these practices was the gradual depletion of water retention in the Iowan soil, which was once capable of absorbing up to eight inches of water per day. At the time of the floods, the soil could only retain a little more than one inch per day.<sup>289</sup> This depletion led to widespread increases in flooding, which happened more frequently and quickly.

The old Voxman Music Building had been built along the river as a part of the Fine Arts Campus, which included the Art Building (built in 1936), the Theatre Building, and the Museum of Art. A performing arts center for the campus west of the Iowa River had been under consideration for decades when in the early 20<sup>th</sup> century Edward P. Schoentgen of Council Bluffs, Iowa, who was a member of the university's Board of Education (now known as the Board of Regents), had a vision of a fine arts campus on the west side of the Iowa River.<sup>290</sup> In the early 1930s the Board of Regents decided to set aside 30 acres of land on the west bank of the Iowa River, which would become the Fine Arts Campus. At that time the goal was to establish the "first art colony" at a university

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<sup>289</sup> "Rising Waters: Rapid Changes," *History Corps*, <http://thestudio.uiowa.edu/historycorps/exhibits/show/flood>.

<sup>290</sup> David McCartney, "Old Gold: Historic Art Building to see new life," *IowaNow*, September 17, 2013, <https://now.uiowa.edu/2013/09/old-gold-historic-art-building-see-new-life>.

in the United States, which would include art, theater, and music.<sup>291</sup> Himie Voxman explained that plans had been made in the late 1930s to begin the construction of a new music building with the help of the Works Progress Administration, but when World War II ensnared the country, these plans were abandoned.<sup>292</sup> There was a revival of hope in the 1960s, especially when the idea of the Iowa Center for the Arts took shape, that the new music building would become part of one of the nation's great fine arts centers.<sup>293</sup> The music building was subsequently built along the Iowa River to do more than "accentuate the natural beauty of the river and nearby wooded bluffs," but to provide geographical and disciplinary unity for the arts:

Successful completion of the Fine Arts Campus as an integrated whole can do far more...than augment and accent the beauty of the community primarily in that single area. It can show to all that treatment of an area as a unit is immensely preferable to the kind of jumble of buildings that has marked this and other cities.<sup>294</sup>

The old Voxman Music Building was subsequently built on top of the 100-year flood plain, an area that extended from the Theatre and Music Buildings to North Riverside Drive, which was highly susceptible to flooding.<sup>295</sup>

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<sup>291</sup> "Fine Arts Progress," *The Daily Iowan*, November 6, 1936, 2.

<sup>292</sup> "Engineer, Psychologist, Head of U. of I. School of Music," *Iowa City Press-Citizen*, March 8, 1970, 3T.

<sup>293</sup> Joe Sheridan, "Fine Arts Center, Long Iowa Dream, Nearing Reality," *Iowa City Press-Citizen*, January 13, 1965, 5.

<sup>294</sup> "Iowa City's Interests in Fine Arts Campus," *Iowa City Press-Citizen*, November 29, 1965, 10.

<sup>295</sup> "Iowa River Corridor Landscape Master Plan," *University of Iowa*, <http://facilities.uiowa.edu/space/campus-planning/cpstudies/CampusLandscapeMasterPlan.pdf>.



When the Iowa River began to rise in the summer of 1993, the music building closed its doors for nearly two months as floodwaters filled the basement. The orchestra pit in the Hancher Auditorium had up to three feet of water, and the air conditioning and ventilation systems in the building failed and were out of order for more than a month.<sup>296</sup> The flood had caused \$100,000 in damages to heating, ventilation, and air-condition equipment in the art and music buildings.<sup>297</sup> Rather than relocating all of the classes, it was decided that most classes and rehearsals would be postponed until the second week of the fall semester.<sup>298</sup> Kirk Corey shared his story of the flood and how the Studios were affected:

I was the Audio Engineer in '93 during the first flood, and that was the second time in five years that we had to move everything out, except we were not moving everything out...I took one of the computers out of the ITC so I could work on stuff from the ITC and I think I took the Casio CZ-1...Because the Studios were all upstairs, there was really nothing to worry about with the flood. The water was not going to get that high, and nothing in there was really going to be that sensitive to mold.<sup>299</sup>

The Great Flood of 1993 was not the first time that the music building had to be closed for an extended period of time. Three years before, asbestos removal projects and the replacement of aging water pipes required the music building to be closed from May to August 1990. Everyone had to move out of the building. Faculty and staff were

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<sup>296</sup> Lynn M. Tefft, "Hancher prepares for 1<sup>st</sup> show," *The Daily Iowan*, August 24, 1993, 5A.

<sup>297</sup> "Damage," *Iowa City Press-Citizen*, September 8, 1993, 3C.

<sup>298</sup> Scott Hauser, "UI music students must wait," *Iowa City Press-Citizen*, August 21, 1993, 9A.

<sup>299</sup> Kirk Corey, interview by the author, March 6, 2017.

relocated to the Mayflower Hall and Currier Hall, and all of the equipment from the EMS had to be moved temporarily to Mayflower Hall.<sup>300</sup>

Unlike the Great Flood of 1993, the effect of the Great Flood of 2008 was far more extensive and devastated the School of Music. As a result of heavy snow in northeast Iowa and heavy rainfall in the spring of 2008, the water level of the Iowa River rose to unprecedented heights. The water quickly topped Coralville Reservoir's spillway, and by June 15, two days after the Voxman Music Building was closed, the Iowa River had crested to 31.5 feet, which not only shattered its previous record of 28.52 feet in 1993, but also peaked earlier than had been anticipated.<sup>301</sup> The flood caused extensive damage to the first floor of the Voxman Building, the Clapp Recital Hall, and Hancher Auditorium. The *Iowa City Press-Citizen* reported on July 5, 2008 that the ground floor of the Voxman Music Building accumulated as much as 2-3 feet of water and the Hancher Auditorium 6 feet of water.<sup>302</sup> The flood had caused \$30 million in damages, more than 50% of the building's value, and ruined the organs that were on the ground floor.<sup>303</sup> Some students lost their instruments. One student, Kate Truscello, lost her violin and 2 bows to the flood, valued at \$4,000, which was not covered by insurance.<sup>304</sup>

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<sup>300</sup> Ibid. As the equipment was housed at the Mayflower only for a short time, Mayflower Hall is not considered an official residence of the Studios.

<sup>301</sup> "Timeline of Events," *RIO Iowa Project*, <https://rio.urban.uiowa.edu/resources/timeline.html>.

<sup>302</sup> Kay Thistlethwaite, "Views of the flooding Iowa River," *Iowa City Press-Citizen*, July 5, 2008, <https://www.newspapers.com/image/207258182>.

<sup>303</sup> Brian Morelli, "Hancher out at least a year," *Iowa City Press-Citizen*, August 14, 2008, <https://www.newspapers.com/image/207308352>.

Nearby, the Department of Theatre Arts underwent restoration after the floodwater crested to the tops of its 15-20 ft. tall ceilings in the basement.<sup>305</sup> With the music building closed starting midsummer 2008 and the School of Music without its own building for the first time in 37 years, the School of Music was in a state of disarray and forced to move as quickly as possible to find relocation sites in preparation for the fall semester of 2008. Initially, expectations were that the Voxman Music Building would be rebuilt and everyone would return to the building during the winter break of 2008.<sup>306</sup> However, by April 2009, the University of Iowa community decided to relocate the Voxman Music Building and the Hancher Auditorium with the support of FEMA, and further attempts to restore the older music building were halted. This building was subsequently torn down between late December 2013 and early January 2014. The damage caused by the flood would take eight years for the School of Music to recover.

In the 2008-09 academic year the School of Music was spread out to as many as 17 different locations around Iowa City, with some faculty members not even having their own offices in the fall semester.<sup>307</sup> By fall 2009, the number of locations had been reduced to 9. The administrative offices were relocated to Clinton Street Music 5 (CSM5) on Court Ave. The choral area, excluding the offices for the director and assistant director of choral activities, was relocated to CSM 5 and 6. Musicology, music

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<sup>304</sup> Brian Morelli, "Coming to artists' aid," *Iowa City Press-Citizen*, November 7, 2008, <https://www.newspapers.com/image/207303714>.

<sup>305</sup> *Ibid.*

<sup>306</sup> Brian Morelli, "Fall semester sees recovery landmarks," *Iowa City Press-Citizen*, December 14, 2008, <https://www.newspapers.com/image/207346696>.

<sup>307</sup> *Ibid.*

education, jazz studies, and music therapy faculty, as well as theory/composition TA's, resided at the Communications Center on South Madison Street. The band, orchestra, and percussion areas went to the Music West Interim Building, formerly the Art Museum Building, on Riverside Drive. The offices for most faculty members, as well as piano and organ TA's, were at the University Capitol Center (UCC) on Clinton Street. A few offices were relocated to the United Congregational Church basement on Clinton Street. Student recitals were held at the UCC Recital Hall. Chamber ensembles, such as the Chamber Winds and the Center for New Music, performed at Riverside Recital Hall, the former St. Thomas Moore Catholic Church at 405 N Riverside Drive. The largest ensembles performed at the Iowa Memorial Union Ballroom and area churches.

The Electronic Music Studios, due to its location on the second floor of the Voxman Music Building, were left mostly untouched from the flood. While the equipment may not have been damaged from the floodwaters, the facilities were still vulnerable to theft and the humidity of the 2008 summer, yet the only item of equipment that appeared to have been stolen was an electric drill.<sup>308</sup> Lawrence Fritts found a new home for the studios at the Becker Communications Studies Building (BCSB) on 25 South Madison Street. Leighton Pierce of the Department of Cinematic Arts suggested to Associate Dean Joseph Kearney that a studio at the BCSB could be used to house the EMS for a period of time.<sup>309</sup> Robert Burns, a member of the CLAS Production Staff,

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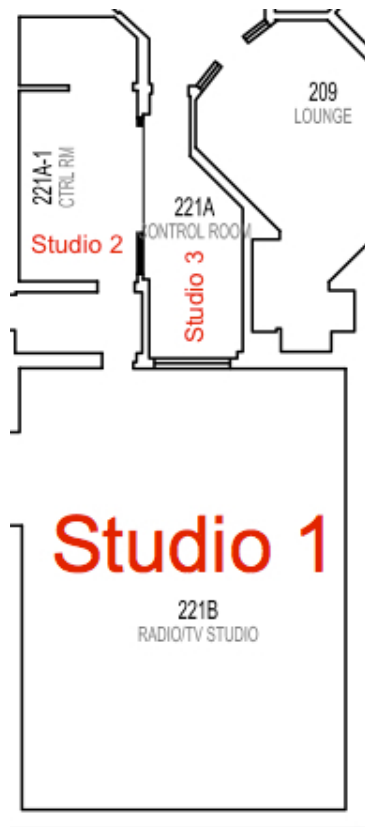
<sup>308</sup> Jennifer Hemmingsen, "Thieves strike flooded campus," *The Gazette*, July 25, 2008, <http://infoweb.newsbank.com.proxy.lib.uiowa.edu/resources/doc/nb/news/12236FC74EC93F70?p=AWNB>.

<sup>309</sup> Joseph Kearney, e-mail message to Lawrence Fritts, July 10, 2008.

helped Fritts with an 8-channel ring setup and carpet installation for half of the relocated Studio 1. Studios 2 and 3 were in 221A and 213 respectively (see Figure 5).

Studio 1 at Becker was previously a large film studio. It was the primary studio for electronic music classes, composition lessons, and many composition seminars. It was also the main studio used by composers for recording, which was superior to Room 2062 at the Old Voxman Music Building because of its low-noise high-ceiling fan and exterior walls.

**Figure 5: EMS at BCSB,  
2008-16**



The room was large enough in area that all of the equipment from the studios could have been stored in this room alone. This was a digital studio with an 8-channel ring

configuration that used 8040A Genelec speakers, which are still in use. It also included two flat-screen monitors that mirrored the computer monitors for class demonstrations and presentations. Two partitions, one small, and one large, were installed in this room. The smaller partition was built to enclose the concert equipment in storage. A second taller partition was built before the fall semester of 2013 to protect unwary students from stumbling upon an unfinished massive multi-planar animation camera stand from a Master student's project and Fritts's numerous boxes of books, which were first kept in Becker 328 from the fall of 2008 to the summer of 2013.

In contrast, Studio 2 was considerably smaller than Studio 1, and was only usable for realizing compositions in stereo using two 8040A Genelec speakers. The Moog Synthesizer, ARP 2600, and all the analog equipment from the old racks were stored in this studio. In both studios 1 and 2, a procedure for power sequencing was designed so that all of the necessary audio equipment could be activated with the touch of a single button. This power sequencing procedure involved the activation of the mixer and recording equipment in the first stage, the sound processing equipment in the second stage, and the speakers in the final stage. Studio 3 was Fritts's office, which was used as a workspace for 2-channel stereo works with 2 pairs of Alesis Monitor One speakers. On one occasion, in the summer of 2015, all of the equipment from Studio 3 and most of the equipment in Studio 2 had to be moved to Studio 1 for a month while the air conditioning systems were undergoing an upgrade.

All concerts hosted by the Electronic Music Studios at this time took place in room 101 BCSB, an auditorium used for large-class lectures. Concert setups required moving the electronic equipment from storage in Studio 1 down the building's freight

elevator and then pushing or carrying the equipment down a series of hallways to the auditorium. The freight elevator was a blessing and a curse. On the one hand, the close proximity of the studios to the freight elevator provided a very convenient means of moving electronic equipment in and out of the BCSB. On the other hand, a careless action on the part of the handler could result one in being locked out of the freight elevator. Once, about four to six hours before the December 2013 EMS concert, four harpsichords that were brought in by a guest composer from Ohio for the last piece on the program ended up being locked in the elevator for two hours before a technician was able to arrive from Dubuque to reset it and open the doors.

The majority of the digital equipment currently used by the Electronic Music Studios was acquired in its residency at the BCSB. Two GL2800 32x8 analog stage mixers were purchased at the beginning of the fall semester of 2009 for use in Studios 1 and 2.<sup>310</sup> The current studio computers, Mac Pro with 32GB RAM, 1TB storage, and the G-RAID external hard drives, were acquired in August 2015. The Earthworks 1024 preamps and the Zener Limiter in Studio 1 were also acquired at this time. Eight 8260A 10” Genelec speakers were purchased in the spring semester of 2009 for EMS concerts.

Both Studio 1 and Studio 2 followed the same setup for signal flow. The core interface for both computer systems was the Metric Halo 2882, one of the earliest digitally controlled FireWire interfaces built for Macintosh computers and one of the earliest FireWire interfaces to offer digital signal processing and digitally controlled analog stages. Like the thalamus in the brain, the Metric Halo 2882 could receive messages from the computer and send them to any interface to which it was connected

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<sup>310</sup> The date on the invoice for the purchase was August 28, 2009.

and could provide a 24bit/96kHz stereo front end. This interface replaced the Digidesign sound cards as a result of the 2008 release of Pro Tools 9, the first version of Pro Tools not to require Digidesign hardware in order to run the digital audio workstation. The Metric Halo had four XLR and four quarter-inch inputs, eight quarter-inch outputs, and eight ADAT inputs and outputs. Any signal from a microphone or synthesizer would be sent through an XLR patchbay to a Focusrite ISA828 (later in Studio 1 during the fall semester of 2015 the Earthworks 1024 preamp would replace the Focusrite). Any signal sent to the Focusrite would proceed to the Metric Halo and then travel by FireWire to the computer for recording. Playback of any audio from the studio computer would travel from the FireWire cable to the analog outputs of the Metric Halo. The signal from the outputs of the Metric Halo would be sent to the mixer and then bussed out to channels 1-8 in Studio 1 or L-R in Studio 2 to the BBE 882i Sonic Maximizers, which are still used to adjust the level of phase-corrected low and high frequencies. From these maximizers the signal was sent out to the Genelec speakers. Before 2015 the Capybara 320 interfaces were also connected to the computer for work with Kyma, but this program was not updated during the studio's residency at Becker, and so this system fell into disuse by the fall semester of 2013.

The Becker Communication Studies Building was the birthplace of two laptop orchestras. The first of these was iLork (Iowa Laptop Orchestra, 2010-2012), which was founded by graduate composition student Zach Zubow. This laptop orchestra consisted of Zach Zubow, Shane Hoose, Lawrence Fritts, and Jason Gregory. The second was the Laptop Orchestra of the University of Iowa (LOUi) in the spring of 2014. This ensemble was born from the construction of hemisphere speakers used by the ensemble, which were



built mostly on the second floor of the BCSB. David Gompper, the Director of the Center for New Music, wrote up a Student Technology Fund (STF) proposal for the laptop orchestra that was awarded to the Composition Program, and those funds were used to purchase hemisphere speaker parts and electronic equipment. A semester-long project led by graduate composition students Will Huff, Jason Palamara, and Nima Hamidi, the hard labor (drilling and sawing of the hemisphere speaker parts) was done in the Paint Room down the hall from the studios, while the electronics were completed in Studio 1. The hemisphere speakers were first used in an installation composed by Will Huff called “HarpMusic” at the end of an EMS concert on April 5, 2014. Two weeks later, the inaugural concert for the hemisphere speakers took place at a Composer’s Workshop concert on Sunday, April 27, 2014 at Riverside Recital Hall. Gompper shared his thoughts in a 2014 interview on the significance of the Laptop Orchestra for composers in the Composition Program:

I think the importance for the Laptop Orchestra is that...we’re forcing [the composers] on stage, in other words, forcing them to collaborate with each other, to talk to each other through music, and then to present their pieces on stage.<sup>311</sup>

Studio 1 was used for the very first rehearsals with the hemisphere speakers, and the Studios would provide rehearsal space for LOUi for a couple of classes in the spring of 2015 and the 2015-16 year when the ensemble was under the direction of Christopher Jette. This ensemble (as of 2017) is under the direction of Jean-Francois Charles, Assistant Professor of Music in digital arts and composition.

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<sup>311</sup> University of Iowa, “Excitement encompasses UI laptop orchestra,” video, 2:10, June 10, 2014, <https://www.youtube.com/watch?v=o2GIDIkcnso>.

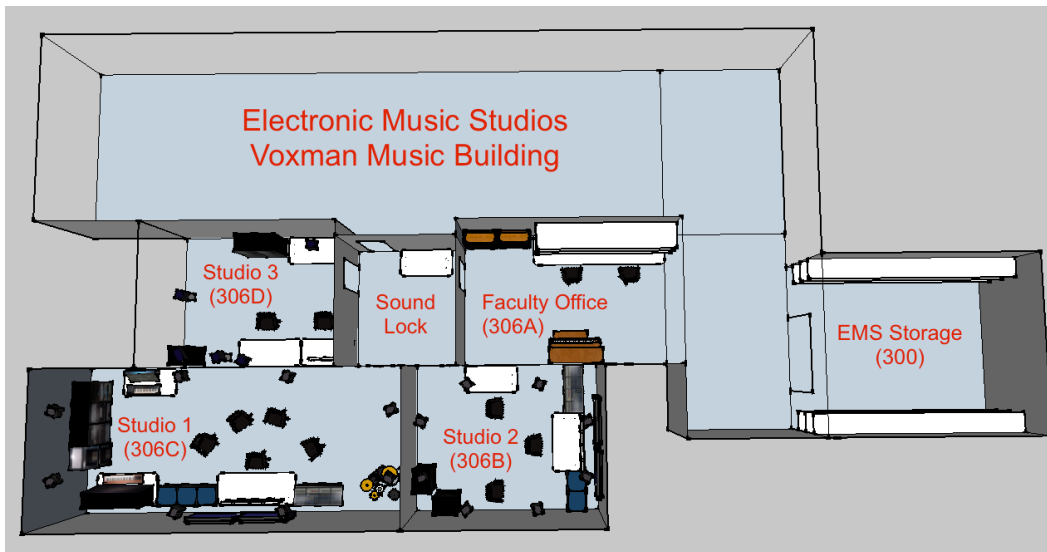
### **Voxman Music Building (2016 – present)**

The summer of 2016 marked the end of an 8-year residence at the Becker Communication Studies Building as the EMS planned for its long-awaited move to the new music building, which is situated at the southeast corner of Burlington and Clinton Street. Considerable planning took place from late May to late July 2016 to design the interior of the new studios at the Voxman Music Building, a project that Fritts entrusted to Jonathan Wilson. Wilson used a program called Sketchup and created numerous objects to scale with photographs to create a realistic depiction of objects in the studios. Plans were made to create a simulation of the new studios for the upcoming fall semester with a program called Unity. The expectation was that visitors to the website could take a virtual tour of the new facilities and learn more about the equipment housed in each studio. The Becker studios were closed one by one as they were gradually stripped down beginning on the night of July 3, 2016. Studio 1 at Becker was closed permanently on July 20, 2016 when the speakers were removed from the ceiling mounts with the help of Robert Burns and Randall Schildmeyer. Studio 2 was closed shortly after on July 22, 2016. The equipment was moved on the morning of Wednesday, August 3, to the new Voxman Music Building.

The Electronic Music Studios are located in the basement of the new building with reinforced sound walls. The Studios contain five rooms. Three of those rooms (0306B, 0306C, and 0306D) are Studios 2, 1, and 3 respectively. Studios 1 and 2 have 8-channel rings with Genelec speakers, and the audio equipment in both studios is installed with power sequencing capabilities. Studio 1 contains three racks of analog equipment from the 1960s to the 1990s, including the Moog, ARP 2600, Dingman Probability

Controller, and the B&K 1/3 Octave Equalizer. Studio 2 is used as a digital mixing room and contains all the microphones used by the studios. Studio 3 does not yet have power sequencing installed, but it is expected that this will be completed in 2018. It will be equipped with five 8040B Genelec speakers, but the number of speakers could be altered for research into spatialization. Since January 2017, two Genelec speakers in stereo have been used, along with a number of Alesis Monitor One speakers for experiments in sound projection. The fourth room (0306A) is the director's office, which includes an upright piano and two Alesis Monitor One speakers, and the fifth room (0300) is the storage room for the large concert equipment (see Figure 6).

**Figure 6: Electronic Music Studios, Voxman Music Building, 2016-present**



A month after the move to the Voxman Music Building, the Studios acquired its newest synthesizer, the Buchla Electric Music Box. It arrived on the afternoon of September 13, 2016, one day before the death of Don Buchla.<sup>312</sup> This synthesizer has been used in EMS concerts and in performances with LOUi.

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<sup>312</sup> Don Buchla (1937-2016), along with Robert Moog, was one of the American pioneers of synthesizers.

All of the Electronic Music Studios, excluding the storage room, are wired for interconnectivity through the patch panel in Studio 1. Sending signal (audio or video) between any two studios requires that the signal be sent through Studio 1 before it can be sent to the studio of choice. It is also possible to send a signal out from Studio 1 to the Recording Studios, which can then be routed to the Recital Hall, Concert Hall, Stark Opera Studio, or any rehearsal room in the building (excluding most practice rooms).

## CHAPTER 10

### THE EMS ASSISTANTS

The EMS Assistants have been seminal to the functionality and productivity of the Electronic Music Studios since 1964. While the professors who directed the Studios have provided their visions of what the program could become, the assistants have been the backbone of the program. Their responsibilities have evolved considerably over the last fifty-three years. Since the fall semester of 1997, two graduate students from the Composition Program have fulfilled this responsibility annually. They maintain the computers, order new equipment for the facilities, teach for the professor whenever absent or engaged in professional activities, manage the electronic music concerts, maintain records of all persons with studio access and computer program licenses, and maintain the EMS website, including recording projects at the anechoic chamber. This chapter focuses on the historical development of these assistantships and the contributions of the assistants to the future growth of the program.<sup>313</sup>

Subsequent EMS Assistants to the program following James Cessna worked under a research assistantship until the late 1970s. At that time these assistants were referred to as studio technicians. They had to be skilled in electronics and ought to be interested in ongoing developments of contemporary music, but they were not required to have formal music training (although this was considered to be very desirable for

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<sup>313</sup> For a full list of assistants to the program, please refer to Appendix B.

applicants).<sup>314</sup> It was more common during the 1960s and 1970s for Iowa's technicians to have a background in physics or electrical engineering. As one example, Kenneth J. Baker (1948-2014), an electrical engineering major at the University of Iowa who worked for the program from September 1969 until the summer of 1973, designed an audio switching device for a 16-speaker sound-in-motion system,<sup>315</sup> which was used for Peter Tod Lewis's "Sound-messe II" and "Sound-messe IV." He left the Studios to devote his career as a project engineer at Rockwell Collins Company until his death in 2014.<sup>316</sup>

### **Paul Dingman**

Another graduate student from the Department of Electrical Engineering, Paul Taft Dingman, took Kenneth Baker's place in September 1973. Holding a BA in Physics from Simpson College at Indianola, IA, he had spent a semester at the Argonne National Laboratory in Chicago, where he made "a mixed signal system for sequentially measuring magnet currents in a High Energy Physics experiment."<sup>317</sup> While at Iowa, he wrote papers on the use of oscillators in electronic musical education and on waveform generation with Johnson counters. His dissertation was a controller called the Dingman

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<sup>314</sup> F. Robert Shallenberg, Letter to Lejaren Hiller, April 29, 1968, University of Iowa Electronic Music Studios Archives, Iowa City, Iowa.

<sup>315</sup> "Peter Lewis Plans Recital," *Iowa City Press-Citizen*, November 5, 1973, <https://www.newspapers.com/image/23410339>.

<sup>316</sup> "Kenneth Baker," *The Gazette*, December 23, 2014, <http://www.thegazette.com/obituaries/kenneth-baker-20141223-0001052794-01>.

<sup>317</sup> Paul Dingman, "Paul Dingman," *LinkedIn*, <https://www.linkedin.com/in/paul-dingman-0286a77/>.

Probability Controller.<sup>318</sup> This device is a sample and hold oscillator with a sawtooth wave that uses a 16-step staircase waveform to output a sequence of voltages based on the positions of knobs called “Relative Probability Controls,” where each knob affects the duration of time at that step of the staircase, which can affect the frequency of the entire staircase. For example, if all the knobs are turned to the 7:00 position, and the eighth knob is raised up to the 12:00 position, this will result in a decrease in frequency across the entire staircase because the eighth step is being extended in length. When the length of a step is extended, it increases the total duration of the entire waveform, which slows down the entire cycle and lowers correspondingly the overall frequency of the waveform. This controller includes buttons and switches that will affect the direction of the staircase (ascending or descending), the operation of the sample and hold oscillator, and the scale of the output voltage. When Dingman graduated with a Master of Science in Electrical Engineering degree, he left the Studios in August 1974 to take a job for a public television station in Madison, Wisconsin.<sup>319</sup>

Paul Dingman is currently an Associate Professor in the Department of Electronics and Engineering Technology at the Oregon Institute of Technology in Klamath Falls, Oregon, where he has worked since 1988. He also participated in the 1988 United States Air Force Summer Faculty Research Program.<sup>320</sup>

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<sup>318</sup> The Dingman Probability Controller was recently used in conjunction with the ARP 2600 during the full performance of Jonathan Wilson’s *Rotations* on December 3, 2016.

<sup>319</sup> Paul Taft Dingman, Letter to Peter Tod Lewis, August 12, 1974, University of Iowa Electronic Music Studios Archives, Iowa City, Iowa.

<sup>320</sup> “United States Air Force Summer Faculty Research Program 1988: Program Technical Report,” *Defense Technical Information Center*, <http://www.dtic.mil/dtic/tr/fulltext/u2/a278741.pdf>.

## Peter Elsea

By January 1975, Lewis recruited one of his composition students Peter Elsea (B.M. 1972, M.A. 1974) to be his next assistant. He was a recent graduate of the University of Iowa with degrees in music education and composition. His composition studies with Lewis and music technology with Lowell Cross provided him the necessary experience to handle the position.<sup>321</sup> A native of Sioux City, Elsea had been interested in electronic music from a young age and was experienced in repairing musical instruments. After high school, he spent a year at Iowa State University in Ames majoring in physics, but when his musical inklings prodded his thoughts elsewhere, he transferred to the University of Iowa in 1966 to become a band director and teach high school students. He would later recall how he became interested in electronic music many years later:

When I was an undergraduate in '66 through '69, a lot of my teachers were involved in the electronic music program...I took theory with [Robert Shallenberg]...I was interested in electronics because of a high school crush I had, and I wrote him a paper on the design of a synthesizer, which he gave me a 'B' on, but he was intrigued enough by the fact that I liked the idea and that I did enough research to find out about oscillators, circuits, and what not that he at least showed me the Studios...this was the early studio. The Moog had just arrived, and he showed me around, so I got to know the studio that year in the Quonset hut and the following year at Eastlawn and got to watch some of the graduate students. Of course, I was an undergraduate, and I wasn't allowed to touch anything, but a few times I went in there with various people, a couple of times to play for people (I was a bassoonist), and just sometimes just sort of snuck in and had a chat with somebody like Cleve Scott while they were taking a break and they had to open the door...and that encouraged my interests in electronics.<sup>322</sup>

Before his last semester as an undergraduate, he was drafted into the Vietnam War and was assigned to the Continental Army Band in Hampton, VA. Every army band at that

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<sup>321</sup> Peter Elsea, *About Peter Elsea*, [http://artsites.ucsc.edu/ems/music/PQE/About\\_Peter\\_Elsea.html](http://artsites.ucsc.edu/ems/music/PQE/About_Peter_Elsea.html).

<sup>322</sup> Peter Elsea and Veronica Voss Elsea, interview by the author, May 9, 2017.



time had a recording kit, and he was trained to use that gear with a recording engineer of an army band stationed in Arlington. Elsea served with the army band in Hampton for two years, one year in Korea, and then returned to Iowa City in the spring of 1972 to complete his student teaching at University High School. At this time he decided to pursue a Master's degree in composition to further his studies in electronic music and compose in the Studios.

When Dingman left in the summer of 1974, the vacancy of this position left Lewis in a state of distress. The Electronic Music Studios were without a technician for the first time in its history. In his search for a new technician Lewis proposed in a letter written to Himie Voxman late in September 1974 that a studio technician with a full-time position for the studios should be recruited with a starting salary of \$8000-\$9000 for eleven months per year.<sup>323</sup> He further expressed the frustration of finding a new technician with the necessary qualifications and emphasized the grave importance of the studio technician to the health and functionality of the Electronic Music Studios:

Since April of this year, when the possibility of our former technician leaving became evident, I have been in touch with both the Department of Electrical Engineering [sic] and the Department of Physics and Astronomy [sic], which have supplied technical assistants in the past. The only candidate they were able to send us so far turned out to have an insufficient grade point average (2.47 as compared to the minimum 2.5). This is a nearly intolerable situation which I hope will be remedied soon. But even if, and perhaps I should say when, we find a new studio technician, the situation cannot be altogether satisfactory. We have to train a new one every year, or every two at best, time lost which is rarely regained on a half-time appointment. Further, graduate students are pressed by their own exams.<sup>324</sup>

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<sup>323</sup> Peter Tod Lewis, Letter to Himie Voxman, September 26, 1974, University of Iowa Electronic Music Studios Archives, Iowa City, Iowa.

<sup>324</sup> Ibid.

Elsea recalled that Lewis was stressed, had enough of working with engineering students, and wanted a different kind of person to take over the job:

I saw him one morning, and he was in a fret, and he says, “I’ve lost Paul, and now I’ve got to... find myself somebody, and I’m just tired of working with these engineering types who don’t really understand music, and I’ve got to find myself a music major who knows electronics,” and I just mentioned, “Hey, Peter! I’m a music major who knows electronics!” To be truthful, I was pushing the envelope a little bit on the electronics because, yes, I knew some electronics, I played with electronics, I read an electronics textbook once, but that’s a long way from an EE degree, but I was willing to learn on the job.<sup>325</sup>

Elsea was not the only person under consideration for the position. Around the time he began working at the Studios, Lewis became acquainted with a prospective graduate student to the University of Iowa: Jeff Goldstein. He was an assistant to the Electronic Music Studios at Oberlin Conservatory under the direction of Sergio Franco and, having experience in digital and analog circuitry, was very interested in computer music. However high his credentials were, Lewis wanted someone who he could trust to take care of the Studios while he was living in Europe for several months. In the end Elsea’s intimacy with the studio equipment and two years of compositional activities in the Studios prevailed over Goldstein’s knowledge of electronics, so Lewis decided in February 1975 to keep Elsea on the job.<sup>326</sup> Although he had graduated by the time he was working at the Studios and decided not to pursue a PhD in composition, he enrolled in a couple of courses at the university each semester to maintain his employment.<sup>327</sup>

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<sup>325</sup> Peter Elsea and Veronica Voss Elsea, interview by the author, May 9, 2017.

<sup>326</sup> Peter Tod Lewis, Letter to Jeff Goldstein, February 26, 1975, University of Iowa Electronic Music Studios Archives, Iowa City, Iowa.

<sup>327</sup> Peter Elsea, e-mail message to author, March 18, 2017. Elsea had debated the possibility of enrolling into the PhD program him, he was only interested in working with audio and never considered himself a “paper and pencil composer.”

With his new half-time appointment, Elsea kept busy for the next few years working at the Studios and at West Music in Coralville, Iowa as an instrument repairman, where flutes, oboes, and bassoons were his specialties.<sup>328</sup> These jobs seemed to be ideal for the avid electronics technician, especially in the first year of his assistantship for the EMS, which he spent mostly redoing the work of his predecessors:

.... all I was doing was rewiring things that other technicians had put in and then kind of slipshod on, and when I got it done, the Studio no longer hummed, and I built the patch cord racks that would hold the patch cords on a thing like a hat stand (they weren't quite comfortable...they were hanging on the wall), things you can buy that really don't do the job very well for what we need, did little things like that that I could do because I was still working in the music repair shop. Heck, I could go over there and build a patch cord rack, and they wouldn't care.<sup>329</sup>

Elsea was also studying on the job. He wanted to build synthesizers, explore digital electronics, and become more exposed to computer programming. Newsletters from Electronotes were being sent to him on how to build synthesizers at 1/10 the cost of the Moog and the Buchla. The schematics those newsletters included motivated him, and he started to spend a lot of time tinkering and building new equipment on the job, including the studio's first mixing console with linear faders.

His biggest accomplishment was building a set of 16x4 (16-stage, 4-output) sequencers based on discrete logic chips, which had previously been designed and built by Cross's audio technical assistant Thomas Mintner in 1974, who later sent the schematics to Electronotes for publication. Once he built a couple of sets like this for

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<sup>328</sup> West Music is a chain store in Iowa and Illinois that sells musical instruments and print music, as well as offering repairs, lessons, and music therapy services. The main location of West Music is three miles away from the University of Iowa campus in Coralville, Iowa.

<sup>329</sup> Peter Elsea and Veronica Voss Elsea, interview by the author, May 9, 2017.

himself, Elsea made a set of sequencers for composition student Michael Babcock and another for the studios with funding from the university in 1980<sup>330</sup> called the Elsea-Mintner sequencer. This set of sequencers was similar to the Moog 960 Sequential Controllers in that the position of knobs would determine the amount of output voltage of an activated stage, but the user could change the direction of the stages (left to right, or right to left). V-trigs were required to shift the sequencers since they did not have an internal oscillator, and any sequencer could be called by applying a V-trig to a SET jack. The sequencer could be shifted up or down based on the position of a switch for the shift input. It also had a “Data Load” feature that could reset the sequencer at any stage when the “Man Load” (manual load) button was pushed. The stage would then be selected based on the position of four toggle switches labeled 8, 4, 2, and 1. These switches would input a binary number into the counter circuit, which would correspond to one of the 16 stages in the sequencer. It also had a “Reset Break” button, which would allow the data load to happen automatically by the use of the rotary switch, which could be set to any of the 16 stages. The stages selected with the rotary switch and the four toggle switches could be used in combination to shift between the sequencer stages, depending on the direction of the sequencer. The sequencer could also be used in combination with the Moog to create more complex sequential patterns. This device included trigger outputs with a switch-activated pattern generator that could be connected to the B&K Graphic Equalizer and the custom-made keyboard built by Cross.<sup>331</sup>

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<sup>330</sup> Ibid.

<sup>331</sup> This part of the sequencer can be found in Studio 1.

Another one of Elsea's accomplishments was replacing an oscillator in the Moog with an E-MU oscillator so that Lewis could produce a pure sine wave from it. This came about after one of his students accidentally blew up the former oscillator, and they couldn't get Moog at that time to repair it.<sup>332</sup> Elsea later explained that Lewis had a very specific reason why he wanted to acquire the E-MU oscillator:

What he wanted was modulation, but he wanted his modulation to be very clean. He wanted a pure sine wave as the modulator so that he was predictably generating really interesting and rich sounds from his other outputs on the other side.<sup>333</sup>

Besides making repairs and building synthesizers, Elsea was gaining experience from teaching classes at the EMS. He first covered for Lewis when he went to the Institute of Sonology in 1975 and six different guest composers came for two-week residencies, including Morton Subotnick. During those weeks he was their teaching assistant between guest visits and had to maintain a curriculum. He began to teach the EMS I in Studio 1 in 1977 and then a year later, in the fall of 1978, he was hired as the first Audio Specialist for the EMS, where he continued to teach the EMS I class, maintained the Studios, and also taught a course on band instrument repair.<sup>334</sup> The Audio Specialist position was significant for the EMS. For the first time Lewis had a full-time technician to support the program, something that he had pursued for a number of years. In addition, the new position was not a graduate assistantship. Rather, it was a staff appointment in the School of Music, which meant that Lewis could hire someone with

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<sup>332</sup> Peter Elsea and Veronica Voss Elsea, interview by the author, May 9, 2017.

<sup>333</sup> Ibid.

<sup>334</sup> Lyle Merriman, ed., "Staff Changes," *Segue: The University of Iowa School of Music Newsletter* 20, no. 1 (1979): 4.

professional experience to keep the equipment in top condition. The responsibilities of the Audio Specialist included module/system design and construction. A prospective employee for the position was required to have more than 3 years of post high school experience working with audio equipment.<sup>335</sup> In addition to his EMS duties, Elsea would assist the Recording Studios with specific projects. On one occasion, he assisted with the installation of Cross's laser system at the Adler Planetarium in Chicago.<sup>336</sup> He took his summer recording courses on audio recording and engineering, and he would learn different techniques at a high level from guests such as Stephen Temmer, the founder of Gotham Audio, who visited the University of Iowa. Elsea attended the classes on three different summers for free because he was working for the EMS, while the others had to pay a lot of money for the sessions.<sup>337</sup> It was at the Studios where he met Veronica Voss, who he married in Iowa City in 1977. She related the story of the day that she met her future husband:

...I discovered that one of the requirements for composition majors was to take a course in the Electronic Music Studios, so I signed up, and I waltzed upstairs and introduced myself to Peter Lewis and said, "Hi, just letting you know I'm going to be up here taking your course," and he went "Blah, a blind girl! What do I do?" and "I know. I'll pawn her off on the TA," and I met the TA, and went "Thank you very much," and so did my guide dog at the time.<sup>338</sup>

After two years as Audio Specialist, Elsea left his position at the University of Iowa in the summer of 1980 when Gordon Mumma recruited him for the electronic music

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<sup>335</sup> "Audio Specialist," *The Des Moines Register*, December 5, 1980, <https://www.newspapers.com/image/128741759>.

<sup>336</sup> "Laser System Designed at the UI," *Iowa Alumni Review* 33, no. 1 (1979): 5.

<sup>337</sup> Peter Elsea and Veronica Voss Elsea, interview by the author, May 9, 2017.

<sup>338</sup> *Ibid.*

program at the University of California, Santa Cruz (UCSC). The turn of events was unexpected. Hired with only three weeks notice, Elsea related the story of how the new chapter of his life at UCSC began:

It was fairly quick. Basically, I was working in my office and Lowell came to me and says, “Gordon Mumma’s on the phone and wants to talk to you,” and I had not met Gordon at the time, and I was kind of surprised, and we talked on the phone a bit and Gordon asked me about my experiences doing electronics and other things, and then he offered me a job as his technician and teacher...at UCSC where they were just getting a program going...he had had a technician there who was a volunteer and finally got a job and went away, and he’d been looking around for somebody and he just, being Gordon, he envisioned what he wanted and then started looking for it, and he realized very quickly that he and I spoke the same language...so at the end of that phone call I was hired...<sup>339</sup>

At Santa Cruz, Elsea devoted over thirty years to the expansion of the UCSC Electronic Music Studio, where he served as the director of that studio and continued to build synthesizers until his retirement in 2013.<sup>340</sup> In 1995 Elsea became acquainted with Max/MSP and developed more than 100 external objects for use in Max/MSP called “Lobjects,” which mainly perform operations on lists.<sup>341</sup> He wrote a number of tutorials for the program and published a textbook on electronic music *The Art and Technique of Electroacoustic Music (Computer Music and Digital Audio Series)*.

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<sup>339</sup> Ibid.

<sup>340</sup> “An Afternoon with UCSC Research Associates Peter Elsea, Inderjit Kaur and Robert Strizich,” *University of California, Santa Cruz*, <http://music.ucsc.edu/programs/graduate/associates-abstract>.

<sup>341</sup> “Woodstockhausen Concert Program,” *Woodstockhausen*, <https://nosuch.com/wsh/2003/program.html>.

## **Thomas Henry**

When Elsea left, Thomas Henry succeeded him in September 1980. He had published an article for the *Electronics* magazine in 1981 on a three-chip generator capable of giving a four-step waveform for a modulating voltage-controlled oscillator. He built several pieces of equipment for the studios, including a 16-stage sequencer.<sup>342</sup> After resigning suddenly in December 1981, Thomas Henry went on to publish several books, including *Building a Better Synthesizer* in 1987, *An Analog Synthesizer for the 21<sup>st</sup> Century* in 2006, *Making Music with the 3080 OTA* in 2008, *The Noise Generator Cookbook* in 2009, and *The PICAXE 18M2 Cookbook* in 2014.<sup>343</sup>

## **Jon Palmer**

Following Thomas Henry's resignation, a PhD student in psychology named Jon Palmer took his place as Audio Specialist in early 1982. Along with Marilyn Somville,<sup>344</sup> Cross hired Palmer as the EMS Audio Specialist when Lewis was unable to do so since he was recuperating from his illness.<sup>345</sup>

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<sup>342</sup> Michael Farley, e-mail message to author, August 20, 2015.

<sup>343</sup> "Books by Thomas Henry," *Magic Smoke Electronics*, [http://www.magsmoke.com/thomas\\_henry\\_books.asp](http://www.magsmoke.com/thomas_henry_books.asp).

<sup>344</sup> In December 1980, Himie Voxman retired from his position as Director of the School of Music, and Marilyn Somville, who at that time had been dean of liberal arts at Centre College in Danville, Kentucky, succeeded him and became Director of the School of Music from 1980 to 1990. See "The Changing Scene," *Music Educators Journal* 67, no. 4 (1980): 23.

<sup>345</sup> Lowell Cross, Letter to John Preece, February 19, 1982, University of Iowa Electronic Music Studios Archives, Iowa City, Iowa.



Although Cross considered Palmer to be a “genius” with the Buchla 400,<sup>346</sup> the technician did not live up to Kenneth Gaburo’s demands satisfactorily. His job consisted of maintaining both studios, performing “weekly system checks,” “instrument design & fabrication consistent with the development of the program,” “student services,” sharing technological expertise in studio seminars, and being an active part of the EMS concerts.<sup>347</sup> He was terminated after two years of employment at Iowa in April 1984 when his failure to appear for work for more than two weeks was considered to have been a “voluntary quit.”<sup>348</sup> His unpredictable work schedule and work ethic was considered by Gaburo to have added to the studio’s “already depressing state of affairs.”<sup>349</sup>

The “depressing state of affairs” at the EMS was a time of crisis for the program. From 1981 to 1983 the program was strained by a lack of leadership, technical support to maintain the aging equipment, and funding. From the spring of 1981 to the fall semester of 1983 the Electronic Music Studios did not have a tenured-track professor in charge of the studios when Lewis was undergoing treatment from cancer or anyone with Elsea’s familiarity of the equipment after his departure to Santa Cruz. This left Cross in charge of supervising the audio technicians for both of these studios and drafting the funding proposals for both programs. However, his projects and his own troubles of maintaining

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<sup>346</sup> Lowell Cross, Letter to Kenneth Gaburo, December 28, 1982, University of Iowa Electronic Music Studios Archives, Iowa City, Iowa.

<sup>347</sup> Kenneth Gaburo, Letter to Jon Palmer, November 11, 1983, University of Iowa Electronic Music Studios Archives, Iowa City, Iowa.

<sup>348</sup> Marilyn Somville, Letter to Jon Palmer, April 9, 1984, University of Iowa Electronic Music Studios Archives, Iowa City, Iowa.

<sup>349</sup> Kenneth Gaburo, Letter to Marilyn Somville, March 27, 1984, University of Iowa Electronic Music Studios Archives, Iowa City, Iowa.

a dedicated Audio Engineer for his own studio further minimized the degree to which Cross could assist the EMS. He explained to Gaburo in December 1982 that he had to resort to the “nitty-gritty chores of installing our new 24-track equipment...(down to soldering connections and drilling holes) since the last employee didn’t take any interest in our new equipment windfall while he was ‘working’ here and spent most of his time brooding and trying to involve me in his own problems.”<sup>350</sup>

Further compounding the problems beset upon the program was the underfunding for the replacement of outdated and/or dysfunctional equipment. A considerable amount of the EMS equipment was reported to have fallen into disrepair, and the studio was in a dire need for funds to replace outdated equipment. Michael Farley recalled that the electronics were “in disarray and badly in need of calibration.”<sup>351</sup> While he also mentioned that the studios were without a budget,<sup>352</sup> it would be more preferable to argue that the Electronic Music Studios were inadequately supported through funding in spite of the new equipment acquired during those years, for the EMS received by the end of 1982 a Buchla 400 analog-digital synthesizer, valued at \$9,500 at the time of its release.<sup>353</sup> In comparison, when the Recording Studios and Electronic Music Studios submitted an equipment request to Howard Laster, Dean of the Liberal Arts and Sciences, in the amount of \$99,787 for the 1980-1981 academic year, the EMS received a Lexicon

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<sup>350</sup> Lowell Cross, Letter to Kenneth Gaburo, December 28, 1982, University of Iowa Electronic Music Studios Archives, Iowa City, Iowa.

<sup>351</sup> Michael Farley, e-mail message to author, August 11, 2015.

<sup>352</sup> Ibid.

<sup>353</sup> “Products of Interest,” *Computer Music Journal* 6, no. 4 (1982): 49.

93 Digital Delay Processor valued at \$1,685.<sup>354</sup> Even taking these few purchases into account, these acquisitions were insufficient to replace most of the equipment that had been a part of the studios since 1971.

Another particular problem for the program was a diminishing number of student composers interested in electronic music. After the 1980 fall semester, only a handful of composers continued to work in the studios. By the time Gaburo arrived, Cross reported that only one or two students from the Composition Program were left who had received instruction from Lewis,<sup>355</sup> and none of the students from the EMS I class in the fall 1982 semester were music majors.<sup>356</sup> Gaburo had to formulate a plan to restore the studios to proper working order, secure an adequate budget, increase student composer enrollment into the program, and find the right technician to help him get the studios back into shape.

The reasons for Palmer's two-year employment, in spite of the difficulties Gaburo had with him, could be argued as a matter of necessity. After his arrival, Gaburo needed all the help he could get to become fully knowledgeable about the equipment at the Studios. Farley noted that it took Gaburo several years to become acclimated to the studios before he took firm leadership of the program around 1987.<sup>357</sup> It is possible that Gaburo was convinced that he could sway Jon Palmer into changing his work habits, yet Palmer and Gaburo had conflicting ideas of work ethics. Farley recalled Gaburo's

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<sup>354</sup> Lowell Cross, Letter to Howard Laster, May 27, 1980, University of Iowa Electronic Music Studios Archives, Iowa City, Iowa. The Lexicon 93 Digital Processor is still a part of the analog studio at the new Voxman Music Building.

<sup>355</sup> Lowell Cross, Letter to Gaburo, December 28, 1982.

<sup>356</sup> *Ibid.*

<sup>357</sup> Michael Farley, e-mail message to author, August 11, 2015.

neatness, maintenance of regular hours, and insistence that Palmer should be present to fix any problem immediately that could arise in the course of studio operation, which was in stark contrast to the technician who was often a night owl, a thorough and meticulous problem solver who could immerse himself for hours into a project.<sup>358</sup> Gaburo had expressed optimism that the EMS would be restored by the end of the spring semester of 1983 as he, Jon Palmer, and his students went through every piece of equipment to diagnose the cause of their malfunctions.<sup>359</sup> By February 1984, however, even Gaburo became increasingly frustrated with Palmer's infrequent appearances, and, when his efforts failed to persuade him into following a work schedule that he wanted, he was likely convinced that a replacement was going to be needed, so he began to compile the necessary paperwork to make his case to Marilyn Somville.<sup>360</sup> Additionally, Cross may have been too lenient with Palmer's absences, especially when he did not discuss this matter with her even in Palmer's first year of employment.<sup>361</sup> Finally, and most importantly, it is possible that if Gaburo had let him go too early, he might not have had the funding necessary for a replacement. His thoughts about hiring a new technician in his letter to Somville dated March 27, 1984 suggest that he was concerned that the School of Music would have been unable to secure sufficient funding for a replacement, and he would not have proceeded to hire a new technician without fulfilling the following:

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<sup>358</sup> Michael Farley, e-mail message to author, April 27, 2017.

<sup>359</sup> Kenneth Gaburo, Letter to Lowell Cross, March 16, 1983, University of Iowa Electronic Music Studios Archives, Iowa City, Iowa.

<sup>360</sup> Kenneth Gaburo, Letter to Lowell Cross, February 3, 1984, University of Iowa Electronic Music Studios Archives, Iowa City, Iowa.

<sup>361</sup> Lowell Cross, Letter to Jon Palmer, November 17, 1982, University of Iowa Electronic Music Studios Archives, Iowa City, Iowa.

I hesitate to go forth with “vigor”, unless and until we can obtain reasonable assurance that replacement funds will be forthcoming. As soon as this is the case, I am prepared to do whatever is necessary to begin the long overdue process of finding a replacement, and to persist in the construction of our studios such that they can be worthy of our best hopes for the program.<sup>362</sup>

### **Dave Muller**

Almost immediately, Gaburo sent out an ad for a new technician for the EMS. With a considerably different person in mind Gaburo hoped for a turnaround from his previous three semesters at Iowa and to restore the studios to suitable working conditions. He found the person he wanted in the summer of 1984 in Dave Muller, who at the time had been working as a technician in the back of a video game store called Mountain Coin Machine Distributors in Des Moines. However, he did not meet the educational requirements to be hired for the position. Interested in engineering race cars, Muller had been an electrical and electronics engineering major at Iowa State University from 1976 to 1978, but he withdrew before he completed his degree and did not possess the three years of post-high school experience with analog and digital systems expected for the job. Peter Nothnagle, Audio Engineer for the UI School of Music Recording Studios (1985-1989), remembered that Gaburo was able to get around this by waiving the requirements for the position,<sup>363</sup> and his career began shortly thereafter in July 1984. He had been a technician, self-employed subcontractor, and service shop manager for several businesses in Des Moines, where he acquired a wide variety of skills repairing electronic keyboards

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<sup>362</sup> Kenneth Gaburo, Letter to Marilyn Somville, March 27, 1984, University of Iowa Electronic Music Studios Archives, Iowa City, Iowa.

<sup>363</sup> Peter Nothnagle, e-mail message to author, April 27, 2017.

and computer-based HVAC systems, installing sound systems, and recording studio maintenance.

Muller received considerable acclaim from his colleagues for his work at the University of Iowa. Gaburo considered him to be the “computer designer and programmer extraordinaire.”<sup>364</sup> Farley praised Muller’s work ethic and his ability to turn the studios around from their state in the 1980s:

Dave worked his butt off until all was in order. Then he began building elements from whole cloth that those of us who worked in the lab asked for. I remember particularly a continuously variable (truly!) varispeed interfaced with most of our tape machines and an ingenious Ambisonic [sic] system for locating sound precisely in a quad field.<sup>365</sup>

Muller was an experimental builder, and his contributions to the EMS program included a number of these devices. One of those was a varispeed machine with a counter that could control the speed at which the tape moved. Known as the Varispeed/ Counter unit, or Tape Variable Speed Controller, it would control the DC capstan motor on an audio tape recorder. It could alter the speed of tape running through a tape recorder from .75 inches to 35 inches per second when it was applied an external control voltage. For the composer that meant he could send an external control voltage from the Moog or ARP 2600 to control the speed of the tape. The machine contained a digital frequency counter and intervalometer for calibration. It needed approximately 5 minutes for the varispeed oscillator to reach the optimal temperature for operation in order to prevent unwanted changes in speed. Another one of his devices was the Ambisonic Decoders. They could recreate a three-dimensional sound field by converting Ambisonic recordings on four-

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<sup>364</sup> Gaburo, “Two Interviews,” 17.

<sup>365</sup> Michael Farley, e-mail message to author, August 11, 2015. The Varispeed machine can be found in the old racks in Studio 1 in the new Voxman Music Building.

track tape to separate loudspeakers. He collaborated with Cross on this project, who had received a Calrec Soundfield Ambisonic microphone for concerts recordings (e.g., Hancher Auditorium). Muller set up a full-sphere three-dimensional Ambisonic monitoring system with eight speakers (each speaker positioned in each corner of the room from floor to ceiling) in room 2057. He also had an interest in building highly sophisticated objects that were emerging from the rise of digital technology throughout the country. One of Muller's experiments was designing a digitizing tablet that could be used to draw things that would be translated into sound.<sup>366</sup> In another one of his experiments Muller figured out how to control Cross' VIDEO/LASER III with a Commodore 64 personal computer, which was then the most popular mass-produced low-cost personal computer in the country. Using the principles he had used in designing the suspension of racing cars to the dynamics of the tiny moving mirrors of the laser system, Muller could use the Commodore 64 to make the laser draw numbers and letters.<sup>367</sup>

Muller's largest accomplishment was the development of an experimental computer workstation for the studios. It was the first attempt for the EMS towards the construction of a digital audio workstation. In the mid-1980s digital audio recording was still relatively new. Within a few years of its existence, commercial digital recording was gradually becoming more accessible to the public. However, the equipment remained very expensive. Many companies were tackling the problem of recording, storing, and getting back massive quantities of numerical data. Sony came up with an idea to use a videotape transport to carry the data, which would be encoded and then converted into

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<sup>366</sup> Kirk Corey, interview by the author, March 6, 2017.

<sup>367</sup> Peter Nothnagle, e-mail message to author, April 27, 2017.

video format by proprietary devices. By 1977, to appeal to the top-of-the-line consumer market, Sony had built a device that could perform the same functions at a fraction of the cost. Known as the F-1, it would convert analog stereo audio into PCM (pulse-code modulation, which is the same principle of digital audio used in compact discs) digital audio. The digital audio would then be converted into the EIAJ-1 consumer video format, which would make it possible for someone to record it onto any video cassette recorder. For many individuals outside the big recording facilities in the country, high-quality digital recording was soon more accessible and more affordable to the greater public.

The drawback to the F-1, however, was that it could not be used to edit recordings. Playback and recording was possible, but editing was not possible in the digital domain unless the recordings were converted to a higher-quality format that could be used in conjunction with more expensive professional equipment. In addition, a digital audio workstation had only been around for a short period of time. One company in Salt Lake City called Soundstream, founded by MIT graduate Thomas Stockham Jr., who is now known as the “father of digital audio,” was able to produce a 2-track digital audio recorder that could record audio at a 16-bit, 37 kHz sampling rate in 1976. Using Stockham’s designs, his company later applied a 16-track Honeywell instrumentation tape recorder as a transport that was connected to digital audio recording and playback hardware. This equipment could record digital audio at a 50 kHz sampling rate, which was higher than the 44.1 kHz audio CD sampling rate.

Because the EMS did not own such professional equipment, Gaburo and Muller had to come up with a cost-effective method to make the editing of digital audio possible



for students. In the summer of 1986 they devised a plan to implement an Amiga workstation with an IBM PC-AT computer that would be able to realize compositions through video and sound synthesis techniques at a cost of less than \$10,000. This setup consisted of two workstations that could combine into one whenever desired. While the parts for the video workstation had to be purchased, many of the auxiliary parts for the sound workstation were built in collaboration with Iowa's music, engineering, and computer science students. With these workstations an EMS student would be able to edit in the EIAJ digital recording format, a format in use by the Recording Studios, to program audio equipment testing with the computers, and to analyze speech and instrument sounds for research into composition, linguistics, animal behavior, speech pathology and therapy, psychoacoustics, and even vibration analyses. Additional uses for the workstation included sampling concert halls for "acoustic treatment," storing and retrieving data, the creation of music, and even live electronic performances.<sup>368</sup> The computer was connected to a Sony PCM adapter, a black box with inputs and outputs, which was connected to a video recorder that could store computer memory onto videotape.<sup>369</sup> Videotapes could store more than 1GB of data when 7.5-inch floppy discs could only hold up to 720KB of data. The University of Iowa was able to approve \$9,400 in funds towards this project.<sup>370</sup> As advanced as this computer was for its time, Nothnagle remembered:

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<sup>368</sup> George Cain, Letter to Marilyn Somville, August 13, 1986, University of Iowa Electronic Music Studios Archives, Iowa City, Iowa.

<sup>369</sup> Ibid.

<sup>370</sup> George Cain, Letter to Marilyn Somville, December 23, 1986, University of Iowa Electronic Music Studios Archives, Iowa City.

Parenthetically, the ca. 1986 off-the-shelf IBM PC-AT...was woefully underpowered to handle digital audio...As I recall it could barely keep up with monophonic audio. So Dave hacked the computer also, replacing its clock crystal with one that increased its processing speed...<sup>371</sup>

Coinciding with Muller's development of the Amiga workstation was his change of position from Audio Specialist to Audio Engineer in the 1986-87 academic year.<sup>372</sup> His salary increased substantially as a result of this change from \$15,421 in 1985-86<sup>373</sup> to \$19,695.<sup>374</sup> In addition, Muller had an undergraduate engineering student Adam Cain as an assistant. A dabbler in guitar and keyboards, as well as a student employee for the Recording Studios at the University of Iowa, Cain was awarded an undergraduate scholarship award annually from 1987 to 1991, which was created and endorsed by University of Iowa President James Freedman in 1984, to an undergraduate to do research into psycho-acoustic perception at the EMS.<sup>375</sup> It was one of many such assistantships created in 1984 that were given to students at the University of Iowa whose grades were in the top 1% of the undergraduates in Iowa City and gave them the privilege to work on research projects with a faculty member.<sup>376</sup> With this assistantship Cain contributed his engineering and computing skills to the development of the IBM

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<sup>371</sup> Peter Nothnagle, e-mail message to author, July 15, 2017.

<sup>372</sup> Mona Shaw, ed., "Staff News," *Segue: The University of Iowa School of Music Newsletter* 27, no. 1 (1987): 21.

<sup>373</sup> *Internal Allocations 1985-86* (Iowa City, IA: University of Iowa, 1986), 58.

<sup>374</sup> *Internal Allocations 1986-87* (Iowa City, IA: University of Iowa, 1987), 56.

<sup>375</sup> Marilyn Somville, "From the Director," *Segue: The University of Iowa School of Music Newsletter* 25, no. 1 (1985): 2.

<sup>376</sup> "UI picks undergraduates in top 1% of student body for assistantships," *Iowa City Press-Citizen*, December 12, 1989, <https://www.newspapers.com/image/206233536>.

workstation, a project that spanned his entire UI undergraduate career.<sup>377</sup> Together, Muller and Cain researched the use of computers and manipulation of audio “to create a studio within a computer.”<sup>378</sup> One such program, in collaboration with Keith Johnson, was the *US* program. Still in use to this day, it is a live-electronic computer program similar to the better-known SuperCollider. Designed through BASIC, its software is based in DOS. The program is “user extendable.” A computer programmer can create additional subprograms that could become a part of the *US* program.<sup>379</sup> This program has seven pull-down menus, each one containing up to 14 functions. It is usable for recording and playback, creating waveforms, emulation of analog synthesizer modules, audio filters (e.g., high-pass, low-pass, and band-pass filters), and performing analyses on waveforms (e.g., Fourier transforms).

Another program in the late 1980s that resulted from Muller’s collaboration with Cain and Nothnagle was the *PEDIT* program. This program allowed students in the Experimental Music Studios to edit audio in the digital domain for the first time. This is an early text-based audio editor that preceded modern-day digital audio workstations (e.g., Pro Tools or Logic) and one of the first DAWs to run on an IBM-PC. Like the *US* program, the software for *PEDIT* is based in DOS. It is a non-destructive editing system that can work interdependently with the *US* program. One can use the *PEDIT* program for editing audio files, specifically to make cuts to audio files and splice them together to

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<sup>377</sup> Linda Hartmann, “UI student combines music, science,” *Iowa City Press-Citizen*, April 15, 1991, <https://www.newspapers.com/image/205662584>.

<sup>378</sup> “Four Profiles of Honors Students: Engineering Undergraduate Experiments with Music,” *The Daily Iowan*, April 14, 1989, 2.

<sup>379</sup> Kirk Corey, liner notes to *Music from the Ivory Tower*, Kirk Corey, Curious Music 2215744, CD, 1992.

edit a recording from any session. These edits can be viewed as a waveform or as a list of events. Edits to a file are sample-accurate. A student working with the program can shift audio files left or right from 1 sample to 10,000 samples and then apply crossfades between them. Any edits between two sound files can be saved as a screenshot, which forms a temporary file that can later be recalled and edited while working with other audio files. The *PEDIT* program cannot handle specific audio processes, such as splitting a stereo signal into mono tracks, mixing two files together, or altering the volume of a file. This requires a user to edit the audio file in the *US* program, save it, and then return to *PEDIT* to continue work on the new audio file.

Muller continued to work as Audio Engineer for the Studios until August 1990<sup>380</sup> when he moved to Iowa's Department of Physics and Astronomy full time as an Electronics Design Engineer. Corey recalled that Muller had begun to work with them on the side as they were developing the equipment to be used for a space probe that was soon to be launched.<sup>381</sup> He later worked at Iowa as a CAD Research Engineer from 1994 to 1997. He continued to work on a number of different projects, including a semi-tractor simulator for BMW, a tank simulator for the U.S. military, and a thermocycler for a DNA duplicating machine. Muller went on to become vice president of Engineering at Integrated DNA Technologies (2000-07) and a hardware engineer for the University of Iowa National Advanced Driving Simulator (2010-14).<sup>382</sup> His assistant Cain continued

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<sup>380</sup> Katie Villhauer, e-mail message to author, July 14, 2017.

<sup>381</sup> Kirk Corey, e-mail message to author, April 25, 2017.

<sup>382</sup> Dave Muller, "Dave Muller," *LinkedIn*, <https://www.linkedin.com/in/dave-muller-3a597765>.

his education at the University of Illinois Urbana-Champaign, and has gone on to work as a Software Engineer for Bracket Computing in Eugene, Oregon.

### **Kirk Corey**

After Muller's departure, Kirk Corey (PhD 1991 in composition) became the last Audio Engineer for the Electronic Music Studios from 1991 to 1997. A pianist and composer, he studied composition with Lejaren Hiller and Herbert Brün at the University of Illinois. He earned his Bachelor's and Master's degrees there before coming to the University of Iowa with a fellowship in the fall of 1988. The 1987 Midwest Composers Symposium in Iowa City during his final year at Illinois lured him to the university, as well as the quality of the personnel. As Corey explained:

At the party at Hervig's house I had a long conversation with Dave Muller...and the takeaway from that was, "Wow, if this place is so great that even the staff are this smart, I really want to be here."<sup>383</sup>

In the fall of 1989, he took over Farley's teaching assistantship and taught the Experimental Studio I class. His residency in Iowa included studies in composition with Gaburo for his first two years and with Robert Paredes in his third year. In addition, Corey was learning constantly from Muller about electronics, computers, and technology.<sup>384</sup>

During his six years as an Audio Engineer Corey attempted to keep the *US* Program going for the Studios, but it came to a halt when he could no longer keep it

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<sup>383</sup> Kirk Corey, interview by the author, March 6, 2017.

<sup>384</sup> Ibid.

going.<sup>385</sup> The advancements in computer software were quickly outpacing the sophistication of the custom interfaces Muller had built for the Studios, and without him the program could not continue. In the course of his duties he installed Csound onto the new studio computers and assisted the students with their projects and ideas in any way that he could.<sup>386</sup> He formed a mailing list called “algo-comp,”<sup>387</sup> which was used as a forum for composers across the United States to discuss issues of algorithmic composition. Corey also taught a summer course in music technology for high school music teachers for 2-3 years.<sup>388</sup> By the fall of 1993, he was promoted to UI Electronic Systems Administrator.<sup>389</sup> With this new position Corey became part of the Professional and Scientific staff on the Iowan campus. His responsibilities were to ensure that the computers and electronic equipment in the School of Music ran smoothly and to supervise and maintain its computer laboratory, an Instructional Technology Center (ITC). He had become a consultant to music faculty and staff on the computer equipment, an electronics technician by repairing, installing, and upgrading computer, video, and audio equipment and by writing up proposals for new equipment, and a supervisor for School of Music computer lab. In addition to both these responsibilities, he became an Adjunct Assistant Professor in the School of Music from 1996 to 1997.

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<sup>385</sup> Even though the Electronic Music Studios no longer uses the *US* Program, it is still used privately by Peter Nothnagle for editing audio recordings.

<sup>386</sup> Ibid.

<sup>387</sup> Lawrence Fritts, e-mail message to UI-Composers@List.uiowa.edu, March 21, 2016.

<sup>388</sup> Lawrence Fritts, e-mail message to author, February 2, 2017.

<sup>389</sup> “UI students to present experimental music, videos,” *Iowa City Press-Citizen*, May 5, 1994, <https://www.newspapers.com/image/206904753>.

After the spring semester of 1997, Corey left the School of Music and spent a year as a Computer Consultant in the UI Division of Sponsored Programs. From 1998 to 2002 he was the IT Manager, later IT Director, of Iowa City's Diversified Software Industries. In 2003 he returned to the University of Iowa and joined the College of Law, where he works to this day as its Director of Information Technology.<sup>390</sup>

### **EMS Assistants (1980s-1997)**

After the creation of the Audio Specialist position for the EMS in 1978, the research assistantship continued to be a part of the program, but it underwent several changes. While this assistantship was still awarded to a graduate student, the size of the assistantship was gradually reduced in scope from a half-time position to a third-time assistantship by the 1980s and was reduced further to a quarter-time assistantship by 1997. Additionally, in his proposal to Somville written in November 1985 Hervig described that the research assistantship had become a teaching assistantship, and the responsibilities of this assistantship were similar to the research assistantship for the EMS in the 1960s and 1970s. The teaching assistant was required to have teaching experience from undergraduate music theory and aural skills. In addition, the TA would be required to perform the following duties:

...attending Mr. Gaburo's lectures; teaching the classes when Mr. Gaburo is absent; maintenance of the Studios; private conferences with students; work on preparation and up-dating of studio manuals; presentation of studio lecture tours, to visiting public school classes or to university classes; assisting in the presentation of Electronic Music Studio concerts, and/or concerts involving electronic music.<sup>391</sup>

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<sup>390</sup> "Kirk Corey," *The University of Iowa*, <https://law.uiowa.edu/kirk-corey>.

Several of these graduate assistants covered their professors during a considerable period of absence. Elsea had done this for Lewis when he went to the Institute of Sonology in the fall of 1975. When Lewis was being hospitalized in La Jolla California, Douglas Dean Fulton, a Master's composition student at the University of Iowa, was appointed to direct the Electronic Music Studios for the spring semester of 1982 at the age of twenty-three, which makes him to this day the youngest person appointed in such a capacity to teach classes at the EMS.<sup>392</sup> The Des Moines native, who had earned his Bachelor of Music degree from the University of Iowa in 1980, was a pianist, flutist, and clarinetist who became interested in electronic music during his high school years when he opened up a Mattel telephone amplifier.<sup>393</sup> He was known to have had a considerable presence at the studios while working 40 hours a week on his compositions. Farley remembered the quality of Fulton's work and his knowledge of the equipment:

Doug understood the Moog better than any of us. Seemed like he had a new work every two weeks, and they were deep. Not facile. A biting sense of humor. To me, he seemed private. A bit of a lone wolf. In my early years there, he was the top composer in the Studio.<sup>394</sup>

He was the recipient of several prizes at the University of Iowa, including First Prize Winner of the 1979 Rutgers Center for Electronic Music Competition for his work *Baby*

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<sup>391</sup> Richard Hervig, Letter to Marilyn Somville, November 12, 1985, box 2, University of Iowa Archives, Iowa City.

<sup>392</sup> Chris Zinger, Mary Bergstrom, and Jane Turnis, "Arts: the Year in Review," *University of Iowa Yearbook, 1982* (Iowa City, IA: University of Iowa, 1982), 45.

<sup>393</sup> "Composers of contemporary sound," *Iowa City Press-Citizen*, March 6, 1982, <https://www.newspapers.com/image/206939677>. Although David Harrison in 1967 may have been a graduate assistant for the studios in the late 1960s, it cannot be verified at this time whether he was paid to work there.

<sup>394</sup> Michael Farley, e-mail message to author, August 20, 2015.



*Death*. He was awarded a Clapp Memorial Award in 1980 as an outstanding student in music composition.<sup>395</sup> He later graduated with his Master's in 1982.

Fulton was one of a few students with connections to the University of Iowa who participated in the world-renowned Center for Computer Research in Music and Acoustics (CCRMA) at Stanford University in the mid-1980s,<sup>396</sup> which had been one of the leading centers for computer music research since the late 1970s. Stanford University was the place in the United States during the 1980s to study FM synthesis and digital waveguide synthesis. Its faculty members included co-founder Leland Smith, who assisted with the development of the *Institut de Recherche et Coordination Acoustique/Musique* (IRCAM) in Paris, co-founder John Chowning, Max Mathews from Bell Labs, and Jonathan Berger. With the encouragement of his colleagues Heinrich Taube and David Lang he began his studies for a DMA at Stanford University and joined the research center.<sup>397</sup> His music at the time focused on tonal rhythmic composition from established musical traditions that were to go one step beyond into the unknown with the advances of the computer.<sup>398</sup> His work at Stanford would lead him to further recognition. Fulton's composition *Red Cup and Rat (What's Wrong with This Picture?)* for computer and generated tape was selected for the 1985 International Computer Music

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<sup>395</sup> "Fulton, Labet, Rogers," *Iowa City Press-Citizen*, June 24, 1980, <https://www.newspapers.com/image/207389749>.

<sup>396</sup> "Center for Computer Research in Music and Acoustics," *Stanford University*, <https://ccrma.stanford.edu/~aj/archives/docs/all/218.pdf>.

<sup>397</sup> Heinrich Taube, e-mail message to author, April 28, 2017.

<sup>398</sup> Ronald Chrisley, "Frost hosts Computer Music Festival," *The Stanford Daily*, July 16, 1985, 6.

Conference in Vancouver.<sup>399</sup> He was one of seven composers featured on Stanford's Computer Music Festival in the summer of 1985 and had been involved musically with several local productions, including "The Melody That Got Lost" and "Sold Out."<sup>400</sup>

The CCRMA had also attracted Taube and Lang. Taube had been a Master's student at Stanford and had participated in CCRMA before coming to the University of Iowa to study with Donald Martin Jenni. He later received a grant from the Rockefeller Foundation to continue his studies in composition at CCRMA in the late 1980s. Through his studies and experiments with a computer language called Pla, developed at CCRMA by Bill Schottstaedt in 1983, Taube developed the Common Music software for computer-aided composition in 1989,<sup>401</sup> which he developed further in the five years he worked at the Institut für Musik und Akustik at the Zentrum für Kunst und Medientechnologie in Karlsruhe, Germany. This software can be used in integration with a number of different computer languages and software, including MIDI and Csound. His work with Common Music awarded him First Prize in the computer-aided composition category at the *1er Concours International de Logiciels Musicaux* in Bourges, France in 1996. Lang, who had been a student of Leland Smith at Stanford, worked at CCRMA during his years as an undergraduate<sup>402</sup> and was also a visitor to CCRMA, in 1987.<sup>403</sup>

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<sup>399</sup> Larry Austin, "Report from Vancouver: 1985 International Computer Music Conference," *Perspectives of New Music* 23, no. 2 (1985): 254.

<sup>400</sup> Chrisley, "Frost hosts Computer Music Festival," 6.

<sup>401</sup> "Synopsis of work and Biography of composer," *ICMC 2003*, <http://music.nus.edu.sg/Events/icmc2003/ht-aeolian.php>.

During Fulton's residence in California, he made a career for himself in technical writing. In 1987, while he might have continued to be a PhD student at Stanford University, Fulton worked as a technical writer for the emerging NeXT, Inc. (1987-93) in Redwood, California, a company that had just started up in 1985 under Steve Jobs who had resigned from Apple. With the backing of billionaire Ross Perot, the NeXT computer, developed in 1988, was a significant comeback for the NeXT co-founder and an important stepping stone towards the invention of the World Wide Web by English computer scientist Tim Berners-Lee, who himself used a NeXT computer while he was at CERN in Switzerland. The NeXTcube in 1990 was one of the first computers to share voice, image, graphics, and video in e-mail. While it is unclear whether Fulton was recruited by NeXT or if he was involved with the ISPW chip, during his six years with the company, he became a senior technical writer. He was responsible for the technical writing for NeXTSTEP programs Sound Kit, Music Kit, Database Kit, Array Processing Kit, and some of the Application Kit and Interface Kit. He was involved with the design of the API for the Sound Kit and Music Kit, of which he gave presentations to the Music Teachers Association of California in Irvine, the National Music Teachers Association in

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<sup>402</sup> Robert L. Hubley, "David Lang and *The So-Called Laws of Nature*" (DMA diss., University of Houston, 2015), 6.

<sup>403</sup> "Composers and Musicians at CCRMA: 1985 through 1988," *Center for Computer Research in Music and Acoustics*, <https://ccrma.stanford.edu/~aj/archives/docs/all/919.pdf>. In an interview with Marisa Landicho of *The Stanford Daily* in 2010, it is mentioned that prior to 2010 David Lang had not visited Stanford since 1987. One should refer to: Marisa Landicho, "Q & A: Composer David Lang '78 returns to campus," *The Stanford Daily*, November 5, 2010, <http://www.stanforddaily.com/2010/11/05/qa-composer-david-lang-78-returns-to-campus/>.

Boulder, Colorado, and at Juilliard.<sup>404</sup> As he began his work at Be, Inc. (1993-2001), Fulton continued to be a PhD graduate student at Stanford and was still a member of CCRMA, where he finished  *Holding Betty Under Water*  for computer-generated tape at CCRMA in 1995.<sup>405</sup> Sometime after 1995, his plan to attain his DMA came to a halt, and his degree was subsequently unfinished. He continued to work in his capacity as a technical writer for the PalmSource, Inc. (2002-3), There, Inc. (2003-4), and Symbol Technologies, Inc.<sup>406</sup>

Two graduate students in the 2000s, Jean-Paul Perrotte and Israel Neuman, taught for Lawrence Fritts during his sabbatical leaves. Perrotte had earned his Bachelor of Music in Jazz Composition from the Berklee College of Music in 1991, had been a Teaching Assistant for the Studios from the fall of 2002 to the spring of 2005 (excluding the fall semester of 2004) when he received his MA in music composition. He continued his doctoral studies at the University of Iowa and taught the Electronic Media I course in Fritts’s absence in the fall of 2006. He earned his PhD in music composition from the University of Iowa in 2003 and is currently an Assistant Professor of Composition/Theory at the University of Nevada.<sup>407</sup> Neuman, as previously mentioned in chapter 8, taught the Electronic Media I course in the fall semester of 2008. A Bachelor of Music recipient from the University of Hartford, he earned an MA degree in

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<sup>404</sup> John Cerreta, e-mail message to author, August 12, 2015.

<sup>405</sup> Alex Igoudin and Fernando Lopez-Lezcano, “CCRMA Studio Report,” *Proceedings of the 1996 International Computer Music Conference*, (San Francisco: International Computer Music Association, 1996), 504.

<sup>406</sup> John Cerreta, e-mail message to author, August 12, 2015.

<sup>407</sup> “Jean-Paul Perrotte,” *University of Nevada*, [http://www.unr.edu/cla/music/pages/bios/perrotte\\_jeanpaul.htm](http://www.unr.edu/cla/music/pages/bios/perrotte_jeanpaul.htm).

jazz studies and Master of Computer Science degree at the University of Iowa. Later, he received a PhD in composition from the University of Iowa in 2010. He has taught as a Visiting Instructor in the Department of Computer Science at the University of Iowa from 2012 to 2014 and is currently an Instructor in Multimedia and Communication of the Division of Performing Arts at Iowa Wesleyan College.<sup>408</sup>

An EMS Teaching Assistant of the 1980s during Gaburo's time at Iowa taught the EMS I class in the Old Voxman Building while he focused on EMS II, the Experimental Music Seminar, and composition lessons.<sup>409</sup> Michael Farley (M.A. 1980, PhD 1989) taught this class before Corey, who later taught it from 1989 to 1990. Farley was Gaburo's teaching assistant until the spring of 1989. With a Bachelor's degree in music education from the University of Central Missouri, he had grown up playing in school bands and rock and roll groups in his youth.<sup>410</sup> He had received instruction in electronic music from Lewis in the fall of 1980 before his sabbatical. Through another teaching assistantship he received in African-American studies, he also taught a course on African-American music history listed in 1988 as 25:106, History of Black Music.<sup>411</sup> Farley is Associate Professor at St. Lawrence University in Canton, New York. Although he does not teach electronic music, he has taught Composition, Music and Society in

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<sup>408</sup> Israel Neuman, "Israel Neuman," *Israel Neuman*, <http://israelneuman.com/content/IsraelNeuman-CV.pdf>.

<sup>409</sup> Kirk Corey, interview by the author, March 6, 2017.

<sup>410</sup> Kanchalee Svetvilas, "Grad student plays tribute to African-American music," *Iowa City Press-Citizen*, February 3, 1989, <https://www.newspapers.com/image/207175281>.

<sup>411</sup> *University of Iowa General Catalog: 1988-90* (Iowa City: University of Iowa, 1988), 181.

New Orleans, a seminar called Music and Place, Introduction to Music, Musics of the World, Popular Music in the US, and Finding a Voice.<sup>412</sup>

### **EMS Assistants (1997-present)**

Since the summer of 1997, two assistants in the graduate program in music composition at the University of Iowa have normally shared the task of maintaining the studios. Both assistants are identified as teaching assistants. While their responsibilities are shared, both positions receive funding from different sources. One teaching assistant works only for the studios with funding coming through the School of Music. The other assistant works at an hourly-rate for the studios up to 10 hours per week per academic year, oftentimes working principally in another area of the School of Music, such as music theory. Since 2010 this position has been supported via a proposal made through Student Computing Fees once every four years. During the summers, depending on the level of available funding, both assistants are able to work up to 20 hours per week. On one occasion, in the summer of 2016, the move to the new Voxman Music Building required the EMS Teaching Assistants to work up to 40 hours per week. Once in the late 1990s three assistants helped to put on a live Internet concert for Kristin Thelander, which Lawrence Fritts considered to be the first of its kind.

In the past exceptions have been made to the two-TA graduate student arrangement. Not all of the EMS teaching assistants have been graduate students. Depending on one's level of experience with electronic music/recording, undergraduates

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<sup>412</sup> "Michael Farley," *St. Lawrence University*, <https://www.stlawu.edu/people/michael-farley>. The course in electronic music is taught by Associate Professor Christopher Watts, who teaches a course in computer music programming and directs the Newell Center for Arts Technology (NCAT).

have sometimes been chosen as TA's. John Ritz, as one example, was Fritts's teaching assistant for five years (1997-2002) and recorded many instruments at the anechoic chamber in the website's infancy. Joss Nichols, as another example, was an undergraduate student in music when he worked for the EMS from the fall of 1997 to the spring of 1999. In addition, depending on the level of available funding, Fritts could have more than two TAs working for him. This has happened on several occasions: in the late 1990s, the spring of 2002, the fall of 2003, and the spring of 2005. Fritts was able to acquire sufficient funding to support as many as four assistants for the fall 2003 semester with two Teaching Assistants supervised the technical aspects of the EMS and two Music Instrument Sample Managers managing the website.<sup>413</sup>

Accommodating the changes in personnel during this time required Fritts to look for funding outside the School of Music. He was successful in doing so from the Honors Program and Research Experiences with Undergraduates (REU), which is known today as the Iowa Center for Research for Undergraduates (ICRU). He also made attempts to earn additional funding for personnel outside the university. In 2003, he submitted a proposal to the National Science Foundation requesting \$998,130 for a considerable expansion of the MIS database by recruiting six assistants, two half-time graduate assistants and four undergraduates, as part of a five-year plan to record over 100 musical instruments that would perform 70,000 samples over 150 hours of recorded time. While this proposal ultimately did not come to fruition, it was one example in which Fritts attempted to make the program a leader in recording instrument sounds for use in the public domain and an attempt to tackle the question of dealing with budget autonomy for

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<sup>413</sup> "Staff," *Internet Wayback Archive Machine*, <https://web-beta.archive.org/web/20031008104929/http://theremin.music.uiowa.edu:80/Staff.html>.

the EMS when its own self-preservation was becoming increasingly dependent on resources outside the School of Music.

Since its development through Matthew Hallaron in 1997, the website for the Music Instrument Samples Database has been under the care of the EMS Assistants. It has been their responsibility to manage all the recorded samples that are uploaded for public and research use. A number of assistants have made contributions to the database, including Scott Adamson, John Ritz, Eric Durian, Joss Nichols, Michael Cash, Jean-Paul Perrotte, Andrew Struck-Marcell, Tohm Judson, Zach Zubow, Shane Hoose, Will Huff, Daniel Frantz, and Jonathan Wilson. Other assistants, such as Chris Diehl, Anne Guthrie, Rachel Foote, Paul Brenner, Matt Dotson, and Chris Shortway helped to maintain the website. Chris Shortway also worked with Fritts to create two transformation plugins for Sibelius in the spring of 2009. In the summer of 2011 Zubow and Hoose designed the present appearance of the website. With the help of Brian Penkrot from 2011 to 2012, they created new recordings of string instruments and guitar at the Anechoic Chamber. During those years, the Studios received over \$180,000 in funds, the majority of which went to equipment and hardware upgrades.<sup>414</sup> Zubow and Hoose conceived a call for scores that would feature compositions from students at Big 10 universities alongside works by University of Iowa student composers.

Daniel Frantz and Will Huff continued the work that Zubow and Hoose did with the website with recordings of percussion instruments and a collection of “Found Objects” in 2013. As studio assistants, each had different strengths. Frantz was adept with live processing programs, including Max/MSP and Pure Data. Huff had a strong

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<sup>414</sup> “Student Technology Fee Awards: Fiscal Years 2010-12,” *University of Iowa*, <http://clas.uiowa.edu/files/clas/it-group/stfhhistory.pdf>.



knowledge of recording and Pro Tools. They continued Zubow and Hoose's tradition of a call for scores, but expanded it to include other universities outside the Big 10. When Frantz graduated with his Master's, Jonah Elrod and Jonathan Wilson became the new assistants. Both Elrod and Wilson had completed their first-year as PhD composition students when their appointments began in May 2014. Huff continued to work at the EMS until the end of May and later returned in mid-July to defend his dissertation and earn his PhD. The new assistants were in charge of two particular projects during their first summer. Elrod spent the next three months by learning Max/MSP, while Wilson was in charge of cleaning almost all audio files marked at *fortissimo* from the Musical Instrument Samples Database and creating new webpages for them. This project was completed was in early August 2014. In addition, Wilson added several additional webpages for the website, including an archives webpage for concerts and another for newspaper articles about the program from the *Daily Iowan*. Once Elrod finished his assistantship in June 2016, PhD composition student Carlos Toro Tobón, a native of Colombia, succeeded him. Wilson created new recordings of "found objects" in late May, while Toro Tobón continued to make cleaner edits of the Instrument Samples Database, this time at *mezzo forte*. The two assistants were responsible for the installation of the Electronic Music Studios at the new Voxman Music Building. As of June 2017, Wilson and Toro Tobón continue to work at the Studios.

## CHAPTER 11

### THE EMS CLASSES

Important to the purpose of the Electronic Music Studios is the preparation of students with the tools to pursue their career-oriented goals. From their start the studios have been comprised primarily of graduate students who are in the Composition Program with aspirations of teaching at colleges and universities around the world. Students enroll in two classes that are part of a yearlong intensive study of writing electronic music in an academic setting (excluding film music and popular music), including fixed media and performer with live electronics. Although the curriculum has gone through a number of changes and the technologies in the studios have been upgraded to reflect new developments in the medium, whenever possible, throughout its existence, the problems of composing with technology remain, and it is up to the students in these classes to determine how they can develop their own identities as composers as they combine their musical ideas with the technologies right at their fingertips, whether they work with synthesizers, digital audio workstations, or live-processing software. This chapter serves as a discussion of enrollment into the EMS classes and an historical discussion of the curricula that have forged the identity of the studios in the classroom setting. The pedagogical approaches of these classes are principally based around the teachings of Shallenberg, Lewis, Gaburo, and Fritts, whose ideas significantly influenced how students interacted and composed with technology.

## Studio Access

Studio access to students has always been a concern for any faculty member who is responsible for the Electronic Music Studios in order to prevent theft, take good care of the expensive equipment, and handle delicately the older analog units, some of which are irreplaceable. Because of the degree requirements for a PhD or MA in music composition, the majority of students with access to the studios are graduate students who are majoring in music composition. PhD students are required to complete two classes in electronic music, while Master's students are required to complete the first class, though they may opt to enroll in the second class if desired. Other persons with access to the studios include undergraduate composition students and any student from another music major or discipline in the university that is enrolled in one of the two electronic music classes.

The professors in charge of the Electronic Music Studios have had different opinions about the regulation of access to the studios. Some believed that the right to a key had to be earned. As an example, when the program was located at Eastlawn, Peter Tod Lewis required everyone to pass a test that he administered, whether or not they were students enrolled in any of the courses.<sup>415</sup> Some have changed their opinions over time about regulations of studio access. In his earlier years, at the old Voxman Music Building, Lawrence Fritts regulated access to the studios based on the qualifications and needs of the students. For example, in 1997, he allowed students enrolled in the EMS classes keys to Studio 1, 2, and 3 for the semester, whereas students not enrolled in the classes could check out a key from the Main Office for up to a week, but if they were

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<sup>415</sup> Peter Tod Lewis, Letter to James Dunn, February 18, 1970, University of Iowa Electronic Music Studios Archives, Iowa City, Iowa.

enrolled in Composition Seminar (25:151), they could check out a key to Studio 3 for the semester.<sup>416</sup> After the flood, he was more relaxed in issuing students keys at the Becker Communications Studies Building. Any composition student could have access to the studios, whether or not they took any of the electronic music courses, and could keep their keys until their graduation, whereas non-composition majors had to return their keys after they completed an EMS class.

Of great importance is to provide students with sufficient hours to do good work. Hours for students have changed from building to building. In the earliest days, students had access to the studio at Eastlawn from 8:30 AM to 11:00 PM.<sup>417</sup> At the old Voxman Music Building, the students had 24-hour access to rooms 2058 and 2062. Fritts recalled his experiences at the studios during the late hours of the night and the level of access his students had to the equipment:

In the old Voxman, I would sometimes come in after midnight. The building was open, and there would be students around. I wasn't aware of any distinction among them. It was just as common to see undergrads as grads or TAs.<sup>418</sup>

At the Becker Communication Studies Building, students only had access from 7:00 AM to 11:00 PM six days a week, with a four-hour window on Sundays from 1:00 to 4:00 PM. Students could remain in the building after closing time. The Teaching Assistants had building keys, which allowed them 24-hour daily access to the facilities. In the new

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<sup>416</sup> "EMS Policies," *University of Iowa Electronic Music Studios*, <http://theremin.music.uiowa.edu/EMS.Files/Handouts/1997/F.1997/EMS.F1997.Policies.1.pdf>.

<sup>417</sup> Peter Tod Lewis, Letter to James Dunn, February 18, 1970, University of Iowa Electronic Music Studios Archives, Iowa City, Iowa. The building hours for studio work at MBTA-N are unknown.

<sup>418</sup> Lawrence Fritts, e-mail message to author, November 19, 2016.

Voxman Music Building, during the fall and spring semesters, all students, including TAs, have access from 7:00 AM to 11:00 PM Monday through Friday and on the weekends from 10:00 AM to 10:00 PM. Students are not allowed to remain in the building after closing hours. The hours change during the winter and summer sessions at the discretion of the Director of the School of Music. The building is closed during holidays, including Thanksgiving, Christmas, New Year's Day, Memorial Day, and the 4<sup>th</sup> of July.

### **The EMS Classes (1964-82)**

Very little documentation has been found on the electronic music classes in the first five years of the program, yet some observations can be made of Robert Shallenberg's classroom, even without any surviving syllabi on file. In his first year, his first class from 1964 to 1965 was small in size. Only five people, all of them composers in the graduate program, were able to enroll into the class due to time and space restrictions.<sup>419</sup> Their names were Maurice Monhardt of Decorah, Iowa; Paul Martin Zonn (1938-2000) from Miami, FL; John Richard Ronsheim from Cadiz, Ohio (1927-1997); M. William Karlins (1932-2005) from Brooklyn, NY; and David Hollister (1929-2014) from New York City. These composers enrolled in "25:109 Electronic Studio." For 1 semester hour of credit, they were only required to have the consent of the instructor to learn "the nature, care, and use of the equipment in an electronic music studio."<sup>420</sup> After the first year, the number of credits that a student could receive was arranged and

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<sup>419</sup> McDonald, "Computer Center," 11.

<sup>420</sup> *University of Iowa General Catalog: 1965* (Iowa City: University of Iowa, 1965), 153.

remained this way through the 1970s. In the 1967-68 academic year the EMS offered a second course for the first time. The original Electronic Studio course was now known as “25:153 Electronic Studio I” with the same goals as described in its first year, while the new course “25:154 Electronic Studio II” was offered for “individual creative studies.”<sup>421</sup> In the 1968-69 academic year the course numbers for these two courses changed to 25:250 and 25:251 respectively and would remain this way for the next 47 years. Shallenberg wrote in 1975 that he valued more textbooks that provided “just the information,” rather than textbooks that he believed their authors wrote simply for the sake of creating a textbook. Shallenberg explained these as two categories “at the extremes of a scale” and his preference for the first category to be based on his judgment of “the degree of the author’s involvement with, and interest in, the subject matter as reflected by his development of a precise language for the book, and his care for the use of that language.”<sup>422</sup> His students at this time were expected to have knowledge of maintaining tape recorders, which included how to demagnetize the heads, as well as some proficiency in cleaning the heads, capstan idler wheel, capstan, reel idler, and tape guides.<sup>423</sup> They were recommended to record their compositions using Scotch 201 “Low Noise” reel-to-reel tape, which Shallenberg argued had a “better high frequency response, and greater ‘wear life.’”<sup>424</sup>

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<sup>421</sup> *University of Iowa General Catalog: 1968* (Iowa City: University of Iowa, 1968), 181.

<sup>422</sup> Robert Shallenberg, “Review,” *Perspectives of New Music* 13, no. 2 (1975): 178.

<sup>423</sup> Shallenberg, “Studio Manual,” <http://theremin.music.uiowa.edu/shallenbergmanual.html>.

<sup>424</sup> *Ibid.*

A greater amount of information on Lewis's classes survives, and from this information, a better understanding of the Electronic Studio 1 and 2 classes (also known as EMS I and EMS II) can be made.<sup>425</sup> Students first took EMS I in Studio 1 three times a week.<sup>426</sup> Lewis described EMS I as an introductory course to the medium, which was, in part, a composition course, and, whenever possible, an opportunity for students to get a broad survey of the literature. They acquired knowledge of the rudiments of acoustics, voltage control, how to work in a "classical studio," and how to record with tape. They also learned how to operate and play the ARP 2600 and Synthi AKS synthesizers.<sup>427</sup> Once they were familiar enough with the equipment through orientation, the students would do their own experiments on the equipment, and the instructor would assign compositional studies to better acquaint them with Studio 1. Subsequent classes would involve deeper discussions of technical problems, compositional techniques, and aesthetics. Lewis stated that his goal for the class was "to quickly raise the veil of technological mystery and get students to thinking and working in fairly sophisticated ways, while...exposing them to a wide range of influences, of esthetic and technical advancements."<sup>428</sup> EMS II advanced these approaches with more professional equipment in Studio 2. Students met twice a week for an hour on Mondays and Wednesdays (from 1:30 to 2:30 PM in 1975), and on Fridays they would participate in a two-hour seminar

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<sup>425</sup> Peter Tod Lewis, Letter to Paul Chihara, Morton Subotnick, Edward Miller, Hubert S. Howe Jr., Robert Ashley, and Pril Smiley, May 10, 1975, University of Iowa Electronic Music Studios Archives, Iowa City, Iowa.

<sup>426</sup> Peter Tod Lewis, "Electronic Music," 152.

<sup>427</sup> Peter Tod Lewis, Letter to Paul Chihara, et al., May 10, 1975.

<sup>428</sup> Peter Tod Lewis, "Electronic Music," 152.

(from 1:30 to 3:30 PM in 1975).<sup>429</sup> Lewis explained that his goal for the course was “not to provide answers as it is to broaden the discussion, to offer even conflicting points of view, to allow each student to find his own way” through critiques of student works, critiques of works from studios at other universities, and discussions of aesthetic or stylistic concerns.<sup>430</sup> His students learned how to operate the Moog and to interact with the more professional equipment in the racks and tape recorders. Lewis described the seminar as “free, unopened, sometimes controversial, a period for discussing anything under the sun.”<sup>431</sup> Students from EMS I could come to the seminar, but they were not required to do so.<sup>432</sup> They could repeat EMS II as many times as desired, or they could choose to take a course known as Special Studies, which would allow students to continue working in the studios until the completion of their education. These courses were offered at the old Voxman Music Building each semester.<sup>433</sup> While Lewis was the professor in charge of these courses and gave the final grades, there are specific instances when others taught the EMS I course. During Lewis’s absence in the fall of 1975, Thomas Mintner, an assistant to the Recording Studios, was given the responsibility to teach this course,<sup>434</sup> while Peter Elsea was expected to tutor students in EMS II when

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<sup>429</sup> Peter Tod Lewis, Letter to Paul Chihara, et al., May 10, 1975.

<sup>430</sup> Peter Tod Lewis, “Electronic Music,” 153.

<sup>431</sup> Peter Tod Lewis, Letter to Paul Chihara, et al., May 10, 1975.

<sup>432</sup> Ibid.

<sup>433</sup> Peter Tod Lewis, Letter to Janice B. Andreas, March 6, 1973, University of Iowa Electronic Music Studios Archives, Iowa City, Iowa.

<sup>434</sup> Peter Tod Lewis, Letter to Paul Chihara, et al., May 10, 1975.



there were no guest composers in residence.<sup>435</sup> In addition, Lewis gave Elsea permission to handle all purchases for the studios.<sup>436</sup> That particular semester, it is likely that Lowell Cross gave the final grades for both courses, with grades for EMS II being given on a pass-fail basis.<sup>437</sup> When Elsea taught the EMS I course in the late 1970s,<sup>438</sup> Lewis gave the final grades. In addition, the EMS seminar became a separate course in the late 1970s, and the Composition Program decided that their students would be required to enroll each semester in either the composition seminar taught by Hervig or the electronic music seminar taught by Lewis.

The computer in the 1970s became increasingly an important creative force in the program, but creative work with a computer was very difficult to do in Iowa City. Because of the enormous expenses to purchase a computer, a hybrid approach was necessary for any integration of a computational device with studio equipment. This hybrid approach involved combining a computer or microprocessor with an analog synthesizer. One example was the integration of a computer with Iowa's analog synthesizers in the fall of 1972. Donald E. Hall, an assistant to Cross and an engineering student at the University of Iowa, worked with Elsea on a computer-to-analog synthesizer interface and developed a program that used the IBM System/360 at the Computer Center, then located in Van Allen Hall, to interact with the ARP 2600 and, later, the

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<sup>435</sup> A further discussion of the Guest Composers who came to Iowa in the fall of 1975 will be given in chapter 13.

<sup>436</sup> Peter Tod Lewis, Letter to Business Office, Purchasing, May 12, 1975, University of Iowa Electronic Music Studios Archives, Iowa City, Iowa.

<sup>437</sup> *Ibid.*

<sup>438</sup> Peter Elsea, e-mail message to author, March 18, 2017.

Moog in the summer of 1973.<sup>439</sup> Further developments included the installation of a 12-bit PDP-8 minicomputer and a terminal that would connect to the IBM 360 in the summer of 1974.<sup>440</sup> Elsea described Hall's device as an oscilloscope output for the PDP-8 and that if a composer wanted to use the computer to create an interaction between it and the synthesizer, the composer would have to bring the ARP 2600 or the Moog to the building and plug it in.<sup>441</sup> While the IBM 360 found its uses in generating compositional material for students, Lewis noted that the use of IBM 360 had two significant problems for composition students. The lack of a digital-to-analog converter at the University of Iowa required anything created by the IBM 360 to be sent to another institution. Furthermore, students encountered financial and scheduling difficulties to use the computer, which made Hall's interface an unsustainable project.<sup>442</sup> Hall also designed an interface that interacted with the Moog and a Southworth color quantizer, and he modified the 1/3 octave B&K Model 125 Graphic Spectrum Equalizer so that it could work in conjunction with a custom-built keyboard.<sup>443</sup>

Further attempts to move to computers and digital control came about with the purchase of 8080A Intel chipsets in February 1977. Lewis, four students, and an additional staff member had plans to conduct research on the design of a module for these

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<sup>439</sup> Donald E. Hall, "Hybrid Computer Music," November, 1972 (Addendum February, 1973), University of Iowa Electronic Music Studios Archives, Iowa City, Iowa.

<sup>440</sup> Peter Tod Lewis, Letter to Gottfried Koenig, February 15, 1974, University of Iowa Electronic Music Studios Archives, Iowa City, Iowa.

<sup>441</sup> Peter Elsea and Veronica Voss Elsea, interview by the author, May 9, 2017.

<sup>442</sup> Peter Tod Lewis, "Electronic Music," 166.

<sup>443</sup> Peter Elsea, e-mail message to author, July 24, 2016.

microprocessors so that they could be used for the synthesis of electronic music.<sup>444</sup> The acquisition of the Ohio Scientific Challenger 2P in 1978, the first known microcomputer purchased for the Studios, was a big step towards the research of computers in electronic music. An even more ambitious plan to build such a hybrid was described in a letter detailing Lewis's Hancher Circle grant proposal of \$5,000, at approximately one-fifth or one-sixth of the estimated cost to purchase a synthesizer-computer hybrid.<sup>445</sup> In addition, the acquisition of the Lexicon Prime Time 93 Digital Delay processor in 1980 (which remains a part of the EMS to this day) was considered "a modest step forward" for those interested in researching digital products, especially for a program that had hardly any facilities available for the processing and production of digital sound.<sup>446</sup> By the 1981-82 academic year the composers of the EMS began to incorporate more computers and digital products in their compositions than tape.<sup>447</sup>

### **The Experimental Music Studios (1983-94)**

With the arrival of Kenneth Gaburo the program underwent considerable changes. By September 1983 Gaburo changed the name of the program to the Experimental Music

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<sup>444</sup> Peter Tod Lewis, Letter to Intel Corporation, February 7, 1977, University of Iowa Electronic Music Studios Archives, Iowa City, Iowa.

<sup>445</sup> Peter Tod Lewis, Letter to Larry Eckholt, May 7, 1980, Peter Tod Lewis Papers, box 1, University of Iowa Archives, Iowa City.

<sup>446</sup> Lowell Cross, Letter to Dean Laster, May 27, 1980, University of Iowa Electronic Music Studios Archives, Iowa City, Iowa.

<sup>447</sup> Chris Zinger, Mary Bergstrom, and Jane Turnis, "Arts: the Year in Review," *University of Iowa Yearbook, 1982* (Iowa City, IA: University of Iowa), 1982, 45.

Studios,<sup>448</sup> the name by which the program would be known until Fritts came to Iowa City in the fall of 1994. The change of name drew connections to the Experimental Music Studios at the University of Illinois and to his idea of multidimensionality/multi-/inter-/disciplinary. Each semester, Gaburo taught EMS II while his teaching assistant would teach EMS I. Though Gaburo had changed the name of the program in 1983, the courses associated with the program remained listed as Electronic Studio I and II in the University of Iowa General Catalog until the fall of 1988, when the names of these courses were changed to Experimental Studio I and Experimental Studio II.

Gaburo's EMS classes went beyond the composition of a work and were not restricted to composers or music majors. His classes included studies into perception and cognitive processes, which were important to the composer's ideas of multidimensionality. He advanced his agenda through the integration of students from music, dance, theater, art, and film into his classes. Though the student body of these courses consisted mostly of students with majors from the aforementioned areas, his classes also included students from science, visual arts, and pre-med backgrounds. In both classes students created projects that were divided into four areas: composition, notation, technology, and perception. Excluding perception, each area was further divided into topics. As an example, the composition area of the course contained the following 16 topics for EMS II: kinds (such as acoustic, analog, digital, or concrete), knowing (such as interaction, relation, or process), concepts (such as ergodic or synergetic), interrogations (such as What-if?, or What-else?), operations (such as density, expansion, or transformation), behaviors (such as inference), language (such as self-

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<sup>448</sup> Kenneth Gaburo and Nicholas Zurbrugg, "Two Interviews with Kenneth Gaburo," 14.

reflexivity), organization (such as verticality or monophony), space (such as un-bounded planes or multi-dimensionality), arguments (such as implicitness or explicitness), processes (such as improvisation or collaboration), issues (such as composition as a demonstration of a machine, or a machine as a demonstration of a composition), attributes (such as accent, stress, tension, or release), values (such as parallel/intrinsic systems), sub-texts (such as redundancy or uniqueness), and material (such as physicality). Any work done on perception was based on projects they did in composition, notation, or technology in addition to their specific assignments.<sup>449</sup> Matt Pollard, who was enrolled in Electronic Studio II in 1983-84, described how an ordinary classroom session at the EMS would have raised eyebrows to persons unfamiliar with the classroom. For example, they sat around and hummed with one another.<sup>450</sup> Gaburo described, on one particular occasion, the conditions to which the students of this studio were subjected:

IN MY EXPERIMENTAL STUDIO CAN ALSO BE FOUND MUCH THE SAME ENVIRONMENT AS IN ANZO; PRIMIT: ANOTHER CATECOMB WHERE INTERACTIONS AND NOT DICTA OBTAIN; PRIMIT; WHERE STUDENTS COME FROM DANCE, AND THEATER, AND LITERATURE, AND LINGUISTICS, AND MATHEMATICS, AND ENGINEERING, AND FILMMAKING, AND VIDEO, AND BROADCASTING, AND COMPUTER SCIENCE, AND MUSIC, ET ALIA: IN OR OUT OF CULT, TO FIND SOMETHING (NOT YET LOST); PRIMIT: RUMOR HAS IT, IF ONE CAN FIND IT IN A BOOK, OBTAIN IT IN SOME JAR OFF THE SHELF, OR PRODUCE IT FROM A PDX-647+ INSTRUMENT, THEN ONE DOESN'T NEED THIS STUDIO; PRIMIT: THIS EXPERIMENTAL STUDIO IS FOR ENDLESS LISTENING; IN MAKING; IN COMPOSING; IN LISTENING TO, AND CRITIQUEING WORK; IN DESCRIBING; IN COMING TO KNOW

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<sup>449</sup> Kenneth Gaburo, "Electronic Music Studio One & Two," *University of Iowa*, ca. 1989.

<sup>450</sup> Mary Bergstrom, "An Artful Scenario," *University of Iowa Yearbook, 1983* (Iowa City, IA: University of Iowa), 43. This was from one of Gaburo's *Twenty Sensing Compositions*.

EACH OTHER, AND SELF; PRIMIT: ESPECIALLY SINCE ALL OF THE SOPHISTICATED GADGETS, ---(SYNTHESIZERS, MIXERS, TAPE DECKS, COMPUTERS, SIGNAL PROCESSORS, VIDEO SYSTEMS, ET ALIA)---ARE LIKE LA IN THAT NOTHING WILL HAPPEN UNTIL ONE IS READY, AND OPEN TO WHAT IS THERE, ---( NEITHER ANZO'S LA, NOR IBM'S PC-AT WILL MAKE YOUR WORK FOR YOU; ALTHOUGH THEY CAN SURELY MAKE THEIRS, QUIETLY, SECRETLY RESONATING IN CIRCUIT-CHATTER LANGUAGE)---; UNTIL ONE GETS THE WAX OUT OF EARS, HEAD OUT OF SAND, AND, AT LEAST BEGINS TO SEE SELF, AND EACH EXPERIENCE, AS UNIQUE [*sic*].<sup>451</sup>

Gaburo devised a particular method for the evaluation of a composition in his classes. He would critique a composition with the intention of protecting the individuality of each composer and measure the strengths and weaknesses of each composition on its own terms. Each work was evaluated from multiple disciplines (he might ask, after discussing a musical work for a while, “Now what if this were performed by an actor?”). These multidisciplinary inquiries were a way to arrive at a fuller estimation of the work as a whole. In his recollections of Gaburo’s classes Robert Paredes emphasized the importance of this approach to evaluating student compositions:

Kenneth construed his/our studio very much as a species of “safe place”: an environment in which creative work (music, video, movement, writing) might be shared, seriously considered, and examined, without either the autocrat’s hasty rushes to judgment or the humiliation of the maker which can occur in such a domain. It was Kenneth’s desire that work under consideration be subject to comprehensive and multidirectional inquiry into the realities (i.e., materials and motivations, physical and conceptual) which it exhibited before any strategies for improvement were overlaid. Of necessity, observers (critics) might then be encouraged to come to know the work under consideration as the maker made it, before moving in haste to construct some new reality out of easily acquired understanding or hidden prejudice. Such care in critique emanated from Kenneth’s perception that the too rapidly or capriciously employed strategy for “improvement” can often say more about unexamined influence exerted upon the critical observer...by some other preferred work or works (which he/she either

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<sup>451</sup> Kenneth Gaburo, “LA,” *Perspectives of New Music* 25, no. 1 (1987): 507-08.

takes as a model and/or may wish to have experienced) than about the phenomena under his/her immediate consideration.<sup>452</sup>

The experience of making a work in the studio, where only the experience of the results as heard on the tape were pertinent, meant a very focused purpose of critique in the present. There was no history or outside authority to justify the organization of the sounds. There was no score other than one's experience of it. Each student brought a descriptive language into the listening and interpretation, but the question was: how could they be more open, listen without prejudice or imposed expectations, and critique the critique? The work ultimately resided in the metalanguage.

During the fall of 1988 the electronic music program included two additional courses: Multimedia III (25:253) and Experimental Music Seminar (25:215).<sup>453</sup> The former, taught by Dave Muller and later Kirk Corey, was an advanced independent study course in "experimental performance," the inclusion of film in projects that were integrated with Gaburo's ideas of "technology, perception, and related cognitive processes." Corey recalled that Gaburo instructed Muller to create this new class for the Studios.<sup>454</sup> When Corey became the Audio Engineer for the Studios, Paredes and Hinkle-Turner allowed him to continue teaching the course, even though he would not earn any extra income from teaching it.<sup>455</sup>

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<sup>452</sup> Robert Paredes, "Might Never Have Been: To and for Benjamin Boretz," *Perspectives of New Music* 43, no. 2 & 44, no. 1 (2005-2006): 275.

<sup>453</sup> The University of Iowa 1990-92 General Catalog lists the course number for Multimedia III as 25:253.

<sup>454</sup> Kirk Corey, interview by the author, March 6, 2017.

<sup>455</sup> Ibid.

The latter, the Experimental Music Seminar, was a co-requisite course for any student enrolled in any of the classes offered by the Experimental Music Studios. It was a continuation of the idea of the Institute for Cognitive Studies, which he had first developed in La Jolla, California, where students from a variety of programs across the university would be immersed into discussions of the creative process. In an interview with Nicholas Zurbrugg in September 1983 Gaburo explained how the seminar reinforced his belief in the development of a large-scale language that would blossom from the interactions between these different departments:

Our seminars focus on discourse about a work being put forth. The seminars last for hours. Individual-group discourse generates a language of its own—a macro-voice which speaks to, for, and about the work held in view, and speaks to, for, and about each member. The discourse, in the light of the work (the subject of our attention) becomes a grand performance, and the members-plus-work form the ensemble. It's getting to be elegant, and more complex all the time.<sup>456</sup>

Philip Blackburn described the focus of the seminar as the analysis of the cognitive process from the inception to the realization of an idea, from its abstraction to its concretion. It was at the seminar where the teaching really took place, where the “energy and the experiences of the languages of the people in that room” could develop for three or four hours in the classroom with further discussion after class at the Mill Restaurant.<sup>457</sup> Corey recalled that these seminars were on Thursday nights from 7:30 to 9:30 or later, and that his students would go to the Mill for all-you-can-eat spaghetti nights.<sup>458</sup> Gaburo described these seminars further in a magazine called *Distractions*, a special feature of the *Daily Iowan*, in the summer of 1986:

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<sup>456</sup> Kenneth Gaburo and Nicholas Zurbrugg, “Two Interviews with Kenneth Gaburo,” 14.

<sup>457</sup> Philip Blackburn, interview by the author, January 15, 2017.

<sup>458</sup> Kirk Corey, interview by the author, March 6, 2017.



We all sit in a circle, and I am usually the provocateur during discussion...we do a lot of critiquing of each other's work. The students work hard; they have projects they show and lecture about. The seminar is a place where people can be free to imagine, but mostly it is the interaction between people which becomes important to them. The students grow to realize that everything involves perception. They realize that while explanation of their own work is demanding, they must rely on the ear for answers.<sup>459</sup>

The seminar was also an opportunity for guest composers, such as Warren Burt, to give presentations of their work.<sup>460</sup> Blackburn gave praise to the respect and dignity Gaburo gave to each person in the classroom and how his experiences from the course continued to feed his interest into "the relationship of the maintenance of the made."<sup>461</sup> A simple but important response to any comment was, "Who says?" throwing the responsibility back onto the observer. Burt had great respect for Gaburo's handling of a discussion during his seminar:

...the restriction on discussion was even more stringent. The two statements not allowed in discussion were "I liked it because..." and "I didn't like it because..." Getting rid of personal opinions and dealing with the matter at hand was often difficult for students, but once they adjusted to this, they seemed to thrive, and learn quite rapidly. One of the questions Gaburo continually asked students in the seminar was, "Are you criticizing the work you heard, or the work you *wanted* to hear?" Again, the results of this reorientation of critical discourse were impressive. Every time I would visit the U.S. and pass through Gaburo's seminar, I heard and saw some extremely interesting and challenging multimedia works.<sup>462</sup>

Gaburo's ideas of the Experimental Music Studios and his interdisciplinary course were initially supported. Marilyn Somville considered the advancement of the EMS

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<sup>459</sup> Maria Deligiorgis, "Gaburo: leading a life which is creative," *Distractions*, July 25, 1986, 1.

<sup>460</sup> Kirk Corey, interview by the author, March 6, 2017.

<sup>461</sup> Philip Blackburn, interview by the author, January 15, 2017.

<sup>462</sup> Nicholas Zurbrugg and Warren Burt, *Critical Vices: The Myths of Postmodern Theory* (Abingdon, UK: Routledge, 2000), 177.

program to be one of the top priorities for the School of Music in the 1984-1985 academic year.<sup>463</sup> D. Martin Jenni also expressed his support for the realization of Gaburo's ideas by saying that the "development of an interdisciplinary experimental laboratory is a fascinating notion, especially as one aspect of a larger collaborative effort among the performing arts at Iowa."<sup>464</sup> The level of support for the Studios shortly after Gaburo's appointment in 1983 can also be attributed to a sense of commitment to revive the studios from their level of deterioration in the early 1980s due to a lack of strong leadership and budget to meet the needs of the students who were doing creative work.

One consequence of this well-trained group of students was that guests and job applicants visiting the downstairs composition seminar were treated to stimulating and sophisticated questioning often beyond the ability of the guests to respond. Gaburo's seminar also influenced a spinoff in the UI School of Art known as the All-Media Forum in the fall of 1989 and spring of 1990. After Gaburo left, Paredes continued this seminar in his attic in an old white house on 920 South 1<sup>st</sup> Avenue in Iowa City, where his students did group improvisation sessions and turned his "garbage" into musical instruments for two hours.<sup>465</sup> Fritts taught one semester of the Experimental Music Seminar in the fall of 1995 before it was dropped entirely at the suggestion of Donald Martin Jenni.<sup>466</sup> When Hinkle-Turner arrived at Iowa, the multimedia course became an

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<sup>463</sup> Marilyn Somville, "From the Director," 2.

<sup>464</sup> Ibid.

<sup>465</sup> Kirk Corey, interview by the author, March 6, 2017. An improvisation session at this house is featured in the documentary film *Music of the Moment*. One should refer to *Music of the Moment*, directed by Kevin Wisor (2014; Berlin Heights, OH: No Guff Productions, 2014), Web.

independent studies class known as Experimental Music Studio IV: Multimedia (25:253), while a separate course Experimental Studio III (25:254) was formed for advanced study in digital processes,<sup>467</sup> which Corey taught.<sup>468</sup>

Another consequence of Gaburo's teaching was the emergence of two different groups of composers throughout the longevity of Iowa's Experimental Music Studios. One group of composers had studied with Gaburo or Paredes and was associated with the Experimental Music Studios on the 2<sup>nd</sup> floor of the old Voxman Music Building at the University of Iowa. They were known as the Upstairs composers, while the other group was the Downstairs composers, who studied with the faculty on the 1<sup>st</sup> floor of the old Voxman Music Building. The Downstairs composers wrote in a variety of musical styles from tonal music to serialism. The faculty from this group emphasized compositional models to their students through the music of composers such as Charles Ives, Milton Babbitt, Elliott Carter, Charles Wuorinen, and Luigi Dallapiccola. Each faculty member from this group had individual musical styles. Richard Hervig was principally rooted in Midwest diatonicism while being aesthetically open to other musical possibilities. Students who studied with William Hibbard were exposed to serialism and the music of Carter and Wuorinen. D. Martin Jenni's compositions were diverse, extracting ideas from numerous music styles (both historical and contemporary).

The Upstairs composers approached musical creation differently. They championed experimentalism and unconventional performance practices that were similar

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<sup>466</sup> Lawrence Fritts, e-mail message to author, June 26, 2016.

<sup>467</sup> *University of Iowa General Catalog: 1992-1994* (Iowa City, IA: University of Iowa, 1992), 183.

<sup>468</sup> Kirk Corey, interview by the author, March 6, 2017.

to the developments taking place on the West Coast. Their goal was to avoid compositional models, to stray from established musical traditions, and to individuate their compositional identities through self-interrogation and self-research. Blackburn noted Gaburo's belief that the instruction of composition via models was a disservice to student composers whose education ought to be better invested into the discovery of their own voices. "Composition," Blackburn wrote, "was radical personal research and interrogation, not mimicry of common practice."<sup>469</sup> The small group of Upstairs composers led by Gaburo and later Paredes associated their activities with very few groups outside of Iowa City. One particular group was the Brunettes of the University of Illinois, who were students of Herbert Brün. Students were exposed to the works of Chris Brown, Pauline Oliveros, Salvatore Martirano, and Henry Brant. Some of his composition students joined the Upstairs composers at the University of Iowa, including William DeFotis and Kirk Corey. A couple of Iowa's composition students, such as Philip Blackburn, were in between, getting the most out of their education from both aesthetics. Gaburo also championed the work of his students who had created their own distinctive voices, such as David Rosenboom, Harley Gaber, Warren Burt, Paul Paccione, Chris Mann, and Ron Nagorcka. The students would read from Noam Chomsky, Theodor Adorno, Levi Strauss, Benjamin Lee Whorf, and Jerzy Grotowski.

After Gaburo, Paredes, and Hinkle-Turner left the University of Iowa, the Composition Faculty made several changes to the electronic music program. The name of the program was returned to its former name: the Electronic Music Studios. The composition seminar requirements were revised for incoming composition majors, so that

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<sup>469</sup> Philip Blackburn, e-mail message to author, September 19, 2017.

all composers had to enroll in Composition Seminar (25:156). The arrival of Fritts to the University of Iowa in the fall of 1994 marked the end of Gaburo's multidisciplinary experiment and a rise of technological sophistication.

### **The Electronic Music Studios (1994 – present)**

Since his appointment, Fritts has taught two classes of electronic music as part of the Composition Program: Electronic Media I (colloquially known as EMS I) and Electronic Media II (colloquially known as EMS II), and the name of the program returned to the Electronic Music Studios. The EMS III and IV classes are no longer taught. Electronic Media I is offered every fall semester. It is an introduction to Pro Tools with the goal of creating a fixed-media work of approximately five minutes in duration. Electronic Media II, offered every spring semester, is an introduction to Max/MSP, which is used not to compose works with live electronics. Rather, it is used as a compositional tool to generate material that can be recorded and used by the composer as is desired for the instrument or the electronics. His two goals for the student in this class are 1) to compose a work for instrument and electronics, and 2) to develop a better understanding of Max/MSP. Usually, the electronics that accompany the instrument are fixed media, but advanced composers may choose live electronics. The students are instructed to compose the instrument part with the instrument track in Pro Tools, so that they are comfortable working with instrument and electronics simultaneously with one methodology before they branch off and experiment with others. In both semesters most students write a composition for 2-channel fixed media that is diffused for 8 channels, but sometimes more ambitious composers may choose to create

8-channel fixed media works. The students complete assignments that guide them towards the realization of their compositions. By doing so, the student completes one composition per semester in class.

His students have learned to work with, and to think in terms of, a library of sounds. Throughout any given semester students accumulate a large collection of sounds that are building blocks to the creation of richer and more complex sounds. The students normally begin working with Found Objects from the MISD and can add to the collection with musical instruments either from the website or from a recording session in the Studios. The Found Objects are everyday items (e.g., staplers, cardboard, wood, combs, etc.) used in electronic music. While students can be assigned a collection of Found Objects for their assignments, no definition is imposed on what those sounds are in their compositions. Any sound is possible for manipulation and transformation. No definition is imposed on the process of transforming those sounds, but the students create definition when they transform their sounds using their own processes. The students are influenced by the repetition of their compositional processes and their observations of his compositional processes, which they acquire through his critiques of their assignments and his suggestions throughout the semester. Gradually, they develop a structure from a semester of hard work, however compelling it may be when the unfolding of their work as a whole is experienced. The student learns that the ear is the final arbiter of a composition and must consider, in the course of listening and evaluating, how he responds to it cognitively and emotionally.

While a library of sounds suggests the student has free rein to use any sound, students are taught to make the quality of a sound a chief concern in the act of

composition. Quality in this context comes from the treatment of a sound. Students are taught to compose in the genre of acousmatic music, where a sound is separated from its source. In a general sense recorded sound is treated as material that is used for the development of more complex sounds. Students learn to combine sound with another via the concept of shading, where a sound is layered underneath another sound, often at the beginning of the first sound, and adjusted in volume to create a single richer sound. When successful, the listener perceives a single sound from the combination of sounds, and the parts of the composite sound add depth and enrich it. Thus, the meaning of a sound is made from the summation of multiple sounds infused into one, and that meaning, to borrow a phrase from Leonard B. Meyer, can be described as “embodied meaning.”<sup>470</sup>

To make these high quality sounds, Fritts instructs his students to micromanage their sounds, and his students learn to use different processes that can be systematical and/or intuitive at durations under ten seconds to create variations between multiple sounds so that they do not appear to be identical. The problem with identical sounds for him has been the perception of artificiality. The second sound, when it is unprocessed and identical to the first, seems like a mere copy of the first, and to the informed listener the composer’s process will be perceived. The challenge for the students then is to prevent the listener from making such observations. To do that, his students learn how to generate material by composing first with gesture sets. They search randomly for sounds that are distinctive or curious for exploration in a process Fritts calls “cherry picking.” The sounds are layered together to create a composite sound that has a projected motion

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<sup>470</sup> Leonard B. Meyer, *Emotion and Meaning in Music* (Chicago: University of Chicago Press, 1956 [1968]), 35.

in terms of pitch, rhythm, density, and speed, which are the properties of a gesture. The students repeat this process multiple times to make a number of different gestures. Students will make copies of those gestures, perform cyclic permutations of the sounds within those gestures, and then render transformations to those sounds via transposition, time expansion/compression, EQ, and/or gain. Once completed, the students will begin assimilating the gestures into sound masses and combining the sound masses into phrases that can be further sculpted by copying and pasting the sounds within them and varying them with transposition, time expansion/compression, EQ, and/or gain. This method of accretion is in other words taking sounds at small durations as building blocks for the development of richer and more complex sound masses that shape the course of a composition. These ideas are carried over into the spring semester when the students are working with a musical instrument and electronics.

The overall development of the EMS classes since 1994 can be better understood as the result of increased sophistication of computer technologies and maturation of Fritts's pedagogy. From 1994 to 1999 Fritts revised the curriculum for his electronic music classes several times to meet the needs of the Composition Program and to adapt to the new developments that were taking place in computer technologies. After accepting the position in April 1994, D. Martin Jenni instructed Fritts to redesign the course by combining a yearlong curriculum into the span of a semester:

...it would be good if you could visit the facilities and plan a sequence of instruction from general principles and elementary techniques through at least a survey of more sophisticated technology. (There are normally two semesters of this course, but as there will be only the first of the pair next year, you might wish to go a bit farther into the territory normally taken up in the second semester.)



Given the circumstances, the best course would be to design the study afresh, as you see best.<sup>471</sup>

Fritts designed the course as an advanced introductory course for the fall of 1994 so that students would be graded on their compositions for two works in *musique concrète*: one three-minute composition for tape and one five-minute composition created using computer-based MIDI programs. The students had readings and received grades on ten assignments, two quizzes, and a final exam. For composition with tape, students spent the first seven weeks working with studio analog equipment and using reel-to-reel tapes. They learned about multi-track recording and mixing. The next four weeks were spent on MIDI. The students learned to operate a Casio CZ-1 keyboard and use computer programs such as Studio Vision and the Galaxy editor. In the last five weeks they explored an historical overview of electronic music. The next year, Fritts revised the syllabus so that grades would be based on 16 assignments (50%) and 3 compositions (50%), and moved away from reel-to-reel tape completely. The students worked mostly on the EMS Quadra using a number of programs, including Sound Effects, Sound Hack, Music-5, Sound Sculptor, and Lemur. The students only spent about four weeks with analog processing and were introduced to the Moog and ARP 2600 synthesizers. Compositions and assignments were saved on floppy disks and DAT tapes.

The acquisition of SGI O2 produced by Silicon Graphics Inc. and Power Macintosh 8500 computers in the fall of 1996 for each studio transformed the classrooms considerably (see Table 1 for a complete list of EMS computers).

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<sup>471</sup> Donald Martin Jenni, Letter to Lawrence Fritts, April 26, 1994, University of Iowa Electronic Music Studios Archives, Iowa City, Iowa.

**Table 1: EMS Computers, 1987-present**

<b>Name</b>	<b>Year of Release</b>	<b>Year of Acquisition</b>	<b>CPU</b>	<b>RAM</b>	<b>Storage</b>
Amiga 1000	1985	1987	7.09 MHz	512 KB	40 MB
Macintosh Quadra 840V	1994	1994	40 MHz	8 MB	230 MB
Power Mac 8500	1996	1996	132 MHz	64 MB	2 GB
SGI O2	1996	1996	200 MHz	64 MB	1 GB
Power Mac G4	1999	2002	400 MHz	512 MB	60 GB
Powerbook G4	2001	2003	867 MHz	1 GB	60 GB
Power Mac G5	2003	2004	1.6 GHz	1 GB	80 GB
Mac Pro (1st Generation)	2006	2009	5.6 GHz	8 GB	1 TB
MacBook Pro (2nd Generation)	early 2011	2011	2 GHz	4 GB	100 GB
Mac Pro (2nd Generation)	late 2013	2015	3.7 GHz	32 GB	1 TB
MacBook Pro (3rd Generation)	mid-2015	2015	2.5 GHz	16 GB	1 TB

With 64MB of RAM, 200 MHz CPU, 1GB of memory, and 4.5GB of storage, the SGI O2 computers were either equal to or superior to a number of computers being produced at that time. The Power Macintosh 8500 had a 132 MHz CPU, 64MB of RAM, 1GB of memory, and 2GB of storage. The standard version of a Power Macintosh 6400, which was released in August 1996, had comparably a 200 MHz processor, 16MB RAM (although this could be upgraded with the support of two 64MB memory modules to achieve a total of 136MB RAM), and 2.4GB of hard disk storage. The SGI computers were very useful for work with multimedia and video, while the Power Macintosh 8500 were used for sound processing. Students began working with a plethora of programs on

these computers, some of which are still in use today (as upgrades), including Cecilia, Csound, CyberSynth, HyperPrism, Kyma, Mathematica, Max, Open Music System (not to be confused with OpenMusic), ProTools, Sound Designer, Sound Hack, Studio Vision, and TurboSynth. For the next few years, students interacted with these programs in their compositions, and they learned to integrate analog devices and voltage-controlled synthesizers as compositional tools into their works.

From the fall of 2000 to the spring of 2006, as digital technologies continued to soar and older programs faded into obsolescence, Fritts began to consolidate the programs used for his classes. Mainly, ProTools, Kyma, and Max were used. Other software, such as Audacity, OpenMusic, Peak, and SuperCollider were introduced, but only Peak became more integrated into the curriculum. The fall semesters became rooted in recording, editing, transforming, and mixing sounds with the goal of composing a work of *musique concrète* in ProTools, Sound Hack, and Peak. His spring semesters focused primarily on composition in the spectral domain. Students used Kyma and created modules aimed towards the realization of their works. In Max they became more knowledgeable in live processing with computer using a microphone input and be able to transform their sounds in Max/MSP. Sometimes, Fritts adjusted his approach to these programs based on the number of undergraduate students enrolled in his classes and their overall skills in the medium. In his determination of content the question for him was how to overcome the barrier in place between the student and the difficulties surrounding these programs:

...the content was determined, in part, by how large a gap there was between a student's technical knowledge and the complexity of certain software or aspects of

it. My goal wasn't to close that gap, but focus on using the tools that a student can easily handle to make a work at the highest level I can hope for.<sup>472</sup>

In 2002 the Studios replaced the SGI computers with four Power Mac G4 computers, which were considerably superior with 400 MHz, 256MB RAM, and 13GB hard drives. A year later, they acquired two G4 PowerBook laptops that were even more sophisticated than the Power Macs with 867 MHz, 1GB RAM, and 13GB hard drives. Each computer was connected to an APS 60GB FireWire and USB Hard Drive. These laptops were acquired for anechoic chamber recording sessions to continue the expansion of the Music Instrument Samples Database. Each Power Mac was connected to a Digidesign 001 FireWire DSP Station (later this would be upgraded to a Digidesign 002). These stations had 8 analog inputs and outputs with digital-to-analog converters that could support up to 24-bit, 96 kHz of audio. The analog outputs of a Digidesign 001 station would be sent to a Mackie 3208 (32 x 8 x 2) mixer. Studios 1 and 2 also had Capybara 320 DSP Workstations with digital-to-analog converters that were capable of supporting 24-bit, 96 kHz of audio for work in Kyma. These workstations were connected to patch bays, which would be sent to the mixer inputs. In 2004, the Studios acquired three Power Mac G5 computers, which were considered the most powerful computers produced by Apple at the time of their release in 2003, each containing a 1.6 GHz CPU, SuperDrive, 1GB RAM, and 80GB hard drive.

A number of changes, technical and pedagogical, were influencing the classes after the flood in 2008. In the fall of 2009 Studios 1 and 2 in the Becker Communications Studies Building were upgraded with the 1<sup>st</sup> generation of Mac Pro computers with two 2.8 GHz Quad-Core Intel Xeon processors, 8GB of memory, and two

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<sup>472</sup> Lawrence Fritts, e-mail message to author, July 4, 2017.

500GB hard drives. The Capybara 320 DSP Workstations were beginning to fail, and the Kyma software was no longer being updated, which made the software incompatible by the time the Studio 1 computer was upgraded to OSX Mavericks. Peak, which had been useful for batch processing files that were then imported into Pro Tools, also went into decline when its company BIAS went out of business and was no longer updating its software. The handouts began to be written increasingly by the EMS Assistants, who began to play larger roles as instructors in the Studios. Another important development was the recording of the Found Objects in the summer of 2013 by Dan Frantz and Will Huff, which have become an essential part of the classes in the fall semesters as the building blocks towards the realization of their compositions.

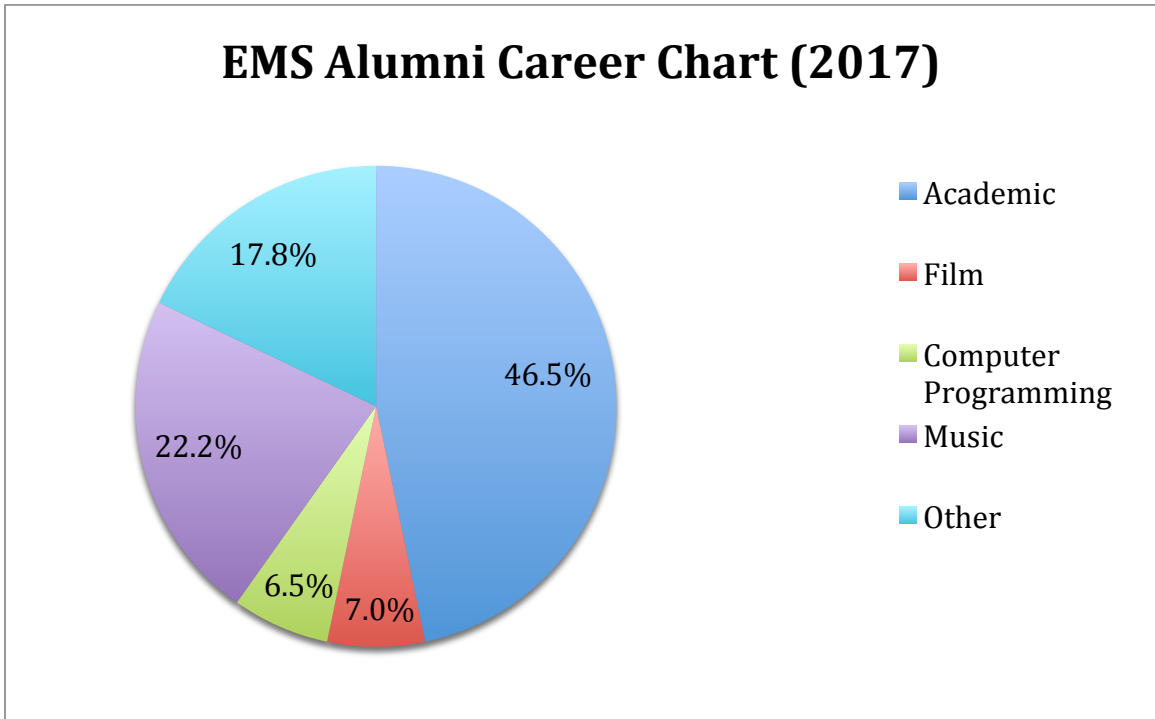
## CHAPTER 12

### EMS ALUMNI

Cessna's collaboration with the School of Music reinforced the Composition Program by providing additional support and opportunity for career growth to its graduate students. The successes of its alumni have reflected the strength of the program and the qualities of the students who have studied at Iowa. Even students who are not composition majors have found benefits from the program by taking the lessons and experiences that they acquired from the EMS and complementing them with their different interests and careers. Upon graduation, whatever their interests may be, these students have been able to follow their own paths and find employment and opportunity around the world.

One of the ways in which the outcome of the program can be assessed is through the careers of its alumni. Since 1964, more than 350 students who have been enrolled in the Electronic Music Studios have graduated from the University of Iowa. Of those students the careers of 230 of those students have been documented. The careers of Iowa's EMS alumni have been established principally in four job categories: academics, film, computer programming, and music. Some alumni can be placed into more than one job category. This list of alumni includes 107 in academics, 15 in computer/technology, 16 in film, and 51 in music. The remaining 41 have found employment in other fields (see Figure 7).

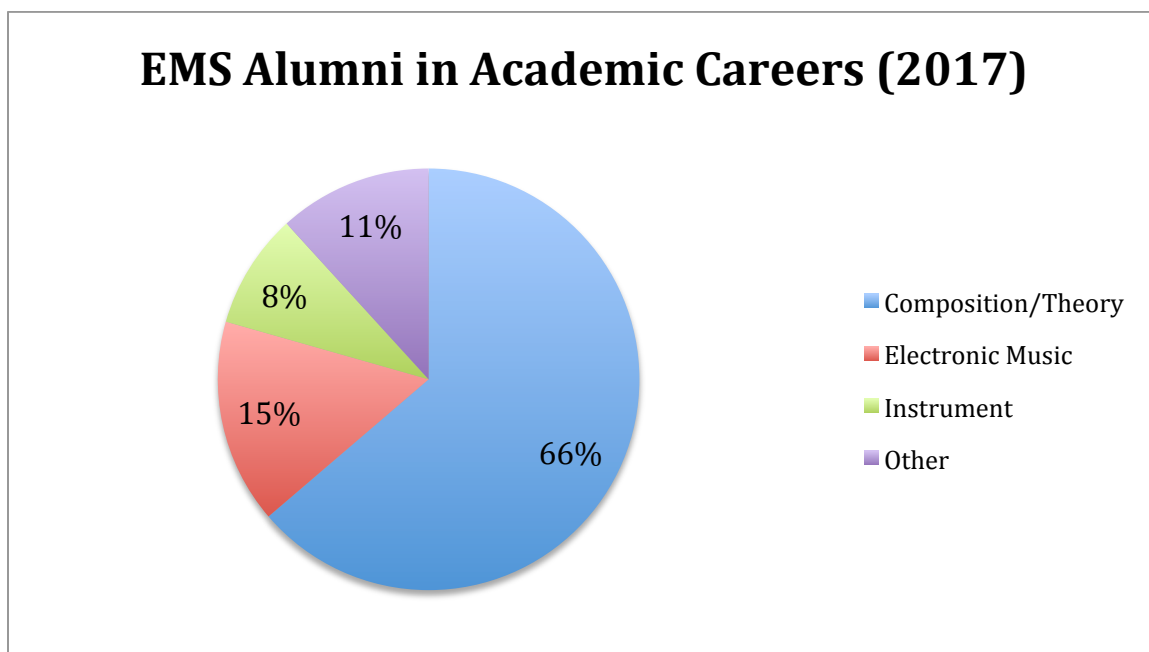
**Figure 7: EMS Alumni Career Chart (2017)**



### **Academic**

Approximately 46.5% of the 230 documented students between 1964 and 2017 have established academic careers at colleges and universities in music around the world (see Figure 8). This path is one of the more prevalent directions for graduate students majoring in music. The majority of those students enrolled in the EMS classes have been composition majors. Of the 107 students who have taught music at a college or university, 66% of them have taught music composition and/or music theory.

**Figure 8: EMS Alumni in Academic Careers (2017)**



All of the composers who were enrolled in the first EMS class were composition majors and obtained teaching positions at other universities. Maurice Monhardt, who had been teaching at Luther College since 1959, resumed his teaching duties there upon graduation until his retirement in 1995.<sup>473</sup> Paul Zonn taught at Grinnell College (1967-70) and the University of Illinois Urbana-Champaign (1970-97).<sup>474</sup> John Ronsheim found employment at the New England Conservatory (1966-67) and at Antioch College (1967-90) in Yellow Springs, OH.<sup>475</sup> M. William Karlins had a 36-year teaching career at

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<sup>473</sup> “‘Music in the Shape of a Pear’ returns Sept. 25,” *Luther College*, [https://www.luther.edu/headlines/?story\\_id=352987](https://www.luther.edu/headlines/?story_id=352987). Maurice Monhardt had been on a leave of absence during his studies at the University of Iowa. He also received several composition prizes from 1963 to 1965. One should refer to “Music Grad Wins Composition Prize,” *The Daily Iowan*, March 18, 1964, 6.

<sup>474</sup> “Paul Zonn,” *American Composers Alliance*, <http://composers.com/paul-zonn>.

<sup>475</sup> “About John Richard Ronsheim,” *The Antioch Chorus*, <http://antiochchorus.com/jrr2.html>.



Western Illinois University (1965-67) and at Northwestern University (1967-2001).<sup>476</sup>

David Hollister was awarded a post-doctoral grant to study avant-garde music in Poland in 1968 and was subsequently employed by the University of New Orleans, Hofstra University, the City University of New York, and Long Island University.<sup>477</sup>

As the University of Illinois cultivated the first director of Iowa's electronic music program, the University of Iowa was likewise the breeding ground for pioneers, in electronic music and computers. Two composers from the earliest days of Iowa's program established programs of electronic music in the Midwest. Cleve Scott (PhD 1971), Professor Emeritus of Music Theory and Composition, was hired in 1970 to develop the Electronic Systems for Music Synthesis studios and music technology program at Ball State University, where he taught until his retirement in 2001.<sup>478</sup> Some of his pieces involved analog live-electronics, such as *Residue II (Fragments of the Moon)*.<sup>479</sup> Stephen Syverud (PhD 1972), set up two electronic music studios in his career, first at Jackson State College in September 1968,<sup>480</sup> and second, after a year of teaching at Grinnell College, at Northwestern University's Moog Electronic Music

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<sup>476</sup> "Guide to the M. William Karlins (1932-2005) Papers," *Northwestern University Library*, <http://findingaids.library.northwestern.edu/catalog/inu-ead-nua-archon-430>.

<sup>477</sup> "Hollister, David," *Composers' Forum: University of Alabama*, <https://uacomposersforum.as.ua.edu/?composer=david-hollister>.

<sup>478</sup> Keith Kothman, Michael Pounds, and Jeff Seitz, "Studio Report: The Music Technology Program: Ball State University, Muncie, Indiana," *Ball State University*, 2004, 1, <http://keithkothman.com/wp-content/uploads/bsustudioreport1.pdf>.

<sup>479</sup> Brian Bevelander, "Observations on live electronics," *Live Electronics*, vol. 6, part 1, eds. Peter Nelson and Stephen Montague (Florida: CRC Press, 1992), 156.

<sup>480</sup> "UI Music Award For Composition Goes to Student," *Iowa City Press-Citizen*, July 1, 1968, <https://www.newspapers.com/image/23495177>.

Studios as Associate Professor of Composition/Music Technology from 1972 until his retirement in 2006.<sup>481</sup> Dennis Riley (1943-1999), a graduate from the University of Iowa in music composition (PhD 1973), was a pioneer in the development of computer music notation who taught at California State University in Fresno and Columbia University.<sup>482</sup>

The most distinguished composer in electronic music to come from the University of Iowa never worked in the Electronic Music Studios. Charles Dodge, after his spring of 1964 graduation, worked at the Columbia-Princeton Electronic Music Center, where his music and interest in computer music composition would result in the establishment of the Brooklyn College Center for Computer Music (BC-CCM) at the City University of New York after he became the director of its electronic music studio in 1978. His compositions *Speech Songs* (1974) and *Earth's Magnetic Field* (1970) were important contributions to the development of computer music. After leaving BC-CCM, he taught at Dartmouth College as Visiting Professor until his retirement in 2009. His status in relationship to the EMS at Iowa, however, is an exception. Although the composer was an undergraduate in the planning stages of the EMS program, he had left Iowa City before the first EMS class began.

Many composers in academic positions have been teaching courses in electronic music or music technology. 15% of the students who achieved academic careers in music have taught courses in electronic music. Peter Elsea, as discussed in Chapter 10, taught electronic music for many years at the University of California, Santa Cruz until

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<sup>481</sup> Stephen Syverud, "Biography," *Stephen Syverud*, <http://www.compsteve.com/about.htm>.

<sup>482</sup> "The Dennis Riley manuscripts and personal papers: An Inventory of Holdings at the American Music Research Center," *University of Colorado-Boulder*, <http://www.colorado.edu/amrc/sites/default/files/attached-files/AMRC-Riley.pdf>.

his retirement in 2013. Robert Paredes directed the EMS from 1991 to 1993. Donald Pederson (PhD 1968) taught for many years at the University of Tennessee-Knoxville, not only as a Professor of Music, but also as the Coordinator of Theory and Composition and Coordinator of Computer Activities.<sup>483</sup> Thomas Miller directs the Sound and Recording Technology program at DePaul University and teaches classes in recording techniques and electronic music. Until his retirement, Jerry Owen directed the electronic music studio at Coe College when he became head of the theory and composition program in the fall of 1976.<sup>484</sup> Rev. Richard McCreary directed the electronic music laboratory at Governors State University until his retirement in 1996. Other alumni teaching electronic music, recording, or courses in music technology include Shane Hoose at Eastern Kentucky University; John McKinnon at Eastern Oregon University; Jason Palamara at Iowa State University and Indiana University Purdue University Indianapolis (IUPUI); Stas Omelchenko at The University of Tampa and Florida Southern College; Jonah Elrod at the University of Wisconsin – Stevens Point; Larry Arnold at the University of North Carolina at Pembroke;<sup>485</sup> Jon Welstead at the University of Wisconsin-Milwaukee; and C. James Sheppard at Miami University of Ohio, who specialized in the Electronic Valve Instrument, which was invented by Nyle Steiner in the 1970s. In total 16 EMS alumni have taught electronic music or music technology courses (not including Charles Dodge).

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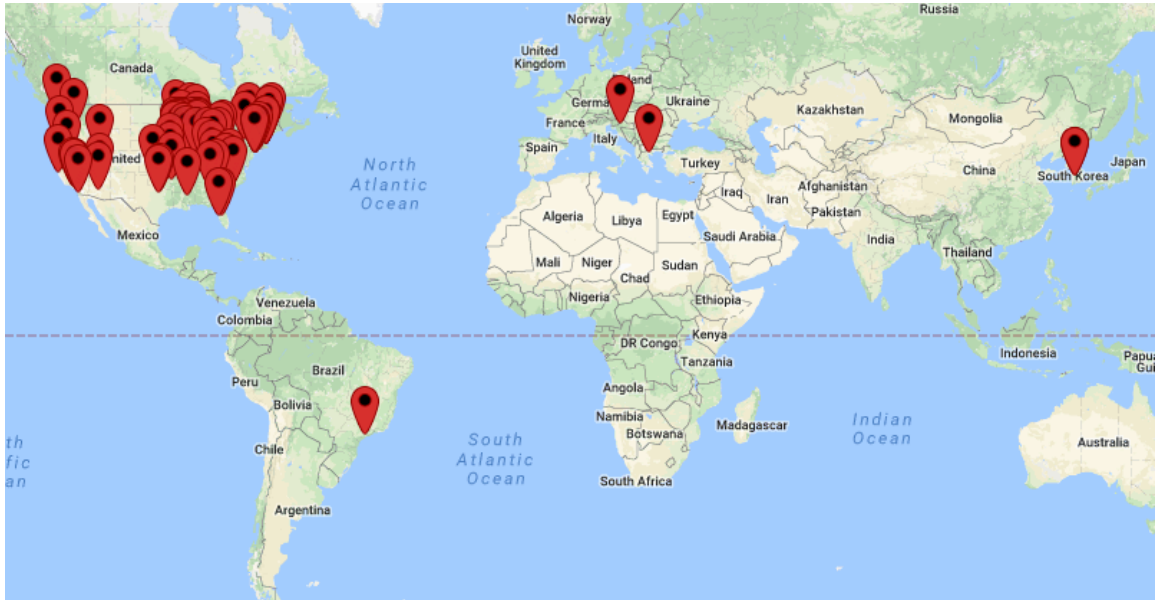
<sup>483</sup> “Faculty Spotlight,” *Office of Information Technology*, <https://oit.utk.edu/instructional/spotlight/archive/2001/pederson/Pages/default.aspx>.

<sup>484</sup> “Musicman comes to Coe,” *The Coe Cosmos*, May 7, 1976, <https://www.newspapers.com/image/32705364>.

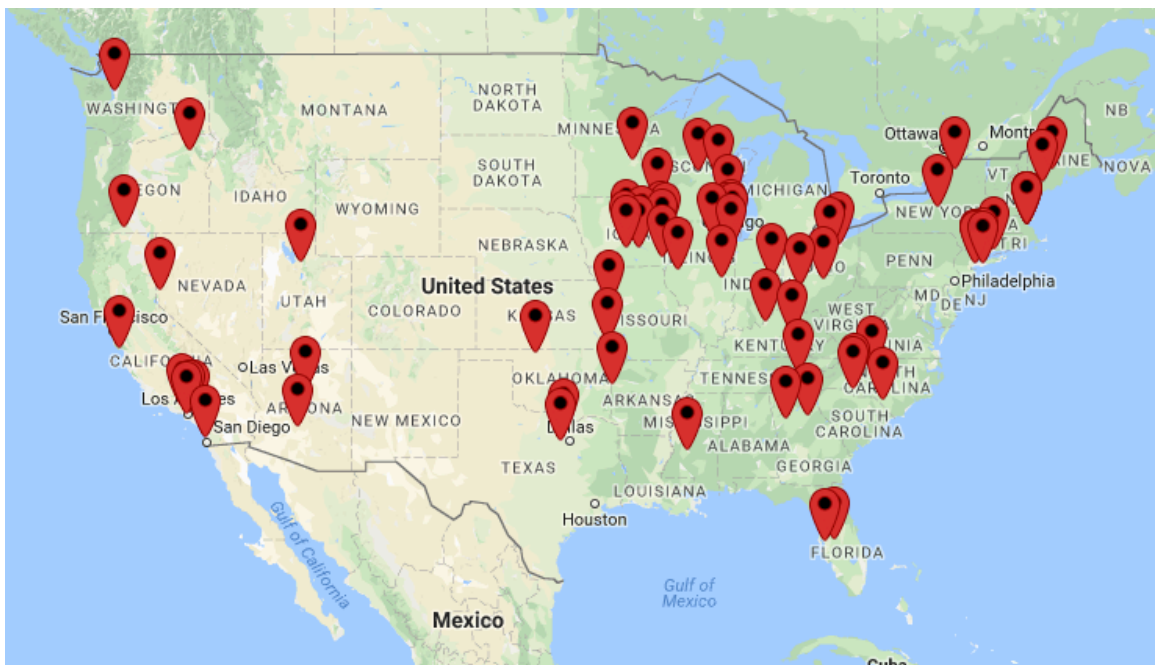
<sup>485</sup> “Dr. Larry Arnold,” *The University of North Carolina at Pembroke*, [http://www2.uncp.edu/media\\_integration/arnold.html](http://www2.uncp.edu/media_integration/arnold.html).

A significant number of composers have taught music composition at the university. While the majority of them have obtained these positions in the Midwest, they can be found throughout the United States and in several countries around the globe (see Figures 9 and 10).

**Figure 9: Map Plot of Iowa Alumni Teaching at Universities Worldwide**



**Figure 10: Map Plot of Iowa Alumni Teaching at Universities in the United States**



In the Midwest Heinrich Taube at the University of Illinois Urbana-Champaign released a program on iTunes he developed in 2013 called Harmonia, which allows teachers to provide students with composition or analysis assignments, as well as harmonic analyses of complex works. Lewis Nielson (PhD 1977) taught for twenty-one years at the University of Georgia (1977-98) and directed the Georgia Contemporary Ensemble before teaching an additional fifteen years at the Oberlin Conservatory (2000-15). The New England states are host to a number of distinguished composers with Iowan connections. David Lang (M.A. 1978), Pulitzer-prize winning composer and 2010 Grammy Award recipient for Best Small Ensemble Performance of “the little match girl passion,” has taught at Yale University since 2008. He is also the cofounder and co-artistic director of New York’s music festival “Bang on a Can.” Erin Gee, recently appointed to the Department of Music at Brandeis University, was awarded the Rome Prize in 2007. In the Western US one can find Iowan composers in academia such as Luke Dahn and George Marie at the University of Utah and Jean-Paul Perrotte at the University of Nevada. The Southern US is no stranger to Iowa City's composers either with John Allemeier, Zach Zubow, Seth Custer, and Joseph Dangerfield teaching at Queen's University - Charlotte, Bob Jones University, and the University of Florida. Outside the US, composers Minpyo Kim and Shinjung Kim have taught in South Korea at colleges such as Korea Baptist Theological University and Hoseo University, while Dimitri Papageorgiou has taught at Aristotle University in Greece, and Alexandre Lunsqui has taught in Brazil at Sao Paulo State University.

A few notable composers have reached administrative positions. Robert Rowe (M.A. 1978) has distinguished himself for his work in computer music and live

electronics. Upon graduation from the University of Iowa, he lived in Europe from 1979 to 1987. His studies across the Atlantic Ocean led him to the Institute of Sonology, where he was able to work with one of Stockhausen's assistants. His education was further enhanced at the Royal Conservatory in The Hague and at IRCAM, where he studied with Pierre Boulez and developed software for the Sogitec 4X, a digital sound processing workstation that was an immediate predecessor to the IRCAM Signal Processing Workstation (ISPW). He was awarded first prize in the "live electroacoustics" category for *Flood Gate* (1990) at the Bourges International Electroacoustic Music Competition in 1991 and was the first composer to earn a Ph.D. in Music and Cognition at the MIT Media Laboratory. Rowe has been at the New York University Steinhardt School of Music for many years as Associate Dean,<sup>486</sup> and he is the author of *Interactive Music* and *Machine Musicianship*. Other composers that have been in administrative positions include Bruce MacCombie (1943-2012), who taught composition at Yale University and became Dean of the Juilliard School (1986-1992) and later Dean of the School of Arts at Boston University (1992-2001). Jon Welstead at the University of Wisconsin-Milwaukee is not only the Director of the Electro-Acoustic Music Center, but also Chair of the Department of Music.<sup>487</sup> David Maki teaches music theory and composition at Northern Illinois University and is Assistant Director and Coordinator of Music Theory and Composition.<sup>488</sup> John Fisher has been Department

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<sup>486</sup> "Robert Rowe," *NYU Steinhardt*, <http://steinhardt.nyu.edu/marl/people/rowe>.

<sup>487</sup> "Jon Welstead," *University of Wisconsin-Milwaukee*, <https://www4.uwm.edu/psoa/music/facultystaff/jonwelstead/>.

<sup>488</sup> "David Maki," *Northern Illinois University*, <http://www.niu.edu/music/meet-us/bio/maki.shtml>.

Chair of Texas Wesleyan University since 2010.<sup>489</sup> Daniel Godfrey is currently Chair of the Department of Music at Northeastern University, the Coordinator for Music Industry Leadership graduate program in Boston, and former Director of the School of Music at the Setnor School of Music at Syracuse University.<sup>490</sup> Eric Ziolek, who taught music theory, composition, and directed the Center for New Music at the University of Iowa, has been at Cleveland State University for many years as Chair of the Department of Music from 2001 to 2012 and is now Associate Dean of the College of Liberal Arts and Sciences.<sup>491</sup>

A number of alumni from the Electronic Music Studios have backgrounds as percussion majors. The most well known from this group, Steven Schick, teaches at the University of California, San Diego, and is music director of the La Jolla Symphony and Chorus and artistic director of the San Francisco Contemporary Music Players. Andrew Thierauf, who studied composition with Lawrence Fritts, teaches at Settlement Music School and Kutztown University. Nick Petrella is an Adjunct Assistant Professor of Percussion at the University of Missouri – Kansas City, as well as the Director of Education for Sabian, Ltd.<sup>492</sup> Will Parsons, the first percussionist for the Center for New Music, is a co-founder of the Ann Ludwig Company in San Diego with his wife Grace Bell Parsons, and he has established a program in Jazz Education at the Bishop’s School

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<sup>489</sup> “Dr. John Fisher,” *Texas Wesleyan University*, <http://test.txwes.edu/spotlight-archive/dr-john-fisher>.

<sup>490</sup> “Biography,” *Daniel Strong Godfrey*, <http://danielstronggodfrey.com>.

<sup>491</sup> “Eric E. Ziolek, PhD,” *Cleveland State University*, [http://facultyprofile.csuohio.edu/csufacultyprofile/detail.cfm?FacultyID=E\\_ZIOLEK](http://facultyprofile.csuohio.edu/csufacultyprofile/detail.cfm?FacultyID=E_ZIOLEK).

<sup>492</sup> “Nick Petrella,” *Sabian*, <http://www.sabian.com/en/artist/nick-petrella>.

in La Jolla.<sup>493</sup> Richard McCandless has performed with the Washington Music Ensemble from 1980 to 1985, founded the Washington-based percussion quartet “ko’mm,” and co-directed the Amaranth ensemble. Mark Schubert, whose compositions “Merchants” was awarded 4<sup>th</sup> place in the Festival Internationale de Musique Experimental in Bourges, has performed as a percussionist with the Lake Placid Sinfonietta for 17 seasons.

Other academics from the Studios who have taught or are currently teaching neither music composition nor music technology include Stephen Husarik at the University of Arkansas - Fort-Smith; Dennis Roseman at the University of Iowa; Michael Stone at Northwestern Oklahoma State University; Mark Urness at Lawrence University; Jamie Poulsen at Simpson College; Randall Faust at Western Illinois University; William DeFotis at Baylor University and the College of William & Mary, who also conducted the orchestras of UCSD and the University of Cincinnati College-Conservatory of Music; David DeVasto at Elmhurst College; Gregory Carroll at the University of North Carolina in Greensboro; Edwin Harkins at the University of California, San Diego; Ted Hatmaker at Northern Illinois University; Yousif Bilal at the United States Department of Defense Language Institute; and Ohannes Salibian at the University of Southern California, where he headed a program in Armenian Music. In addition, J. J. Hudson, while primarily a Stage Director of operas, has taught at SUNY Oswego, Hobart and William Smith Colleges, and Nazareth College in Winchester, NY.

The EMS has also prepared its students for graduate studies at other colleges and universities. Some of those students became studio assistants of electronic music studios in the course of their graduate studies, including John Ritz who worked as an

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<sup>493</sup> “Composer Dave Olive,” *University of Iowa Electronic Music Studios* (13 Sept., 2015), <http://theremin.music.uiowa.edu/PostersPrograms/9.13.2015.pdf>.



Experimental Music Studio Assistant at the University of Illinois in Urbana-Champaign, Chris Ewing as a Studio Assistant at the University of Washington CARTAH, and Chris Brakel as a Computer Music Studio Assistant at the Eastman School of Music. Other students have been accepted into composition and research programs, often with teaching assistantships in electronic music, including Brown University, Columbia University, Cornell University, Florida State University, Harvard University, Royal College of Music in London, Massachusetts Institute of Technology, University of Chicago, New York University, Mills College, University of Southern California, Rensselaer Polytechnic Institute of Technology, University of Oregon, and the University of Graz, Austria (see Appendix C for a complete list of EMS alumni in academia).

### **Film/Theater**

Another outlook for composers from the University of Iowa has been in the area of film or theater. Most composers working in the area of film/theater have settled in Los Angeles or New York. Leighton Pierce, an experimental filmmaker who had been a student of the EMS in the late 1970s and head of Iowa's Program in Film and Video Production from 2001 to 2011, is Dean of the School of Film/Video at California Institute of the Arts. A number of composers in the Los Angeles crew are involved in a film career either as composers or audio engineers, including Michael Boddicker, the 1984 Grammy Award winner for *Imagination* from *Flashdance*, Andrew Hauschild, who has written music for the 82<sup>nd</sup> and 83<sup>rd</sup> Annual Academy Award Shows, Andrew Hausmann, Jonathan Price, Matthew Dotson, Morgan Stine, and Clinton Welander, who won a Grammy Award for engineering Jimmy Cliff's album *Rebirth* in 2012. Mark Anthony

Chubb, who taught at Cal Poly Pomona from 2007 to 2012, has written music for television shows, movies, and mini-series, including “Clean House.” Other alumni with film careers reside in New York. Evan Mazunik, Harlan Muir, Billy Gomberg, Anne Guthrie, and Andrew Struck-Marcell are all a part of this group as they divide their time between composing, improvising, performing, arts management, and acoustical research. Mark Bruckner is an additional member of the New York scene as Co-Artistic Director for MBx2 Productions at the George Street Playhouse. A couple of alumni can be found in the southeast. In Florida Dave Olive has been a filmmaker for Vertical Hold, Inc., and John Cerreta has composed music for film and experimental theater in Atlanta.

### **Computer Programming**

A smaller number of alumni from the Electronic Music Studios have been involved with computer programming. Kirk Corey has been ITS Director since he joined the College of Law in 2003. Jennifer Masada, a student of Elizabeth Hinkle-Turner, is currently Strategic Communications Manager for the University of Iowa Libraries. Matthew Hallaron has designed more than 30 websites and is now Senior Programmer Analyst with Verizon Wireless. Michael Kowalski, a student of Richard Hervig, has worked at the Computervision Corporation in Boston in the late 1970s and then as a software consultant in retailing and brokerage facilities from 1984 to 1995.<sup>494</sup> Evan Kuchar has worked for Granicus and Polymathic in Chicago. Cris Ewing is an instructor in Python web development for the University of Washington Professional & Continuing

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<sup>494</sup> “About Michael Kowalski,” *PostIndustrial Players*, <http://www.postindustrialplayers.com/1.html>.

Education program and Lead Instructor in Python for Code Fellows.<sup>495</sup> Another alumnus, Ianos Schmidt, is currently a Senior Engineer Associate for the Department of Physics and Astronomy at the University of Iowa. Christopher Zahrobky is a Senior .NET Developer for Northern Trust in Chicago, Illinois.

## **Music**

Some of Iowa's alumni have continued to be involved in the performance of music outside the confines of the academic community. Guitarist Ray Burkhart, whose band Surfinks was inducted in the Iowa Rock & Roll Hall of Fame, and who composed and performed in Los Angeles for more than 30 years in film, theater, concerts, and demos, has returned to Iowa as the owner of a bowling/music club and leader of a new band the "Planetpassengers."<sup>496</sup> Clarinetist Michael Lytle has lived for many years in New York City dividing up his time as a performer, record producer, and teacher. A number of these alumni have been private music teachers. Steven Oberg (since 1979) in Albuquerque, New Mexico, Lieschen Mast in Lawrence, Kansas, Marc Weber and Daniel Roeder in California, and Marit Hervig of the Preucil School in Iowa City, are just some of the private music teachers that grace the United States with their instruction. One alumnus even builds musical instruments. Eric Jensen, former cellist of the CNM, designs electric string instruments at Jensen Musical Instruments in Seattle.<sup>497</sup>

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<sup>495</sup> "Instructors," *Jazkarta*, <https://jazkarta.com/services/training/instructors>.

<sup>496</sup> Ray Burkhart, "Bio," *Planetpassengers*, <http://planetpassengers.wix.com/rayburkhart>.

<sup>497</sup> Eric Jensen, *Online Catalog: Electric Bowed Instruments*, <http://www.halcyon.com/jensmus/index.html>.

Several alumni have been in important positions in organizations that promote contemporary classical music. Ralph Jackson, who briefly attended the University of Iowa as a doctoral student in the late 1970s, became president of the BMI in 2002. Julie Weber (MA, 1971) has recently retired from her role as Chairperson of the Musicianship and Leadership Program (MLP) for Music for People. Philip Blackburn (M.A. 1987, PhD 1989) attended the University of Iowa as a graduate student in music composition in the late 1980s and directed the Collegium Musicum, the university's early music ensemble.<sup>498</sup> He has since been responsible for publishing the Harry Partch Archives and is the Innova Recordings Director for the American Composers Forum.<sup>499</sup>

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<sup>498</sup> Jonathan Dixon, "Concerts abound for music lovers," *The Daily Iowan*, November 16, 1989, <http://dailyiowan.lib.uiowa.edu/DI/1989/di1989-11-16.pdf>.

<sup>499</sup> Philip Blackburn, "Curriculum Vitae," *Philip Blackburn*, <http://philipblackburn.com/page-cv>.

## CHAPTER 13

### GUEST COMPOSERS

For more than sixty years the University of Iowa has hosted a large number of guest composers. Many of them have been distinguished for their work in electronic music. Since 1958, the University of Iowa has hosted 91 composers who have received recognition for their work in electronic music (not including every composer who participated in the 2002 SEAMUS National Conference). These composers have commonly been invited through the professor in charge of the electronic music program or the Center for New Music. During their visits, the guest composer often gives a 60-90 minute seminar for the Composition Program, and the composer will usually be featured with a performance of his/her works sponsored by the Electronic Music Studios or the Center for New Music. This chapter will demonstrate the extent of those connections, from the most distinguished composers to the more obscure ones.

#### **Guest Composers (1964-69)**

A number of highly respected composers visited Iowa City within the first five years of the program's inception, including Milton Babbitt, Charles Wuorinen, and Luciano Berio (see Table 2).

**Table 2: Guest Composers, 1958-69**

Name	Year
Karlheinz Stockhausen	1958
Luciano Berio	1960
Charles Wuorinen	1963
Herbert Brün	1964
Josef Patowski	1965
Luciano Berio	1965
Milton Babbitt	1966
Charles Wuorinen	1966
Luciano Berio	1967
Mel Powell	1968
Otto Luening	1969
Luciano Berio	1969
Charles Wuorinen	1969
John Melby	1960s
Edward Miller	1960s

Babbitt was invited as the 10<sup>th</sup> guest of the university's visiting composer program in 1966. During his residency the composer had two concerts of his music, one on May 5 and the other by the Iowa String Quartet on May 6. His visit was widely attended with a number of prominent musicians in attendance, including Wuorinen and music critics Benjamin Boretz and Michael Steinberg for *The Boston Globe*.<sup>500</sup> Babbitt gave a number of presentations during his early May residency, including a symposium at North Hall that featured Wuorinen as a guest in the presentation "Contemporary Music: Responsibilities of Composer, Critic, and Audience"<sup>501</sup> and a presentation on electronic music known as "The Production and Perception of Electronic Sound."<sup>502</sup> Richard

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<sup>500</sup> "Contemporary Music Event To Be Presented in May," *Iowa City Press-Citizen*, March 30, 1966, <https://www.newspapers.com/image/205835332>.

<sup>501</sup> "Music Symposium To Close With Babbitt Compositions," *The Daily Iowan*, May 5, 1966, <http://dailyiowan.lib.uiowa.edu/DI/1966/di1966-05-05.pdf>.

<sup>502</sup> "Symposium for Contemporary Music," *University of Iowa*, May 3-6, 1966, Richard Hervig Papers, box 1, University of Iowa Archives, Iowa City. Stephen Soderberg, an

Hervig summarized the following points that Babbitt expressed in his presentation on electronic music:

- 1) Electronic music is not a particular kind or style of music; rather, electronic production of sound provides a medium in which many kinds and styles may be composed.
- 2) Composers working with electronic media have found that much more needs to be known about human perception of music. It is possible in these media to exert a control over the musical “signals” to an unprecedented degree; for instance, a series of notes can be played faster than any human performer could possibly execute them, and the problem arises – how much can the ear perceive, and how does it perceive such a passage?
- 3) Electronic music is not going to replace the live performance. It is another medium altogether and cannot and should not replace the performer.<sup>503</sup>

Wuorinen was a frequent visitor to the University of Iowa from 1963 to 1979, mostly during the 1960s. Besides his 1963 appearance with the Columbia Trio, Wuorinen was present for the world premieres of several of his orchestral works by the University of Iowa Symphony Orchestra, including the world premieres of his *First Piano Concerto* on May 4, 1966, *Contrafactum* on November 19, 1969, and *Grand Bamboula* on September 30, 1972 for the formal opening of the Hancher Auditorium. In April 1970 he was a visiting composer on Iowa’s faculty while Hervig was on sabbatical for the spring semester. His last appearance was at the world premiere of his *Percussion Duo* performed by Steven Schick and James Avery during the Center for New Music concert on October 18, 1979.

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undergraduate at the time of Babbitt’s visit, recalled the composer’s presentation was shared with Wuorinen. For more information, one should refer to Stephen Soderberg, “Riemannian Variations on a Theme by Milton Babbitt,” *Perspectives of New Music* 35, no. 2 (1997): 9-10.

<sup>503</sup> Richard Hervig, Letter to Susan Fleming, May 24, 1966, Richard Hervig Papers, box 1, University of Iowa Archives, Iowa City.

Since his first visit to Iowa City in 1960, Berio returned to Iowa City on three additional occasions. The purpose of his first trip back to Iowa City on Tuesday, March 23, 1965, was to give a presentation called “On Materials of Music” at North Rehearsal Hall<sup>504</sup> while en route to Los Angeles for the world premiere of “Quaderni III” by the Los Angeles Philharmonic under the direction of Zubin Mehta.<sup>505</sup> Two years later, from February 28 to March 2 he returned as the 11<sup>th</sup> guest of the university’s visiting composer program, and the University of Iowa Symphony Orchestra under the direction of James Dixon performed “Nones” on March 1, 1967.<sup>506</sup> He was in attendance for the world premiere of “Traces,” which was premiered by the Center for New Music concert on May 9, 1969.<sup>507</sup>

Additional composers with reputations in electronic music, including Mel Powell, Otto Luening, Edward Miller, John Melby, and Josef Patowski were said to have visited the studios in the 1960s.<sup>508</sup> However, the dates of the visits for some of these composers cannot be fully ascertained, for their visits were not publicly announced through newspapers. It is known that Powell, who established one of the nation’s earliest electronic music studios at Yale University, was in Iowa City for the performance of his

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<sup>504</sup> Richard Hervig, Letter to Luciano Berio, March 7, 1965, Richard Hervig Papers, box 1, University of Iowa Archives, Iowa City, Iowa.

<sup>505</sup> Luciano Berio, Letter to Richard Hervig, March 4, 1965, Richard Hervig Papers, box 1, University of Iowa Archives, Iowa City, Iowa.

<sup>506</sup> “Orchestra to Play Berio Composition,” *The Daily Iowan*, March 1, 1967, <http://dailyiowan.lib.uiowa.edu/DI/1967/di1967-03-01.pdf>.

<sup>507</sup> “Berio’s ‘Traces’ To Be Premiered in Concert Here,” *Iowa City Press-Citizen*, May 7, 1969, 5D.

<sup>508</sup> “History,” *University of Iowa Electronic Music Studios*, <http://theremin.music.uiowa.edu/history.html>.



orchestral work “Stanzas” in 1968.<sup>509</sup> During his three-day stay from May 13 to May 15 in Iowa City, he gave a lecture on “Contemporary Music,” had a performance of “Stanzas” on a concert by the University of Iowa Symphony Orchestra, and a concert of his works hosted by the Center for New Music that included chamber music and the performance of “Immobiles” (1967) for ensemble and tape.<sup>510</sup> On March 10, 1969, Luening from Columbia University visited Iowa City and gave a presentation known as “Electronic and Computer Music: IS It Here to Stay?” through the Visiting Scholar Program of the United Chapters of Phi Beta Kappa.<sup>511</sup> In his presentation he discussed two particular trends that were growing during that time: live electronic music (labeled “instant electronic music”) and computer music. He also played recordings of two of his works: “Fantasy in Space” and “Poem in Cycles and Bells.”<sup>512</sup> The visits of Miller, Patowski, and Melby are unclear. It is possible that Patowski may have visited the University of Iowa during his visit as guest lecturer at the Experimental Music Studios in Urbana-Champaign on March 4, 1965.<sup>513</sup> One other composer, Herbert Brün, was also known to have visited the University of Iowa, shortly after the electronic music program

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<sup>509</sup> “Work by Powell in Iowa Concert,” *Iowa City Press-Citizen*, May 8, 1968, <https://www.newspapers.com/image/205545330>.

<sup>510</sup> “Electronic Music Concert Scheduled at University,” *Iowa City Press-Citizen*, May 8, 1968, <https://www.newspapers.com/image/23463723>.

<sup>511</sup> “Professor from Columbia to Lecture on Music at UI,” *Iowa City Press-Citizen*, March 5, 1969, <https://www.newspapers.com/image/205597507>.

<sup>512</sup> “Electronic Music is Here to Stay, Composer Asserts,” *The Daily Iowan*, March 12, 1969, <http://dailyiowan.lib.uiowa.edu/DI/1969/di1969-03-12.pdf>.

<sup>513</sup> “Daybook,” *The Daily Illini*, March 4, 1965, <http://idnc.library.illinois.edu/cgi-bin/illinois?a=d&d=DIL19650304.2.35>. In a conversation with Lawrence Fritts, Robert Shallenberg noted that Patowski was in residence at the University of Illinois at the time that he was teaching at Iowa.

was underway. He delivered a lecture for the Humanities Society in the Old Capitol known as “Musical Idea in Search of New Sound” on April 27, 1964, which concerned the types of music that would need sound reproduction other than traditional instruments.<sup>514</sup>

### **Guest Composers (1970-83)**

From 1970 to 1983 the University of Iowa hosted 25 guest composers who distinguished themselves for their work in electronic music through the faculty of the Composition Program and Lowell Cross from the Recording Studios. They were invited through the Center for Performing New Arts, the Electronic Music Studios, and the Center for New Music (see Table 3).

**Table 3: Guest Composers, 1970-83**

<b>Name</b>	<b>Year</b>
Kenneth Gaburo	1970
Charles Wuorinen	1970
Larry Austin	1971
Alcides Lanza	1972
Eliane Radigue	1973
David Tudor	1973
Salvatore Martirano	1973
Paul Chihara	1975
Morton Subotnick	1975
Edward Miller	1975
Frits Weiland	1975
Hubert Howe	1975
Robert Ashley	1975
Pril Smiley	1975
Jaap Spek	1976
Charles Dodge	1976
Daniel Goode	1977

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<sup>514</sup> “Explains Music in World Today,” *The Daily Iowan*, <http://dailyiowan.lib.uiowa.edu/DI/1964/di1964-04-28.pdf>.

**Table 3: Continued**

David Behrman	1977
Tom de Leeuw	1977
Jon Gibson	1978
David Gibson	1978
George Lewis	1978
Charles Wuorinen	1979
Jon Appleton	1980
Michel Redolfi	1980
Jacques Diennet	1980
Royon le Mée	1980
Georges Boeuf	1980
Mario Davidovsky	1981
John Chowning	1981
Charles Dodge	1981
Joel Chadabe	1981
Kenneth Gaburo	1981
Stephen Temmer	1981
Vladimir Ussachevsky	1982
Russell Pinkston	1983

In the fall of 1971 Larry Austin was invited to the University of Iowa at the encouragement of D. Martin Jenni.<sup>515</sup> Sponsored by the Center for New Performing Arts, he gave a presentation on September 24, 1971 called “An Emerging Aesthetic for Electronic Music: New Romanticism,” which was an attempt to analyze the integration of electronic music with other mediums, such as art, theater, and film both historically and theoretically.<sup>516</sup> Seven months later, from April 14 to April 18 of 1972, Alcides Lanza gave a lecture-recital known as “The Music of Alcides Lanza” with a performance of “Acufenos I” by the Center for New Music. He also gave two separate lectures. The first one was similar to his lecture-recital with a repeat performance of “Acufenos I” and the

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<sup>515</sup> Larry Austin, Letter to William Hibbard, April 13, 1971, Center for New Performing Arts Records, box 2, folder 17, University of Iowa Libraries, Iowa City, Iowa.

<sup>516</sup> Shelly Shakas, *University of Iowa, 1971* (Iowa City, IA: University of Iowa), 83; “Larry Austin Concert on Friday,” *Iowa City Press-Citizen*, September 22, 1971, <https://www.newspapers.com/image/205068620>.

performance of two additional works. His second lecture was on “The Young Musician in Latin America” held on April 17.<sup>517</sup> In February 1973, Peter Tod Lewis brought to Iowa City Éliane Radigue, a student of Pierre Schaeffer and an assistant to Pierre Henry, as a composer-in-residence of the Electronic Music Studios. During her two-week stay, she worked on the Moog and the ARP 2600 synthesizers and realized a work called “Arthesis.”<sup>518</sup> Her visit culminated in a concert of her work “Psi-847,” which was performed in Harper Hall on February 19, 1973.<sup>519</sup> Radigue was also featured on a radio program by WSUI on the 21<sup>st</sup> of February to discuss her work in electronic music.<sup>520</sup>

One of the most famous visitors to Iowa City in the 1970s was David Tudor, a close friend of Cross. He came the University of Iowa in June 1973 to assist him with his VIDEO/LASER III system as part of a presentation hosted by the Center for New Performing Arts called *Free Spectral Range II*.<sup>521</sup> Cross wrote that he convinced Edward Miller at Oberlin College to invite Tudor to collaborate with him on his laser project as the Center for New Music was making its trip to the campus for a concert. Both Cross and Tudor performed together later that night after the CNM concert at Oberlin College

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<sup>517</sup> “Alcides Lanza to Perform at UI Events,” *Iowa City Press-Citizen*, April 12, 1972, <https://www.newspapers.com/image/205096632>.

<sup>518</sup> “Arthesis” would later be performed at the University of Iowa in an Electronic Music Studios concert on March 12, 1977.

<sup>519</sup> “Electronic Music Studio,” *University of Iowa Electronic Music Studios* (19 Feb., 1973), <http://theremin.music.uiowa.edu/Archived%20Concert%20Programs/EMS.Concert.February.19.1973.pdf>.

<sup>520</sup> “Four Topics on WSUI Wednesday,” *Iowa City Press Citizen*, February 20, 1973, <https://www.newspapers.com/image/204954287>.

<sup>521</sup> “Laser Show Scheduled at UI Museum of Art,” *Iowa City Press-Citizen*, June 11, 1973, <https://www.newspapers.com/image/23343560>.

in an event known as *Free Spectral Range I*.<sup>522</sup> Afterwards, William Hibbard agreed to a CNPA-sponsored laser event at the University of Iowa, with three presentations held in the evenings at the Museum of Art. Cross reflected on those performances from June 12 to June 14, 1973 with a sense of awe many years later:

Four large loudspeaker systems surrounded the attendees, and our scanning laser beams went over their heads to the screen on the other side of the terrace. Carson D. Jeffries came from Berkeley, joining David Tudor and me – and an enthusiastic group of faculty, staff, and student collaborators. There was a full moon, and I sent laser beams in its direction and to the dome of the University’s “Old Capitol” across the Iowa River. Carson D. Jeffries observed that I might have been successful in reflecting “a few photons” of laser radiation back to Earth from the corner reflectors left behind on the moon’s surface by the astronauts.<sup>523</sup>

Another prominent visiting composer, Sal Martirano, arrived in November 1973 at the invitation of the Center for New Music. His visit featured the Sal-Mar Construction, which he brought to Iowa City for the Center’s November 17 concert.<sup>524</sup> This device was a synthesizer that could be programmed and controlled by the composer in the middle of a performance. Peter Elsea recalled that the composer loaned a set of the plans for the Sal-Mar Construction to Thomas Mintner, and through him Elsea was able to study the synthesizer and figure out how it worked.<sup>525</sup> Martirano was remembered to have frequented a number of CNM events and to bring the Sal-Mar Construction with

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<sup>522</sup> “Iowa City, 1971-1975,” *Remembering David Tudor: a 75<sup>th</sup> Anniversary Memoir*, <http://www.lowellcross.com/articles/tudor/1971-1975.html>.

<sup>523</sup> Ibid.

<sup>524</sup> “Composer to perform at UI,” *Iowa City Press-Citizen*, November 12, 1973, <https://www.newspapers.com/image/23413809>.

<sup>525</sup> Peter Elsea and Veronica Voss Elsea, interview by the author, May 9, 2017.

him a few additional times, including a weeklong collaboration with Cross and the Sal-Mar in the lobby of Clapp Recital Hall.<sup>526</sup>

An admirable quality of Iowa's music program in the 1970s was its ability to enrich the community through its experiments. One such experiment in the Composition Program bore fruit when Lewis went to the Institute of Sonology and GMEB during the fall of 1975. In his place he invited six visiting professors from around the country with distinguishing careers to teach the Electronic Music Studio II class for two-week periods during the fall semester of 1975: Paul Chihara, Morton Subotnick, Edward Miller, Hubert Howe, Robert Ashley, and Pril Smiley.<sup>527</sup> Chihara, who had been composer-in-residence at the San Francisco Ballet since 1973 and had just completed his film score for *Death Race 2000*, first taught the group from September 22 to October 3. He would later return to Iowa City in early February 1977.<sup>528</sup> Subotnick, who had moved with Mel Powell to Los Angeles in 1969 to create the California Institute of the Arts in Los Angeles,<sup>529</sup> only taught the EMS for one week from October 6 to October 10. Miller, who had been teaching at the Oberlin Conservatory since 1971, was in residence from October 20 to October 31. Howe, director of the Electronic Music Studios at Queens College, followed him from November 3 to November 14. Ashley, appointed Director of the Center for Contemporary Music at Mills College in 1969, visited from November 17 to November

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<sup>526</sup> Peter Elsea, e-mail message to author, February 7, 2017.

<sup>527</sup> "Notice," undated (c. May 1975), University of Iowa Electronic Music Studios Archives, Iowa City, Iowa.

<sup>528</sup> Peter Tod Lewis, Letter to Candace Natvig and Jon English, February 23, 1977, University of Iowa Electronic Music Studios Archives, Iowa City, Iowa.

<sup>529</sup> "About Morton Subotnick," *Morton Subotnick*, <http://www.mortonsubotnick.com/bio.html>.

26, and Smiley, who had just received a Guggenheim Fellowship and was teaching composition at the Columbia-Princeton Electronic Music Center, concluded the semester with her visit from December 1 to December 12.<sup>530</sup> Three of the guest composers, Chihara, Miller, and Subotnick, had performances of their works on Center for New Music Concerts in the fall of 1975. Chihara had a performance of “Logs” for double bass and “Willow Willow” for flute, tuba, and percussion on September 21. Miller created a computer-realized accompaniment for Sir Thomas Morley’s *Christes Crosse*, which was performed alongside Subotnick’s “Until Spring” for solo synthesizer on October 19.<sup>531</sup> While all of these composers were visiting, Frits Weiland from the Institute of Sonology visited the Electronic Music Studios on October 29, 1975 while he was on tour giving lectures throughout the United States.<sup>532</sup> Lewis provided some account about the impressions that the visiting composers were making upon the students, especially Elsea in a letter dated November 1975:

A letter from R. Hervig told me a little about the various “over-achievers” you’ve been having: Chihara, Subotnick – and your relief with comparatively easy-going Ed Miller. I’m dying to hear details. Consider: no reason why a very intriguing article couldn’t be made out of all this. Like, keep a diary!<sup>533</sup>

Lewis described his project in a letter to Duane C. Spriestersbach in the fall of 1975 as a successful experiment. The project was given “great interest,” and the students were able

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<sup>530</sup> Peter Tod Lewis, Letter to Paul Chihara, et al., May 10, 1975.

<sup>531</sup> “Center for New Music,” *University of Iowa*, <http://www.uiowa.edu/cnm/tenth-season-1975-1976>.

<sup>532</sup> Martha Letterman, Letter to Frits Weiland, October 17, 1975, Center for New Performing Arts Records, Box 1, The University of Iowa Libraries, Iowa City, Iowa.

<sup>533</sup> Peter Tod Lewis, Letter to Peter Elsea, November 11, 1975, University of Iowa Electronic Music Studios Archives, Iowa City, Iowa.

to take advantage of private instruction from them as well as learn something from the classes they taught.<sup>534</sup> Many years later, Elsea shared fond memories of their visits:

I worked very closely with the visiting composers, assisting in various classes, seminars and concerts and started some lifelong relationships. Tom Mintner...and I took each to dinner at the Brown bottle (Bob Ashley to Amana). Each of them had a profound effect on my following work...Mort was writing "4 Butterflies" at the time, and we set up his system to try out using the chamber orchestra. Another day Mort took me to see "Monty Python and the Holy Grail". Paul was scoring "Farewell to Zanzibar". He got hung up on a cue and asked me how to score an atomic bomb. I was thrilled when I saw in the movie that he had used my suggestion. Tuck and I set up MUSIC 4BF at the centralized computer center. The plan was to send output tapes to Oberlin for DA conversion, but that part of the deal fell afoul of system incompatibilities. Bob was working on Music with Roots in the Aether. He showed some materials in seminar, and experimented with the voltage controlled video quantizer...I had some memorable conversations with Pril about teaching electronic music and what went on at Columbia. Ed Miller didn't use the studios much— he worked directly with graduate composition students. Of course he was a familiar face about the place, visiting for various composers conferences.<sup>535</sup>

The success of Lewis's experiment in 1975 was certainly a motivator for a repeat of this experiment when the composer went on sabbatical in the spring of 1981. That semester, five composers visited the Studios, and they spent a week at Iowa City with the student composers. Most of them gave presentations and concerts of their works. More than half of these composers were distinguished for their work in computer music. On March 12, 1981, John Chowning, inventor of FM synthesis and distinguished for his work in computer music at Stanford University, gave a lecture of his work in computer music known as "Micro/macro structure: Tending to details."<sup>536</sup> Charles Dodge, who

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<sup>534</sup> Peter Tod Lewis, Letter to D. C. Priestersbach, March 1, 1976, University of Iowa Electronic Music Studios Archives, Iowa City, Iowa.

<sup>535</sup> Peter Elsea, e-mail message to author, February 7, 2017.

<sup>536</sup> "Chowning to lecture on computer composition," *The Daily Iowan*, March 12, 1981, <http://dailyiowan.lib.uiowa.edu/DI/1981/di1981-03-12.pdf>.



was then teaching at Brooklyn College, arrived a week later and gave a composition seminar of his works on the 18<sup>th</sup>.<sup>537</sup> Joel Chadabe, Professor of Music at the State University of New York in Albany, where he designed the Coordinated Electronic Music Studio in 1967, was a live performer in a concert of his own works that included a minicomputer and digital synthesizer at the University of Iowa Museum of Art on April 9, 1981.<sup>538</sup> Pulitzer Prize-winning composer Mario Davidovsky at Columbia University was also a Visiting Composer that semester.<sup>539</sup> Kenneth Gaburo came in late April 1981, when a concert of his works was performed under the title “Readings in Compositional Linguistics.”<sup>540</sup>

A number of other guest composers in the 1970s were distinguished not only as composers with connections to electronic music, but also as performers. Many of these musicians visited the University of Iowa in the late 1970s. Jaap Spek, a former assistant of Stockhausen, was a guest for the performance of *Kontakte* by the Center for New

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<sup>537</sup> Ibid. It is worth mentioning that Charles Dodge also visited the University of Iowa from April 18 to April 22, 1976 and gave a lecture at Harper Hall when D. Martin Jenni was on sabbatical for the spring semester. One should refer to Richard Hervig, Letter to Himie Voxman, July 7, 1975, Richard Hervig Papers, box 1, University of Iowa Archives, Iowa City.

<sup>538</sup> “Electronic Music,” *Iowa City Press-Citizen*, April 4, 1981, <https://www.newspapers.com/image/207212480>.

<sup>539</sup> John Hill, ed., “Electronic Music,” 3. The lack of any newspaper articles on Davidovsky’s visit to Iowa City would suggest that he did not make a public appearance or have a presentation of his works at the time of his visit. The announcement of the visiting composers in the *Daily Iowan* article on John Chowning on March 12, 1981 would suggest that Chowning was the first of the five visiting composers. It is possible that Mario Davidovsky might have been the third visiting composer at the end of March, between Charles Dodge and Joel Chadabe.

<sup>540</sup> “Multimedia music presentation will feature composer Gaburo,” *The Daily Iowan*, April 24, 1981, <http://dailyiowan.lib.uiowa.edu/DI/1981/di1981-04-24.pdf>.

Music on April 17, 1976.<sup>541</sup> Clarinetist Daniel Goode, Director of the Electronic Music Studios of Livingston College, Rutgers University from 1971 to 1998, was a visitor from January 23 to January 31, 1977 giving a number of concerts as a performer.<sup>542</sup> Two guests in February 1978 also made an appearance. Composer/musician Jon Gibson, a member of the Philip Glass Ensemble, in the spring semester of 1978 performed his works at the Corroboree Gallery on February 17, 1978. Ten days later, the EMS sponsored a concert that featured composer/performer David Gibson at the Corroboree Gallery. This concert also included a work by Joel Chadabe, Phill Niblock, and Giuseppe Englert.

Other composers who visited Iowa in the 1970s to 1983 included David Behrman, who came with the Merce Cunningham Dance Company, which performed at the Hancher Auditorium February 25-26, 1977.<sup>543</sup> Lewis invited Tom de Leeuw from the University of Amsterdam, who gave a lecture during his visit to Iowa City from October 17 to October 20.<sup>544</sup> Elsea recalled that George Lewis showed his Kim 1 system during his visit to the Studios in the summer of 1978.<sup>545</sup> Wuorinen, as previously mentioned, attended the world premiere of his *Percussion Duo for mallet instruments and piano* at

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<sup>541</sup> “New Music,” *Iowa City Press-Citizen*, April 17, 1976, <https://www.newspapers.com/image/204812443>.

<sup>542</sup> “Daniel Goode to perform,” *Iowa City Press-Citizen*, January 22, 1977, <https://www.newspapers.com/image/205036698>.

<sup>543</sup> Lowell Cross, “Laser Performances Abroad and a Last Trip to Iowa City, 1976-1980,” *LowellCross.com*, <http://www.lowellcross.com/articles/tudor/1976-1980.html>.

<sup>544</sup> Tom de Leeuw, Letter to Peter Tod Lewis, June 9, 1977, University of Iowa Electronic Music Studios Archives, Iowa City, Iowa.

<sup>545</sup> Peter Elsea, e-mail message to author, April 3, 2017.

the Center for New Music concert on October 18, 1979.<sup>546</sup> An electroacoustic ensemble of composers including Jon Appleton, Michel Redolfi, Jacques Diennet, Frank Royon le Mée, and Georges Boeuf visited the University of Iowa on a month-long tour through 13 different universities in North America.<sup>547</sup> Cross invited Stephen F. Temmer to the University of Iowa as a guest lecturer. He gave a lecture/demonstration in audio recording at Clapp Recital Hall on July 10, 1981.<sup>548</sup> A year later, Vladimir Ussachevsky visited the Electronic Music Studios in the summer of 1982. On June 9 he gave a lecture on the new developments that were taking shape in electronic music and played excerpts of his compositions.<sup>549</sup> Additionally, in 1983, Russell Pinkston visited the University of Iowa for an interview for the faculty position to which Gaburo was ultimately appointed.<sup>550</sup>

Some composers between 1965 and 1975 with electronic music backgrounds had been proposed or considered as visiting composers, but did not make the cut. Pauline Oliveros might have been considered as a composer-in-residence at the Electronic Music Studios sometime between March 12 and April 7, 1973. In her letter to Lewis from

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<sup>546</sup> “Concert to feature world premieres,” *Iowa City Press-Citizen*, October 16, 1979, <https://www.newspapers.com/image/207196139>.

<sup>547</sup> Judith Green, “French avant-garde music at UI,” *The Daily Iowan*, November 13, 1980, <http://dailyiowan.lib.uiowa.edu/DI/1980/di1980-11-13.pdf>.

<sup>548</sup> Starla Smith, “Audio adventures: Mozart to Nixon,” *Iowa City Press-Citizen*, July 9, 1981, <https://www.newspapers.com/image/207209359>. The *Iowa City Press-Citizen* lists him as a visiting guest for the Electronic Music Studios, which seems questionable as he was more well-known in recording and broadcasting than for his composing of electronic music, a reputation that is, rather, non-existent.

<sup>549</sup> “Electronic music seminar set,” *The Daily Iowan*, June 8, 1982, <http://dailyiowan.lib.uiowa.edu/DI/1982/di1982-06-08.pdf>.

<sup>550</sup> Lawrence Fritts, e-mail message to author, September 24, 2016.

October 1972 she mentioned that she was giving various presentations and even a tape program while on a tour to the east coast and was available for bookings.<sup>551</sup> Just before Lewis came to Iowa, Hervig invited John Cage to give a lecture at the University of Iowa that would have taken place after the May 16, 1969 world premiere of “HPSCHD.” However, the composer’s price of \$1,000 was too expensive for Hervig’s \$500 budget.<sup>552</sup>

### **Guest Composers (1984-90)**

In contrast to the guest composers that visited Iowa City during Lewis’s time, only nine composers were known to have visited Iowa City when Gaburo was teaching at the University of Iowa (see Table 4).

**Table 4: Guest Composers, 1984-90**

<b>Name</b>	<b>Year</b>
Warren Burt	1984
Peter Otto	1984
Michael Dellaira	1986
David Dunn	1987
Warren Burt	1987
Chris Mann	1987
Ron Nagorka	1987
Bob Gilmore	1990
Christopher Small	1990
Herbert Brün	1990
David Dunn	1990

Most of these composers, who were his acquaintances from the University of Illinois and UCSD, were rarely publicized and documented during this time. Warren Burt’s visit to Iowa City in April 1984 coincided with the Midwest Composers Symposium that the

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<sup>551</sup> Pauline Oliveros, Letter to Peter Tod Lewis, October 22, 1972, University of Iowa Electronic Music Studios Archives, Iowa City, Iowa.

<sup>552</sup> Richard Hervig, Letter to John Cage, March 14, 1969, Richard Hervig Papers, box 1, University of Iowa Archives, Iowa City.

University of Iowa hosted.<sup>553</sup> His later recollection of being present for the dress rehearsal of the University of Iowa Opera Theatre’s production of Ravel’s *L’Enfant et les sortilèges* would suggest that he visited the University of Iowa on that occasion for two weeks.<sup>554</sup> During that same year, he had performances of several works in Iowa City, including “Penguins” and “Der Yiddisher Cowboy – A Film in English” from his *Epic Monumental Project*, “Australian Memories for Iowa” (1984) for live computer and environmental tapes, and “Aardvarks IX – part 2” (1984) for live computer or 2-channel tape.<sup>555</sup> He was also in Iowa City in 1987 conducting interviews with Hervig and Hibbard.<sup>556</sup> Other performances of his works in Iowa City included “The Duck Tapes – Chapter 9 – The Flesh of this Fowl” in collaboration with Lou Blankenburg for Iowa City Public TV in 1986 and “Six Political Piano Miniatures” in January 1991.<sup>557</sup> Peter Otto, inventor of one of the earliest digital audio workstation control surfaces (Waveframe’s Contact MIDI Panel), came in late 1984 to give a lecture on the use of the Buchla 400 and the integration of a computer in a live performance of electronic music.<sup>558</sup> Philip

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<sup>553</sup> “Composers symposium here this weekend,” *Iowa City Press-Citizen*, April 12, 1984, <https://www.newspapers.com/image/204735288>.

<sup>554</sup> Warren Burt, “Some Gaburo thoughts,” *Warren Burt*, <http://www.warrenburt.com/some-thoughts-about-kenneth-ga/>. The Iowa City Press-Citizen advertised the opening night for this opera on Friday, April 27, 1984. One should refer to “Singing birds and dancing frogs,” *Iowa City Press-Citizen*, April 26, 1984.

<sup>555</sup> Warren Burt, “A List of Compositions by Warren Burt with Durations and Selected Performances,” *Warren Burt*, <http://www.warrenburt.com/list-of-work/>.

<sup>556</sup> Richard Hervig, interview by Warren Burt, *Warren Burt in conversation with Richard Hervig*, ca. November 1987, <https://soundcloud.com/innovadotmu/richard-hervig>.

<sup>557</sup> *Ibid.*

Blackburn explained that the following composers Gaburo invited were hardly documented because, in spite of their importance in their fields, “they were of minimal interest to the downstairs comp faculty,”<sup>559</sup> including Michael Dellaira, who met Gaburo at an SCI national conference at the University of Illinois, and was invited to Iowa City in 1986 for a few days to give a presentation on his compositions.<sup>560</sup> Composer/poet Chris Mann, who carried on Gaburo’s experiments in compositional linguistics and gave a composition seminar in Iowa City with Ron Nagorcka on didgeridoo on December 7, 1987. Herbert Brün brought the Performers’ Workshop Ensemble to Iowa City for a concert in the Space/Place Theatre in North Hall on March 15, 1990, which was sponsored by the University of Iowa Composers Workshop.<sup>561</sup> David Dunn visited twice, the first time in 1987 to give a seminar, and the second time in 1990 for an exhibition of “Composition as Eco-System.”<sup>562</sup> Other composers included Harry Partch researcher Bob Gilmore<sup>563</sup> and Christopher Small.<sup>564</sup>

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<sup>558</sup> Catherine Gysin, “He may be a composer whiz, but mostly he’s a composer,” *Iowa City Press-Citizen*, January 4, 1985, <https://www.newspapers.com/image/204759465>.

<sup>559</sup> Philip Blackburn, e-mail message to author, February 20, 2017.

<sup>560</sup> Michael Dellaira, e-mail message to author, April 27, 2017.

<sup>561</sup> “Performers’ Workshop,” *Iowa City Press-Citizen*, March 15, 1990, 2C.

<sup>562</sup> “David Dunn,” *David Dunn*, <http://www.daviddunn.com/~david/Bio.htm>.

<sup>563</sup> Bob Gilmore wrote that he visited Iowa City in January-February 1990. One should refer to: Bob Gilmore, *Harry Partch: A Biography* (New Haven, CT: Yale University Press, 1998), 454.

<sup>564</sup> Philip Blackburn does not recall if Gaburo initiated the invitation. A *Daily Iowan* article published on March 2, 1990 reports that Christopher Small was a “recent guest composer” at the University of Iowa. One should refer to: Martina Brockway, “Mozarts

### Guest Composers (1991-present)

Since 1991, Iowa City has hosted a considerable number of guest composers with recognition for their work in electronic music (see Table 5).

**Table 5: Guest Composers, 1991-2017**

Name	Year
John Elmsly	1993
William Albright	1996
Robert Strandh	1997
Noel Zahler	1997
Todd Winkler	1998
Charles Dodge	1999
Bernhard Lang	1999
Sergei Zagny	2000
Albina Stefanou	2000
Nikolai Korndorf	2000
Vladimir Tarnopolski	2000
Scott Wyatt	2000
Matthew Malsky	2000
James Dashow	2001
Paul Rudy	2001
Donald Buchla	2002
Denis Smalley	2002
Larry Austin	2002
Kevin Blechdom	2002
Goodiepal	2002
Terry Riley	2002
Andrew May	2002
Elizabeth McNutt	2002
Alessandro Cipriani	2003
Vincenzo Cavalli	2003
Fabio Ciardi	2003
Terry Riley	2004
Robert Rowe	2006
Esther Lamneck	2006
John Elmsly	2007
Eric Chasalow	2008
Allison Ogden	2009

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of tomorrow hone skills, expand boundaries of sound,” *The Daily Iowan*, March 2, 1990, <http://dailyiowan.lib.uiowa.edu/DI/1990/di1990-03-02.pdf>.

**Table 5: Continued**

Erin Gee	2010
Francesco Filideli	2011
Rebecca Ashe	2011
Andrew May	2011
James Dashow	2011
Stephen David Beck	2012
Vincenzo Cavalli	2003
Fabio Ciardi	2003
Roger Reynolds	2012
Hans Tutschku	2013
Dave Olive	2015
Michael Lytle	2015
Will Parsons	2015
Elainie Lillios	2015
Dimitri Papageorgiou	2016
Erin Gee	2016
David Maki	2017

Guests from areas outside of music composition became more prevalent with lectures in computer science, intermedia, and film. For example, Lawrence Fritts invited Robert Strandh, a former Computer Science doctoral student of Mike O'Donnell at the University of Chicago, to Iowa City in 1997. Some guests were invited outside the CNM and the EMS. Hans Breder invited composer and multimedia artist Todd Winkler, who currently is on the faculty at Brown University, to Iowa City in 1998 to demonstrate his Very Nervous System at the Memorial Union. Fritts recalled that this project consisted of a camera that could capture his image and treat it as a 4x4 grid, and stepping into one of the fields would send a trigger to Max.<sup>565</sup> Through Michael Eckert's invitation and nomination,<sup>566</sup> Charles Dodge was one of six chosen 1999 Alumni Fellows<sup>567</sup> at the

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<sup>565</sup> Lawrence Fritts, e-mail message to author, April 4, 2017.

<sup>566</sup> Lawrence Fritts, e-mail message to author, August 11, 2016.



University of Iowa, and his visit to the Studios during the 12<sup>th</sup> and 13<sup>th</sup> of April 1999 included a concert of his works, masterclasses, and interactions with students enrolled in electronic music courses.<sup>568</sup> Another prominent visitor, Terry Riley, visited Iowa City on October 26, 2002 with the Kronos Quartet for the world premiere of “Sun Rings,” which used space sounds that were realized by University of Iowa Professor of Physics and Astronomy Donald Gurnett.<sup>569</sup> He later returned in February 2004 for the performance of *In C* at Hancher for “Bang on a Can All-Stars.”<sup>570</sup> Fritts hosted later in 2004 Moreno Andreatta, co-founder of the Journal of Mathematics and Music, who was also a member of the Music Representation Team at IRCAM.

The majority of guests to the Composition Program with connections to electronic music since 1996 have been composers. Both the CNM and EMS have invited composers who distinguished themselves in this medium. John Elmsly from the University of Auckland in New Zealand has visited the University of Iowa twice, the first time to give a composition seminar at the University of Iowa on December 10, 1993,<sup>571</sup> and the second time for the performance of two of his works in a CNM concert on

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<sup>567</sup> James Van Allen was also one of the six chosen Alumni Fellows of 1999. See “UI College of Liberal Arts names six Alumni Fellows,” *University of Iowa News Release*, April 6, 1999, <http://news-releases.uiowa.edu/1999/april/0406alumni.html>.

<sup>568</sup> “Closing the Circle,” *Iowa Alumni Review* 52, no. 2 (1999): 33.

<sup>569</sup> Tricia Birt and Reed Dunn, “Hancher tickets on sale Monday,” *Iowa City Press-Citizen*, June 29, 2002, <https://www.newspapers.com/image/207128575>.

<sup>570</sup> Deanna Truman-Cook, “‘Pop art’ celebrates ‘60s music influence,” *Iowa City Press-Citizen*, February 26, 2004, <https://www.newspapers.com/image/207387320>.

<sup>571</sup> “Composer from New Zealand will speak Friday,” *Iowa City Press-Citizen*, December 9, 1993, <https://www.newspapers.com/image/206404411>.

October 21, 2007.<sup>572</sup> Through CNM a number of additional composers were invited, including William Albright, Professor of Music at the University of Michigan, and associate director for the university's Electronic Music Studios, for a concert of his works in December 1996;<sup>573</sup> Noel Zahler for a performance of his works in December 1997;<sup>574</sup> a group of composers for the Austrian Contemporary Music Festival, including Bernhard Lang, whose list of works includes works for live electronics, in September 1999;<sup>575</sup> and a group of composers in September 2000 for the Russian Contemporary Music Festival in Iowa City, which included composers who experimented with electronic music: Sergei Zagny, Nikolai Korndorf, Albina Stefanou, and Vladimir Tarnopolski.<sup>576</sup> After the flood, the visits continued as follows: On September 13, 2008, the staging of Eric Chasalow's "The Puzzle Master;"<sup>577</sup> on April 25, 2009, the performance of Allison Ogden's work "surface.horizon" at "Off Center-A Collaborative Concert;"<sup>578</sup> a concert including Francesco Filidei's works on February 13, 2011;<sup>579</sup> and three guest composers during the 2012-3 academic year with distinguished backgrounds in electronic music, including

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<sup>572</sup> "Concert III," *Center for New Music*, <https://uiowa.edu/cnm/article/concert-iii-5>.

<sup>573</sup> "Thirty-first Season," *Center for New Music*, <https://uiowa.edu/cnm/thirty-first-season-1996-1997>.

<sup>574</sup> "Thirty-second Season, 1997-1998," *Center for New Music*, <https://uiowa.edu/cnm/thirty-second-season-1997-1998>.

<sup>575</sup> "Concert III," *Center for New Music*, <https://uiowa.edu/cnm/concert-iii>.

<sup>576</sup> "Season 35," *Center for New Music*, <https://uiowa.edu/cnm/season-35>.

<sup>577</sup> "Concert I," *Center for New Music*, <https://uiowa.edu/cnm/article/concert-i-7>.

<sup>578</sup> "Concert IX," *Center for New Music*, <https://uiowa.edu/cnm/article/concert-ix-4>.

<sup>579</sup> "Concert VIII," *Center for New Music*, <https://uiowa.edu/cnm/article/concert-viii-5>.

Stephen David Beck in September 2012,<sup>580</sup> Roger Reynolds in October 2012,<sup>581</sup> and Hans Tutschku in April 2013 for the performance of his “Das Bleierne Klavier” for piano and live electronics, “Shore” for oboe, and “Firmament-schlaflos” for 16-channel fixed media.<sup>582</sup> When the Voxman Music Building opened, the Center also invited a number of its alumni to visit the campus with presentations and concerts, including Erin Gee and Dimitri Papageorgiou in December 2016, Joseph Dangerfield and Luke Dahn in February 2017, and John Allemeier, David Maki, and Ching-chu Hu in late April 2017.

The Electronic Music Studios have been able to invite a respectable number of guests over the past twenty years. Matthew Malsky, who had been acquainted with Fritts at the University of Chicago, came to Iowa City in 2000 for a conference on Walter Murch. In October 2000, Fritts invited Scott Wyatt from the University of Illinois to visit the studios for two days and give a masterclass on October 20, 2000.<sup>583</sup> James Dashow arrived six months later on April 3, 2001 and gave a masterclass.<sup>584</sup> The EMS provided space for three Masterclasses in the fall semester of 2002 with Kevin Blechdom and Goodiepal on September 4, 2002<sup>585</sup> and with Andrew May and Elizabeth McNutt giving

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<sup>580</sup> “Concert II – 09/30/2012,” *Center for New Music*, <https://uiowa.edu/cnm/article/concert-ii—09302012>.

<sup>581</sup> “Concert III – 10/25/2012,” *Center for New Music*, <https://uiowa.edu/cnm/article/concert-iii—10252012>.

<sup>582</sup> “Concert XX – 04/21/2013,” *Center for New Music*, <https://uiowa.edu/cnm/article/concert-xx—04212013>.

<sup>583</sup> “Archived EMS Concerts and Events,” *University of Iowa Electronic Music Studios*, [http://theremin.music.uiowa.edu/Archived\\_EMS\\_Concerts.html](http://theremin.music.uiowa.edu/Archived_EMS_Concerts.html).

<sup>584</sup> *Ibid.*

masterclasses on December 2 and December 4, 2002.<sup>586</sup> A year later, the Edison Studio from Italy, which included Alessandro Cipriani, Vincenzo Cavalli, and Fabio Cifariello Ciardi, visited the studios in late October 2003. Cipriani and Ciardi gave masterclasses and presented their film “The Last Days of Pompeii” on October 28, 2003.<sup>587</sup> Iowa alumnus Robert Rowe and clarinetist Esther Lamneck from the State University of New York were guests for a concert of electronic music hosted on December 9, 2006.<sup>588</sup> A few months before the flood, Fritts co-hosted Tod Machover from the Massachusetts Institute of Technology, who visited Iowa City from March 28 to March 29, 2008 and presented a concert in collaboration with the Ying Quartet at the Hancher Auditorium on the 29th.

Even when the flood forced the program out of the old Voxman Music Building, the Electronic Music Studios continued to invite guest performers and composers to its home at Becker. Erin Gee, a former alumna of the University of Iowa, visited the campus in 2010 with a lecture at a composition seminar and gave composition lessons to students. Guest performer Rebecca Ashe was invited in February 2011 to perform a number of works by student composers at a concert on the 27th. Andrew May arrived two months later in May and performed in a concert that included his works. In October

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<sup>585</sup> “On the Go,” *Iowa City Press-Citizen*, September 4, 2002, <https://www.newspapers.com/image/206929921>.

<sup>586</sup> “Archived EMS Concerts and Events,” *University of Iowa Electronic Music Studios*, [http://theremin.music.uiowa.edu/Archived\\_EMS\\_Concerts.html](http://theremin.music.uiowa.edu/Archived_EMS_Concerts.html).

<sup>587</sup> “Archived EMS Concerts and Events,” *University of Iowa Electronic Music Studios*, [http://theremin.music.uiowa.edu/Archived\\_EMS\\_Concerts.html](http://theremin.music.uiowa.edu/Archived_EMS_Concerts.html).

<sup>588</sup> “Live Acoustic and Computer Music will be Combined in Dec. 9 Concert,” *University of Iowa News Release*, <http://news-releases.uiowa.edu/2006/november/112206acoustic-music.html>.

2011 the EMS hosted James Dashow once again who gave a concert of his works, which were performed on October 23 alongside a selection of works from ChuGye University for the Arts in Seoul, Korea and winners for the University of Iowa EMS Call for Student Works.<sup>589</sup> In the fall of 2015 when the Electronic Music Studios celebrated its past 50 years as a part of School of Music, Dave Olive was invited in September 2015 and brought a number of guest performers with him to perform his pieces on the 13th, which were improvisations over fixed media, many of which were realized in the 1970s at the older Voxman Music Building. Some of the performers were former alumni of the Electronic Music Studios, including Michael Lytle and Will Parsons. Other performers included Grace (Bell) Parsons, John Leake, and Pat Hazell. Jim Tade did plenty of film work, and Peter Nothnagle supervised the recording for the concert. The setup required 13 microphones and three video cameras to cover the whole concert. Olive gave a masterclass on his Serge synthesizer, which he lent to composition students for the 2015-16 year. Two months later, Elaine Lillios visited from November 12 to November 14. Her seminar focused on Deep Listening and a series of compositions that were an outgrowth of its influences. Her visit ended with a concert of her works performed alongside Lawrence Fritts's *Mappaemundi* and Christopher Jette's *Luminescent Trajectories*.

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<sup>589</sup> TonalMusic, "The University of Iowa Electronic Music Studios Present The Music of James Dashow, Electronic Music from the ChuGye University for the Arts in Seoul, Korea and Winners from the University of Iowa EMS Call for Student Works," *Rising: Contemporary Music at UI* (24 Oct., 2011).

## The 2002 SEAMUS National Conference

The largest gathering of guest composers was the 2002 SEAMUS Conference from April 4 to April 6, 2002, which represented the works of 78 composers and included 230 participants from the United States. Known as “Intersections in Sound,” this conference was a representation of the development of sharing ideas and strengthening friendships and to discover “the inter-connections between...a wide variety of aesthetic approaches, compositional media, historical and developing technologies, and electroacoustic composition and performance practices” with hopes of obtaining “fresh perspectives on the rapidly evolving world of electroacoustic music.”<sup>590</sup> During the conference the Electronic Music Studios made use of its 16-channel surround system, which was considered to have been one of the largest sound systems in the Midwest at that time.<sup>591</sup>

The conference featured a number of special guests during the conference that provided masterclasses, special concerts, or performances. Synthesizer pioneer Don Buchla, recipient of the SEAMUS Lifetime Achievement Award, featured his band “Fried Suck” on Concert VIII on April 5, 2002 in the Mabie Theater.<sup>592</sup> Denis Smalley, the featured guest composer of the conference, gave a masterclass for the Studios earlier that day. Other notable guests were present at this conference. Bebe Barron, the 1956 Academy Award winner for Best Film Score in *Forbidden Planet*, had a performance of

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<sup>590</sup> Lawrence Fritts, “Conference Chair’s Welcome,” *SEAMUS 2002: Intersections in Sound*, (Iowa City, IA: SEAMUS, 2002), 5.

<sup>591</sup> Coby Vaknin, “When the electricity sings,” *The Daily Iowan*, April 4, 2002, <http://dailyiowan.lib.uiowa.edu/DI/2002/di2002-04-04.pdf>.

<sup>592</sup> “Concert VIII,” *SEAMUS 2002: Intersections in Sound*, (Iowa City, IA: SEAMUS, 2002), 46.

“Mixed Emotion” on April 4. Larry Austin gave an 8-channel computer realization of John Cage’s “Williams Mix.”<sup>593</sup> Paul Rudy from University of Missouri - Kansas City, also gave a masterclass for the Studios the day before the 2002 SEAMUS conference. He brought the sound system then in use at UMKC’s Inter-media/Music Production and Computer Technology Center (iMPACT), which was used in the Mabie Theater. Many of the participants, including students and alumni, were from Iowa’s Composition Program, including Jon Welstead, Jonathan Hallstrom, Cris Ewing, Tohm Judson, and Christopher Brakel. Compositions by members of SEAMUS and EMS students were featured on “Discrete Music,” a radio program on KRUI from 2:00 to 4:00 AM on the 5<sup>th</sup> of April.<sup>594</sup> The conference included twelve concerts, three panel discussions, five paper sessions with two additional sessions that were paper/concert and paper/demonstration, three curated presentations, two Off-SEAMUS concerts at held at Gabe’s Oasis and the Yacht Club, and one installation in the North Room. All events, except the Off-SEAMUS concerts, were held at the Mabie Theatre in the Theatre Building, the Clapp Recital Hall, and IMU.

Supporting such an enormous group of participants and covering the expenses for this event posed a great challenge for Fritts. The size of the conference required him to recruit a team of 8 staff members and 17 Technical Assistants, who were students from the EMS and the Composition Program. Fritts recalled 15 years later the amount of work involved for the conference:

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<sup>593</sup> “National electro-acoustic music conference will be at UI April 4-6,” *The University of Iowa News Services*, March 22, 2002, [wa.edu/2002/march/0322electro-acoustic.html](http://wa.edu/2002/march/0322electro-acoustic.html).

<sup>594</sup> Coby Vaknin, “When the electricity sings,” *The Daily Iowan*, April 4, 2002, <http://dailyiowan.lib.uiowa.edu/DI/2002/di2002-04-04.pdf>.

I did a lot of planning, including making reservations for concert halls and rooms at the Iowa House...I decided to use the university's Center for Conferences to handle all aspects of registration, paying guests, reserving hotel rooms, renting and buying equipment, designing and printing posters and programs...I worked up a budget and got everything approved and reserved, and only then sent the bid...A few days later, Steve Beck wrote back saying that another school also expressed interest in hosting a conference in 2002, and asked if I could possibly do it the following year. I wrote back saying that everything is ready to go in 2002. Shortly after, I got an email saying that we had been selected.<sup>595</sup>

Using Iowa's Center for Conferences, Fritts was able to see to the payment of registrations, expenses for guests, equipment rental and purchase, and the creation and distribution of posters and programs for the three-day conference. With the majority of support coming from the recently formed Division of Performing Arts and payments from SEAMUS members for registration, he was able to raise \$26,769.00 for the conference.<sup>596</sup> In addition, he received \$15,000 from the Glenn and Emily Millice Fund from the Iowa Foundation, which went to the purchase of a mixer and 8 speakers, which were used for concerts held in Clapp Recital Hall.<sup>597</sup> However, the expenses for the conference ran higher than anticipated, totaling \$36,698.08, which left Fritts with a deficit of \$9,929.08. The Electronic Music Studios had provided the majority of the equipment used in the conference with additional support from the Center for New Music, which was featured in Concert XII. The conference had the support of five corporations and five organizations as sponsors for the event, including Buchla and Associates, Ebtech, Full Compass Systems, Ltd., Genelec, Inc., Symbolic Sound Corp.,

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<sup>595</sup> Lawrence Fritts, e-mail message to author, April 6, 2017.

<sup>596</sup> "Statement of Account: 2002 Seamus Conference," *University of Iowa Center for Conferences*, January 7, 2003.

<sup>597</sup> Lawrence Fritts, "Electronic Music Studios Funding Outline," *University of Iowa*, October 22, 2007.



the American Composers Forum, ASCAP, the Canadian Electroacoustic Community, Electronic Music Foundation, and the Pauline Oliveros Foundation. The conference was further sponsored by seven journals and fifteen record labels.

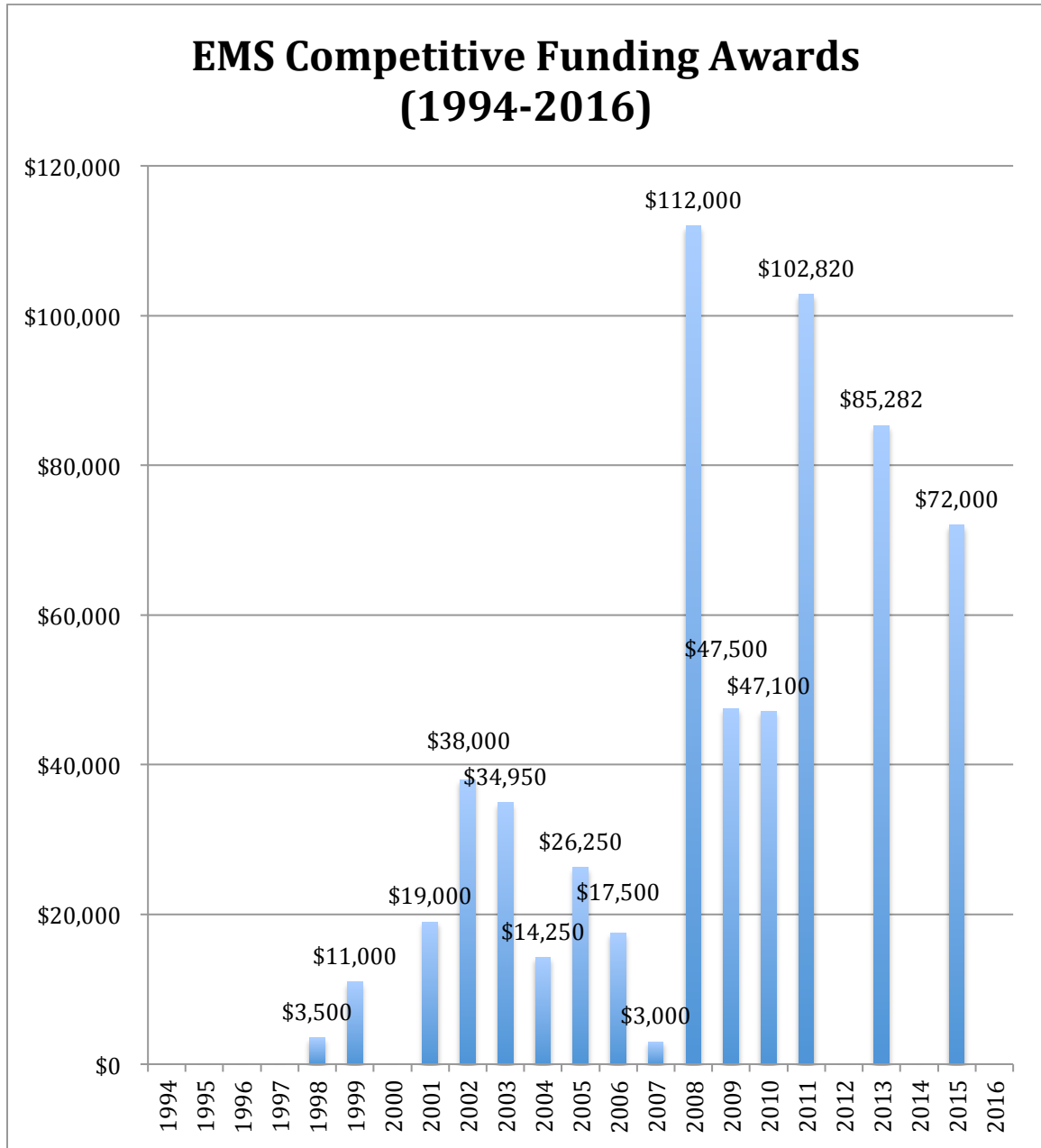
The 2002 SEAMUS Conference provided some benefits for the electronic music program. The EMS became involved with the Spatial Intersections concerts in subsequent spring semesters at the University of Iowa, which were collaborations between students of the Electronic Music Studios and the Intermedia Program. The SEAMUS Conference also led to an invitation for the Electronic Music Studios to participate in a concert during the Florida Electroacoustic Music Festival at the University of Florida on April 5, 2003.

## CHAPTER 14

### FUNDING

An analysis into the funding of the program for more than half a century can shed some light into the question of its longevity and adaptation to various economic challenges that have tested it. Resourcefulness has always been a necessary part of the program for self-sustenance in the short and long term. Since 1994, the primary source of funding for new equipment has come from the annual submission of proposals to Student Technology Fees, which are considered by the university's Information Technologies Committee of the College of Liberal Arts and Sciences. All students annually pay towards Student Technology Fees, and those payments are used towards the improvement of collegiate instruction, particularly for undergraduates. His method of funding for the program is a departure from the practice of his predecessors, who received funding mainly from the submission of equipment proposals to administrators in the College of Liberal Arts and Sciences. Through funding sources outside the School of Music for the last 23 years, Fritts has been awarded a total of \$634,152 for improvements, studio upgrades, equipment, and personnel (see Figure 11). His exploration of grants and other competitive funding resources shifted the program's dependency on allocations from the School of Music annual budget and allowed for greater independence and flexibility in purchasing power than at any other time in its past.

**Figure 11: EMS Competitive Funds Awarded, 1994-2016**



**EMS Funding (1964-94)**

When the School of Music budget was the principal source of funding for the program in its first 30 years, each faculty member in charge of the Electronic Music Studios had to adopt a pragmatic and resourceful approach to the acquisition and

maintenance of equipment. Keeping costs down was a practical necessity, for the EMS did not have startup funds from a grant like the Columbia-Princeton Electronic Music Center in 1959 or the \$100,000 Rockefeller Foundation grant the Center for New Music had received in 1966 to recruit personnel for its ensemble. The electronic music program instead followed a similar approach to Lejaren Hiller's acquisition of equipment for the University of Illinois Experimental Music Studios by finding unused devices located in other departments and limiting spending whenever possible. Hiller wrote that he was able to keep the expenditure of equipment for his studio to less than \$8,000 between 1958 and 1962 while gradually accumulating unused equipment for the program at Illinois, which he justified would greatly enhance investments for his studio when the older equipment would need to be replaced.<sup>598</sup> Iowa's program received a loan of testing equipment from the Department of Physics and Astronomy and support of research assistants, which was James Van Allen's promise to the infant program so that Cessna would have the equipment he needed for his project.<sup>599</sup> The assistants who worked at the EMS became even more crucial to the program by repairing and building some of its earliest electronic equipment. Richard Auld, one of Shallenberg's assistants in the 1960s, explained in April 1967 that the development of homemade devices for the studios was attributable to a lack of available funds to invest in more professional equipment.<sup>600</sup> The EMS received some monetary assistance from the Graduate College in the amount of

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<sup>598</sup> Lejaren A. Hiller Jr., "Electronic Music at the University of Illinois," *Journal of Music Theory* 7, no. 1 (1963): 101-102.

<sup>599</sup> James Van Allen, Letter to John C. Weaver, June 3, 1964, James Van Allen Papers, box 363, folder 10, University of Iowa Archives, Iowa City.

<sup>600</sup> Robert Allen, "Weird Marriage," *The Daily Iowan*, April 27, 1967, <http://dailyiowan.lib.uiowa.edu/DI/1967/di1967-04-27.pdf>.

\$310.75 in the fall of 1964 to be allocated to research,<sup>601</sup> but this level of funding was far from sufficient. The EMS could not even afford an air-conditioning unit to keep the equipment from overheating, which made work time consuming for students. The equipment would have to be turned off regularly, and the door to the studios would often have to be opened to cool the room down. Nevertheless, the program's resourcefulness helped the EMS immensely in purchasing a number of oscillator parts for the Moog IIP synthesizer in the summer of 1968, which amounted to \$1,440 (appr. \$10,060 in 2017 US dollars) without tax or shipping and handling considered.<sup>602</sup> This would have been comparable to 57% of the original manufacturer's suggested retail price for a 1968 Chevrolet Chevelle 300 Deluxe.

While funding successes of Fritts's predecessors came mainly through equipment proposals to the School of Music, other options for resources to support the program had been examined or considered. In a letter to Himie Voxman in April 1970, Peter Tod Lewis wrote of his search for funds through grants and "government surplus equipment."<sup>603</sup> He received some recommendations to consider various donors from the

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<sup>601</sup> Orville Hitchcock, Letter to Richard Hervig, November 25, 1964, Richard Hervig Papers, box 1, University of Iowa Archives, Iowa City, Iowa.

<sup>602</sup> The original invoice for the Moog purchase does not survive at the University of Iowa, so the actual cost of the parts cannot be fully ascertained in combination with shipping and handling costs. However, the total price of the Moog parts can be estimated through two critical sources at the Moog Archives. The number of Moog parts purchased, can be found by referring to "Moog Modular Systems," *Moog Archives*, <http://moogarchives.com/module3.htm>. This page contains an entry for the University of Iowa, which includes the date and the number of oscillator parts that were ordered and purchased in August 1968. The second is a catalog from October 1965 produced by the R. A. Moog Co., which can be referred to at "Ultra – Short Form Catalog of Electronic Music Composition Instruments," *Moog Archives*, <http://moogarchives.com/>.

University of Iowa Foundation, the Fromm Music Foundation in Chicago, and the Mason Music Foundation in Cambridge, Massachusetts.<sup>604</sup> Nevertheless, funding from benefactors outside the university was extremely difficult, let alone obtaining sufficient support from the School of Music for equipment requests. As one example, the Rockefeller Foundation, although a seemingly possible resource for funding since it was an initial benefactor to the Columbia-Princeton Electronic Music Center, the CNM, and CNPA, was an unlikely resource for the EMS, for its members were not providing funding for equipment requests in the early 1970s.<sup>605</sup> One notable exception to the problem was the move to the Voxman Music Building in 1971. The creation of a second studio was sufficient justification for stimulating funding that would guarantee two workable studios for classroom instruction, as well as individual student and faculty use. Another exception came in 1971-1972 when the CNM and the EMS received a grant from the Iowa Arts Council to perform in joint concert-demonstration presentations throughout the state of Iowa.<sup>606</sup>

Even with two functional studios, the EMS in the 1970s never seemed to have enough bread on its plate, and Lewis had to find a way to continue supporting the day-to-

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<sup>603</sup> Peter Tod Lewis, Letter to Himie Voxman, April 27, 1970, University of Iowa Electronic Music Studios Archives, Iowa City, Iowa.

<sup>604</sup> Margery E. Hoppin, Letter to Peter Tod Lewis, June 2, 1970, University of Iowa Electronic Music Studios Archives, Iowa City, Iowa.

<sup>605</sup> C. D. Cornell, Letter to Peter Tod Lewis, October 6, 1970, University of Iowa Electronic Music Studios Archives, Iowa City, Iowa.

<sup>606</sup> Peter Tod Lewis, "Electronic Music," 157. Lewis's article states that the grant was awarded for 1972-3, but this is incorrect. The Iowa Arts Council did not accept William Hibbard's proposal for 1972-73. One should refer to Jack E. Olds, Letter to William Hibbard, March 23, 1972, Richard Hervig Papers, box 1, University of Iowa Archives, Iowa City.

day needs of the program. However, one criticism of Lewis's direction of the Studios was his indifference to budgeting. Both Peter Elsea and his wife Veronica Voss Elsea remembered that Lewis was not someone that was interested in its practicalities.<sup>607</sup> Peter Elsea explained that Lowell Cross was the one who oversaw the operation, and it would be up to Elsea to figure out how the funds would be spent:

In those days the money would come in odd chunks, really surprising chunks, or it would come in year-end funds, and the year-end funds [were] probably the most interesting because Lowell for some reason was kind of the mediator of this...what happened is that Lowell would come to me and say, "Okay, the fiscal year ends on next Friday (this is Monday, [the] fiscal year ends Friday), and I've got year-end funds of \$8,200 (which is a serious piece of change). You've got until Friday to get requisitions together for enough equipment to fit those numbers." And that would be all you would see, and so I would have to do a lot of research, and research was not just "look it up on the Internet"...They gave me a telephone with long-distance privileges...<sup>608</sup>

Cross, a composer and electromusicologist, was initially hired as an Audio Engineer for the School of Music to oversee the installation of the audio equipment for the Recording Studios when the School of Music moved to the Voxman Music Building in 1971. He almost became Robert Shallenberg's successor in the spring of 1969 when he was offered the position before Lewis, but he was unable to accept the position at that time<sup>609</sup> because of the opportunity he received to install his laser system for Expo '70 in Osaka, Japan.<sup>610</sup> Once he began his appointment in Iowa, he taught classes in recording

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<sup>607</sup> Peter Elsea and Veronica Voss Elsea, interview by the author, May 9, 2017.

<sup>608</sup> Ibid.

<sup>609</sup> William Hibbard, Letter to Lowell Cross, February 5, 1971, Center for New Performing Arts Records, box 2, folder 19, University of Iowa Libraries, Iowa City, Iowa.

<sup>610</sup> Barbara C. Philips-Farley, "A history of the Center for New Music at the University of Iowa, 1966-1991" (DMA diss., University of Iowa, 1991), 55-56.

techniques and continued his research into his VIDEO/LASER systems, which had been a part of his work as a composer since the mid-1960s. Part of his responsibilities for the School of Music at that time was to maintain his “supervisory role of the recording facilities and sound systems of the Music Building and Hancher Auditorium...”<sup>611</sup> This would suggest that Cross was the consultant for electronic equipment throughout the building, and that may have led to a greater leadership role in the drafting of equipment requests not only for the Recording Studios and School of Music, but also the Electronic Music Studios. Lewis acknowledged that he lent his support to the Studios on matters of purchasing or building new equipment (see Table 6 for funding from 1968 to 1986).<sup>612</sup>

**Table 6: Equipment Funding, 1968-86**<sup>613</sup>

<b>Year</b>	<b>Equipment Funding Awarded</b>	<b>Equipment Funding Proposed</b>
1968	\$1,440.00	\$1,440.00
1970	\$1,705.00	\$1,705.00
1977	\$30,000.00	\$95,000.00
1978	\$83,450.00	N/A
1980	\$2,500.00	\$99,787.00
1983	\$8,716.40	\$46,920.00
1986	\$9,400.00	\$9,674.90

It is likely that Lowell Cross’s expertise on electronics and his great interest in the facilities of the Voxman Music Building, including the EMS, was an important motivator for his role as a supervisor of audio equipment for the music building. When Cross applied for the position, he made a number of suggestions that seemed to resonate so well

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<sup>611</sup> “Proposal,” Spring 1972, Center for New Performing Arts Records, box 2, folder 19, University of Iowa Libraries, Iowa City, Iowa.

<sup>612</sup> Peter Lewis, “Electronic Music,” 156.

<sup>613</sup> The amounts listed for equipment from 1977 to 1983 include both the Electronic Music Studios and the Recording Studios, while the remaining years are EMS only.



with Voxman, Hibbard, James Wockenfuss, and William B. Oglesby, who was the Director of the university's Audiovisual Center, that they were "captivated by [his] qualifications and by the interest [he] exhibited in [their] undertakings."<sup>614</sup> Those suggestions came from a seven-page letter of recommendations for equipment on March 14, 1971. While most of them were equipment for the Recording Studios, he had suggested several items for the EMS that were purchased and became a part of the program, including the Scully 280-2 for use in conjunction with a synthesizer, console cabinets for Ampex tape recorders already at the EMS so that composers could edit their compositions with greater ease, two B&K Graphic Spectrum Equalizers with a higher level of variation in decibels at each bandpass (50 dB compared to 10-12 dB for a unit such as the Altec "Acousta Voicette"), MC-2505 solid-state amplifiers for their reliability with periodic waveforms, and Altec A-7-500-8 loudspeakers for EMS concerts at the Clapp Recital Hall.<sup>615</sup> In another letter from that same year, Cross was in agreement with Lewis about acquiring EMT reverberation plates for the EMS program, as well as the purchase of a Bode ring modulator from Moog.<sup>616</sup> Cross even made recommendations for acoustical modifications to improve working conditions throughout the building. For

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<sup>614</sup> William B. Oglesby, Letter To Lowell Cross, March 19, 1971, Center for New Performing Arts Records, box 2, folder 19, University of Iowa Libraries, Iowa City, Iowa.

<sup>615</sup> Lowell Cross, Letter to William Hibbard, March 14, 1971, Center for New Performing Arts Records, box 2, folder 19, University of Iowa Libraries, Iowa City, Iowa.

<sup>616</sup> Lowell Cross, Letter to William Hibbard, March 24, 1971, Center for New Performing Arts Records, box 2, folder 19, University of Iowa Libraries, Iowa City, Iowa.

the EMS he recommended reducing ventilation noise in both Studios and improving sound isolation for Studio 1 (Room 2058).<sup>617</sup>

When it came to supplies in the 1970s, the main supplier of gear for the EMS was Allied Electronics, and later Jameco Electronics, while Cross's main supplier was in New York City, but for commonplace parts, Collins Radio Company in Cedar Rapids was ideal. Elsea recalled that once a year he would drive to Cedar Rapids and purchase as much high-quality Teflon insulated wire as he could from its surplus center at \$0.04 per pound.<sup>618</sup> Elsea explained that in his annual trips to Cedar Rapids he wasn't only packing his car with wire:

I would fill up the trunk of the car with parts and interesting stuff that I could get out of Collins, which was primarily nuts and bolts, and the transition from plug-in telephone switchboards to digital switches was just beginning, and that was a godsend for us because we went over to Collins, and they had a whole row of these nice heavy-duty patch bays, and so I got twice as many plugs as I needed and then mixed and matched, finding ones that were working – I found ones that didn't work so well and pointed them out – and building patch bays out of things I bought for \$1.85, and that came out of my own pocket.<sup>619</sup>

For day-to-day maintenance Lewis (and later Elsea) had to rely on other means of support for the program. Lewis and his assistants had to purchase reel-to-reel tapes for the EMS students out of their pockets, and the students purchase them at the EMS assistant's office during the week. Non-affiliated members of the School of Music would be charged for EMS-related services, which would vary from studio use to requesting the help of the EMS Assistant and even equipment for concerts. Lewis used to charge such

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<sup>617</sup> Lowell Cross, Letter to University of Iowa School of Music, March 21, 1973, Center for New Performing Arts Records, box 2, folder 19, University of Iowa Libraries, Iowa City, Iowa.

<sup>618</sup> Peter Elsea and Veronica Voss Elsea, interview by the author, May 9, 2017.

<sup>619</sup> Ibid.

persons for studio use at \$5 per 30 minutes.<sup>620</sup> In one case Lewis charged \$266, which included a lecture-demonstration and concert fee, a technician's fee, and a studio fee.<sup>621</sup>

These sources of income, as unpredictable as they were, could not address a more significant problem: how to replace equipment that was overtaxed, failing, and becoming increasingly obsolescent due to the rise of computers and digital technologies. The amount of funding the Studios did receive in the 1970s and 1980s was fairly inadequate to meet its needs. For example, in 1977, in a spirit of mutual cooperation, Cross and Lewis decided to collaborate on a budget requesting \$95,000 for electronic equipment with the hopes to augment available funding. If the budget had been adequately funded, this might have resulted in selling the Moog, the oscillators of which were beginning to fail, for \$7,500 in exchange for a \$25,000 Buchla Electronic Music Box. However, this idea did not pass the proposal stages,<sup>622</sup> for the School of Music only allocated \$30,000 to the EMS and Recording Studios for equipment, approximately 31.6% of the amount requested. While this was undeniably welcome to both programs, Cross noted that the \$30,000 appropriation was hardly adequate to remedy most of the needs of the Recording Studios and the EMS.<sup>623</sup>

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<sup>620</sup> Peter Tod Lewis, Letter to T. K. Warford, May 3, 1970, University of Iowa Electronic Music Studios Archives, Iowa City, Iowa.

<sup>621</sup> Peter Tod Lewis, Letter to Sister Olivia Stibolt, May 4, 1970, University of Iowa Electronic Music Studios Archives, Iowa City, Iowa.

<sup>622</sup> Richard E. Gibson, Letter to May Brodbeck, March 15, 1977, University of Iowa Electronic Music Studios Archives, Iowa City, Iowa.

<sup>623</sup> Lowell Cross, "Special Request for Equipment: Phase II," March 15, 1978, University of Iowa Electronic Music Studios Archives, Iowa City, Iowa.

The situation did not change for the better with Gaburo, who was known to have complained about the slow pace of budget requests for technology upgrades.<sup>624</sup> Even he struggled to update equipment for his students. Cross also collaborated with Gaburo on budget requests in the 1980s. He reported in 1984 that with an equipment request of \$46,920.00 for the 1983-84 academic year for the Recording Studios and the EMS, only \$8,716.40, approximately 18.6%, of his request, was awarded.<sup>625</sup> Gaburo gave his own explanation for the difficulty of funding the program:

We always see the universities as patrons of the arts in a sense. As it turns out, they really haven't done their patronage. It is not hard to understand, for when it comes down to a push or a shove, it is, of course, not pragmatic to support the arts – there being no real reason for the arts, given they offer nothing immediately viable.<sup>626</sup>

Gaburo did achieve some success. He acquired an Amiga workstation for his students, which was a considerable technological leap for the Composition Program and the EMS. He was also able to get several items that remain a part of the analog racks in Studio 1, including the SRV-2000, Yamaha REV7 Professional Digital Reverberator, and Symetrix 522 Compressor, but even with these few purchases the EMS still suffered from the lack of an annual and reliable source of funds. Even the proposals of Paredes in 1992 and Hinkle-Turner in 1993 could not open the doors to funding for the program outside the School of Music. These factors have shaped how Fritts has been tackling the same problem since 1994.

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<sup>624</sup> Philip Blackburn, e-mail message to author, June 30, 2017.

<sup>625</sup> Lowell Cross, "Audio Equipment Priorities," *University of Iowa Electronic Music Studios*, June 27, 1984.

<sup>626</sup> Maria Deligiorgis, "Gaburo: leading a life which is creative," *Distractions*, July 25, 1986, 1.

### **Fritts and Funding (1994 – present)**

The long-term effect of budget cuts on the EMS has required Fritts to be more proactive in his quest for funds. Rather than relying on the School of Music, he has looked to other university resources for funding. He has received grants from Student Computing Fees, the Arts and Humanities Initiative (AHI), the Facilities Equipment Award, the Information Technology Services Award, the Iowa Informatics Initiative, the Instructional Improvement Award, nTitle, and the Undergraduate Student Research Assistantship Award. The Undergraduate Research Assistantship Awards, which were awarded from 2003 to 2005, have been used for students to develop and maintain the program's website. The awards he received from AHI, Iowa Informatics Initiative, and nTitle have been used for studio upgrades. The other awards have been used to acquire new equipment for the program while phasing out older digital technologies. Fritts has rarely asked for money from the School of Music. One exception to this was in the fall of 2016 when the studios did not receive an award for its 2016 STF proposal because those funds were used up to finish the Voxman Music Building, the Hancher Auditorium, and the Art Building. At that time Fritts had to request to Kayt Conrad, Administrator for the Division of Performing Arts, for funds to receive four television screens for Studios 1 and 2, as well as funds to furnish Studio 2 with 8 Genelec speakers.

Fritts has also received funds from non-competitive resources for different purposes. In 1996 he received \$90,000 in startup funds from the College of Liberal Arts and Sciences to upgrade the Studios with SGI computers, mixers, and software. He has also received some funding from the Millice Foundation, a funding resource once used by the Composition Program until it froze after the Great Recession. He received \$3,000

from the foundation for his students to travel to the Florida Electroacoustic Music Festival in 2003 and \$1,200 for a sound system upgrade in the Clapp Recital Hall in 2007.<sup>627</sup> Other resources for the EMS are unpredictable. Sometimes, the surplus of older equipment has provided a modest amount of funds for new equipment purchases. In 2015 when a large quantity of Mackie C300 speakers, JBL Eon Speakers, Mackie M1400 amps, and Electro-Voice subwoofers were put into surplus, the studios received over \$2,000 for the equipment.<sup>628</sup>

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<sup>627</sup> Lawrence Fritts, “Electronic Music Studios Funding Outline,” *University of Iowa*, October 22, 2007.

<sup>628</sup> Lawrence Fritts, e-mail message to Jonah Elrod and author, February 19, 2016.

## CHAPTER 15

### ELECTRONIC MUSIC IN PERFORMANCE

In discussing the importance of the EMS program, the faculty, assistants, alumni, facilities, classes, guests, and funding over the years, while all of these different aspects have influenced the history of this area of the Composition Program, the legacy of the EMS remains to be assessed upon the community. One way to evaluate this is through the musical compositions and performances. Through the EMS its faculty and students have realized more than 600 compositions at the Studios over the past 53 years, and the alumni have left the university with a number of stories of their experiences. They have been able to contribute to the culture of Iowa City through concerts, ensembles, and collaborations with other disciplines. In doing so, they have contributed to the rise in the program's reputation. In this chapter a very general discussion shall be made of the music composed, along with an examination into the concerts, ensembles, and collaborations that have included electronic music into their performances. This chapter concludes with an evaluation on how the program has been recognized and continues to be an important part of the Iowa City community.

#### **Music**

Even in the program's earliest years, student composers interested in electronic music composed works for performer and tape. Paul Zonn's "Divertimento No. 2" (1965) for clarinet, 3 percussionists, contrabass, and tape is considered to be one of the

earliest compositions for tape, if not the first, realized at the Electronic Music Studios. These facilities have attracted not only the students, but also the faculty. Around the time the Moog arrived in 1968, there was some motivation to embrace the challenge of composing for tape in the Studios. The synthesizer in particular was an inspiration for William Hibbard, whose visit to the *Westdeutschen Rundfunk* in the early 1960s aroused his curiosity about electronic music.<sup>629</sup> His excitement and great interest in this new addition to the Studios were recorded in his proposal to compose a work there, which was awarded through the Old Gold Summer Faculty Research Fellowship in 1969:

The sonoric possibilities made available by the newly acquired equipment (summer, 1968) in the electronic music studio of the University's School of Music are so rich that it would be of enormous value to my continuing creative endeavors to finally produce music in this medium. Up to the present time my compositional output has been entirely associated with traditional sonoric media; now, seeing that the opportunity and facilities are available on campus, I would like to augment my compositional activities to produce a composition realized entirely in the school's electronic music studio.

The demands made upon my time as Musical Director of the Center for New Music and as a member of the theory-composition faculty of the School of Music make any extended work in the electronic music studio impossible; to delay any further would leave me creatively far behind and professionally out of touch with an increasingly vital part of contemporary musical life. (In addition, since my compositions are being performed with increasing frequency in this country, the addition of an electronic work to my output would tend to give our studio a certain status of notice and achievement now finally warranted by the quality of the new equipment.<sup>630</sup>

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<sup>629</sup> William Hibbard, Letter to Philip Bezanson, April 12, 1964, Richard Hervig Papers, box 1, University of Iowa Archives, Iowa City.

<sup>630</sup> William Hibbard, Letter to Willard L. Boyd and D. C. Spriestersbach, October 23, 1968, William Hibbard Papers, series II, box 1, University of Iowa Archives, Iowa City.



It is unclear if Hibbard worked there that summer, but it is very likely that he was unable to compose anything at Eastlawn.<sup>631</sup> He was not the only interested faculty member. Hervig had worked on a composition for tape before the 1980s, but his efforts were unsuccessful. He shared his own experiences of working there with Gaburo and his inability to immerse himself fully into the medium:

With respect to myself, I guess the question is: why have I not, at least to date, become involved in this kind of music? And I find it a very difficult question to answer...I had done a couple of tape pieces years ago just in the Studio, and I found it quite interesting, and I also found it very seductive...I hadn't gotten to the point at which I was able...to get into the stuff far enough, so that I could argue with it, as it were...I found with my limited experience this is the thing that I couldn't handle, and partly it is because I didn't really spend enough time at it.<sup>632</sup>

Indeed, composing in the Studios was not a simple task. It was not at all uncommon for student composers in the 1960s to spend up to 100 hours creating a composition.<sup>633</sup> The majority of works written during those years were for performer and tape, more often instrument and tape. According to Hervig, the combination of a live performer with a tape appeared to be the most successful application of electronic music. His explanation was, "In an audience situation...loud speakers are inhuman to applaud."<sup>634</sup> Compositions

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<sup>631</sup> In early 1969, the University of Iowa was awarded a pilot grant from the Rockefeller Foundation that would fund the Center for New Performing Arts. Hibbard, who was then appointed director of the newborn program, would have had little to no time in the summer to compose an electronic work while he was engaged with planning an entire year of performances for the new organization.

<sup>632</sup> Kenneth Gaburo, interview by Richard Hervig, *Collaboration: a series of six interviews between Richard Hervig and Kenneth Gaburo*, WSUI/KSUI, 1986.

<sup>633</sup> Art Hough, "The Way-Out Sound Sound from Iowa U.," *The Cedar Rapids Gazette*, July 14, 1968, 1B.

<sup>634</sup> *Ibid.*

for tape were not as common as instrument and tape works, but they still had a considerable presence the 1960s and 1970s. Compositions with live electronics were very rare. These works were only beginning to emerge throughout the world with playback of live recorded material in Mauricio Kagel's *Transicion II* (1959) and ring modulation from sine-wave generators that would pick up orchestral sounds via microphones in Stockhausen's *Mixtur* (1964). Only a handful of composers were experimenting with live electronics in Iowa City in the 1970s, including Cross with his VIDEO/LASER system, Elsea, Mintner, and Eric Jensen. As computers were becoming more accessible to composers, more compositions began to emerge for tape. During the 1980s video, MIDI, and computer music became more prevalent. After Fritts upgraded the Studios in 1996, all student composers were using computer software to create electronic music. By the 2000s composition for tape had become the most dominant form of electronic music composition for student composers. While works for instrument and tape became less common, live electronics slowly started to emerge.<sup>635</sup> At the beginning of the millennium Fritts was pushing for live electronics when it was becoming a recent advance in the field. The acquisition of two PowerBook G4 laptops in 2002 opened the door for composers to explore live electronic interactions using laptops. However, issues of latency and low resolution of digital/analog interfaces with these laptops made it extremely difficult for composers to experiment with sounds of high quality in the digital domain, which required him to push for better laptops and interfaces that could handle higher quality digital sounds. Thus, as the performance of laptops have rapidly accelerated, the resolution of digital/analog interfaces have increased, and the

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<sup>635</sup> While Muller's Amiga might have been usable for compositions with live electronics, it is unknown whether it was ever used for that purpose.

software has become more sophisticated, the number of compositions that involve live electronic processes have increased, and the quality of those compositions have likewise risen. In addition, the expansion of compositions from stereo to multi-channel works has also augmented the creative possibilities for student composers to work with spatialization.

Today's student composers of electronic music at the University of Iowa have access to a large number of sound-making devices that can record, transform, and manipulate sounds in real-time. While the majority of compositions realized are for fixed media, a number of composers continue to work with performer and tape. At the same time more advanced composers are experimenting with live electronics in their pieces. Iowa's laptop orchestra has been a valuable resource for composers to gain experience in working with live coding and writing for individual performers and ensembles with live electronics since 2014. In addition, collaborations with multiple disciplines have furthered their opportunities to pursue meaningful and evocative relationships of an interdisciplinary nature. A few developments in the kinds of compositions with live electronics that have been realized since 2012 can be described. Zach Zubow's *Copenhagen Wheel* (2012) for percussion and live electronics is a commentary on the relationship between the fundamentals of technology using cardboard boxes and the integration of technology into everyday life through live electronics. Andrew Theirauf has done a number of compositions that feature percussion and/or dancers with live electronics, such as *Mere Talking* (2013) for multi-percussion and Max/MSP. Jason Palamara has worked with Arduino and has written a number of compositions for laptop orchestra, where instrumentalists work with limited pitch content throughout the piece,

such as *Past every exit...* (2014). Jonathan Wilson has worked with 8-channel spatialization, improvisation, and synthesizers in several compositions, including *Rotations* (2015-6), a 30-minute three-movement work for voice, percussion, ARP 2600, Buchla Music Easel, hand bells, table bells, three microphones, and 8-channel fixed media and live electronics.<sup>636</sup> Joseph Norman has been interested in gestural relationships between performer and electronics using Max patches that involve frequency modulation, delay, and/or spectral transformations of sounds, one example of which is *Insertion/Extraction* (2016) for alto saxophone, guitar, piano, and live electronics.

## **Concerts**

Concerts are the primary opportunity for audiences to become exposed to Iowa's student works. As of June 2017, the Electronic Music Studios have hosted 147 concerts of electronic music since its inception, not including the SEAMUS concerts.<sup>637</sup> Including the SEAMUS concerts, the total would amount to 159 concerts of electronic music. Each concert has been exclusively devoted to electronic music, with the majority of music composed for 2-channel tape or fixed media. Lawrence Fritts has hosted 81 concerts (55% of EMS concerts) of electronic music between August 1994 and May 2017, while Peter Tod Lewis hosted 52 concerts, 35% of all concerts between 1970 and 1982. The remaining 10% of these concerts have been hosted between 1983 and May 1994.

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<sup>636</sup> The movements can be performed separately, but they are preferably performed *attacca*.

<sup>637</sup> This total also precludes the number of concerts done by the Laptop Orchestra of the University of Iowa (LOUi).

The Electronic Music Studios neither sponsored nor hosted concerts of electronic music in Iowa City in the first five years of its existence. Performances in this medium in Iowa City during the 1960s remained relatively uncommon. Whenever it was performed from 1964 to 1969, those curious about it could hear it at the university's Composers Symposiums, Center for New Music concerts, and concerts that featured guest composers, such as Milton Babbitt and Mel Powell. A Composer's Symposium in December 1967 provided audiences one of the earliest windows into the possibilities that student composers could realize. This concert featured two electronic works by University of Iowa student composers, including "Monad," which was a collaborative work for tape and film by graduate students Stephen Syverud and James Barnes. The other work, "Improvisations," by David Harrison was a trio for Cessna's Arbitrary Waveform Generator, electronic tape deck, and piano.<sup>638</sup> Although this concert was not considered a formal concert of electronic music, the instrumentation for these two works reveals that composition students with access to the studios in the 1960s were taking advantage of the possibilities that the program had, even in its infancy when the equipment itself could be cumbersome to work with. The first formal concert of electronic music in Iowa City was sponsored by the Center for New Music, which performed four works of electronic music on February 10, 1967 at the Iowa Memorial Union. The EMS would not host its first concert until January 31, 1970 at the University of Iowa Museum of Art.

In the 1970s, the Electronic Music Studios began to sponsor the majority of concerts that featured electronic music. These concerts provided student composers more

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<sup>638</sup> "Music Tradition to be Ignored in Concert Here," *The Daily Iowan*, December 6, 1967, <http://dailyiowan.lib.uiowa.edu/DI/1967/di1967-12-06.pdf>.

opportunities for performances of their works, commonly held at Clapp Recital Hall and Harper Hall. More uncommon locations included the Museum of Art and the Choral Room. Audiences could encounter performances of electronic music by the Center for New Music, which consisted usually of works by faculty and guest composers. Meanwhile, University Composers Symposiums continued to be a place where student composers could get a performance of electronic music on a concert.<sup>639</sup> As previously mentioned, the majority of composers wrote for instrument and tape, but other concerts would consist of solely fixed media, and those particular concerts could lead to boredom for some sitting in a dark room with speakers around the room and nothing but a tape recorder onstage. Elsea found his own way to try to make these concerts a little more interesting for the audience:

...One concert, instead of looking at an empty stage, I set a candlestick out there, and lit the candle, so we could all look at the candle while the music was playing.<sup>640</sup>

As the number of compositions increased, so did the number of concerts. Beginning in the fall of 1970 the EMS would sponsor three or four concerts per year. By the end of the decade, in the fall of 1979, the EMS was producing six concerts a year, three concerts per semester.

For the audience, what it takes away from every venture into a dark lit room is a difficult question to answer. Reviews of electronic music in Iowa City academia since 1958 have been very few, but they were more common in the 1960s and 1970s. Especially in the 1960s, at the height of the Vietnam War protests and anti-war

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<sup>639</sup> “Electronic composers need not be engineers,” *The Daily Iowan*, May 5, 1970, <http://dailyiowan.lib.uiowa.edu/DI/1970/di1970-05-05.pdf>.

<sup>640</sup> Peter Elsea and Veronica Voss Elsea, May 9, 2017.

sentiments that were being felt across campus, hundreds of students were attending CNM concerts in droves. They were different, and novel in appearance, nothing like the established band, orchestra, choir concerts, and piano recitals on campus, and they seemed to be speaking to younger generations of Americans. Hervig in an article from *The Cedar Rapids Gazette* in 1968 said that in the 1967-68 year their audiences were increasing, and they were performing for more than 500 people per concert.<sup>641</sup> While hundreds of students might have been attending new music concerts during the late 1960s, the few bits of journalism that survive to the present reveal that reactions to electronic music outside the School of Music were not always the most pleasant, even in its earliest days. Some did not know what to make of it, and many were not even well informed on the topic. On one occasion in the month of March 1968 a 3-hour electronic score for a production of *King Lear* realized by cellist Eric Jensen was met with a scathing review in the *Daily Iowan*. D. B. Axelrod, who wrote the review, criticized his music as “unpleasing, incongruous, often ridiculous” sound effects that were “as good to a connoisseur of music as a bad film sound track.”<sup>642</sup> This review prompted Alan Moore, a teaching assistant at the School of Music, to fight fire with fire:

D. B. Axelrod’s review of Eric Jensen’s music for *King Lear*...reveals more about the writer’s ignorance than about the subject he purports to discuss. His use of peculiarly inappropriate and derisive metaphors, and his insistence on referring to the music as “sound effects,” indicate a hostile predisposition and a lack of perception which seriously qualify the value of his critical judgment.<sup>643</sup>

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<sup>641</sup> Art Hough, “Way-Out Sound,” 1B.

<sup>642</sup> D. B. Axelrod, “‘Lear’ music called often ridiculous,” *The Daily Iowan*, March 12, 1968, <http://dailyiowan.lib.uiowa.edu/DI/1968/di1968-03-12.pdf>.

<sup>643</sup> Alan Moore, “Music student refutes ‘King Lear’ review,” *The Daily Iowan*, March 15, 1968, <http://dailyiowan.lib.uiowa.edu/DI/1968/di1968-03-15.pdf>.

The criticisms of D. B. Axelrod could also be found in other critics who were involved in music over the next two decades. One such occasion took place in December 1984, when Gaburo created a series of concerts known as “Scratch” concerts. They were part of the “Scratch Project,” a multimedia project that consisted of people’s opinions over their expendability, should the event of nuclear war come to fruition.<sup>644</sup> The music produced from the Scratch Project received more criticism than praise from Kate Van Orden, now Dwight P. Robinson Jr. Professor of Music at Harvard University,<sup>645</sup> who was then an English major, as well as a bassoonist, at the University of Iowa. Her first words of the Scratch Ensemble’s performance in December 1984 were nothing short of dread:

I knew I shouldn’t have arrived early for the Center for New Music’s Saturday evening performance in Clapp Recital Hall. The woman to my left, I realized, was not calling out numbers at random, but counting backwards at a snail’s pace. And (God help us) she was only on 92...After a while, even the enumerators began to sound sluggish and bored.<sup>646</sup>

The number of concerts per year of electronic music sharply declined under Gaburo from four electronic music concerts in the 1981-82 year to one concert per year, and by 1987 there were no concerts to be publicly announced for the next three years. During the 1991-92, Paredes scheduled an unprecedented five EMS concerts in one semester with one concert per month in the spring of 1992, including a concert that featured his assistant Kirk Corey. Since 1994, the EMS has maintained a consistent number of concerts per year, between two and four concerts.

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<sup>644</sup> Warren Burt, “Listening to Ten Tape Works by Kenneth Gaburo,” *Perspectives of New Music* 33, no. 1 (1995): 159.

<sup>645</sup> Kate Van Orden, *Harvard University Department of Music*, <https://music.fas.harvard.edu/kvanorden.html>.

<sup>646</sup> Kate Van Orden, “Nothing New About New Music,” *The Daily Iowan*, December 11, 1984, 5B, <http://dailyiowan.lib.uiowa.edu/DI/1984/di1984-12-11.pdf>.



Concerts since 1994 have consisted mostly of fixed media, but occasionally some concerts will include instruments and electronics, the April 2015 concert being one example of this. The EMS concerts highlight the diverse individual styles of student composers in the medium at the university. One exception to this was Fritts's first electronic music concert at Iowa on November 14, 1994, which consisted only of his tape pieces, most of them written in the 1980s. In the 2004-05 season the Electronic Music Studios celebrated their 40<sup>th</sup> anniversary with a concert on September 5, 2004 that featured works by Fritts and many of the student composers from the University of Iowa and included mezzo-soprano Katherine Eberle, a professor of voice at the University of Iowa. On that concert Christopher S. Diehl and Peter Rosewall collaborated on a work called "Digital Regressions," a composition that featured recordings of sounds from the Moog and ARP 2600 synthesizers.<sup>647</sup>

### **Ensembles**

In addition to performances of works for tape with/without a performer, Iowa City has had various ensembles that incorporated live performers with electronic music. One closely connected to the Studios was The De Groot Expedition, founded in 1972. It was an intuition-driven ensemble that performed improvisations known as "variants." This particular ensemble included its founder Peter Tod Lewis (synthesizer), Will Parsons (percussion), Candace Natvig (voice), Patrick Purswell (flute), and Jon English (trombone, bass). The name for this ensemble was based on the fictitious entity Jan de Groot, who was claimed to have been, by its founder, an early Iowan pioneer. As an

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<sup>647</sup> "40<sup>th</sup> Anniversary Concert of the Electronic Music Studios," *University of Iowa*, September 5, 2004, 3.

ensemble, Lewis wrote that the ensemble was “a shaky ensemble from the very beginning, comprising on the one hand a firm commitment to the given necessities of the performance situation, and, on the other, a lack of any such commitment.”<sup>648</sup> They played a number of improvisations together in the state of Iowa for eight years.

In 1967, one ensemble formed to host alternative concerts of music that would not be performed by the Center for New Music. This was the Group for the Experimentally Entertaining Exploitation of Existent Prowess (GEEEEEP). Its members included Will Parsons (percussion), Joseph Dechario and Joan Purswell (piano), Patrick Purswell (flute), and Jon English (trombone). Richard Hervig shared his own memories of the ensemble:

These concerts were given in various locations, but principally in the basement of the Unitarian Church. It was there that one could hear pieces like La Monte Young's 344 -- it's a forearm piano cluster piece in which the same cluster is struck 343 times...<sup>649</sup>

Another ensemble called the F.O.P. (Friends of Parsons), which was founded in 1974, was a similar ensemble like GEEEEEP with student performers programming “alternate” works that were contrasts to the new music performed in concert settings. Lewis noted that the group included electronic music as a part of its act from the time it began<sup>650</sup> with Jan Pompilo (flute), Steve Block (piano), Steven Schick and Richard McCandless (percussion), and Peter Elsea (electronics). One of Gaburo’s students, Michael Schell, proposed the creation of the “Electroacoustic Ensemble,” an ensemble of five composers

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<sup>648</sup> Lewis, “Electronic Music,” 158.

<sup>649</sup> Richard Hervig, interview by Barbara C. Philips-Farley, August 2, 1988, quoted in Barbara C. Philips-Farley, “A history of the Center for New Music at the University of Iowa, 1966-1991” (DMA diss., University of Iowa, 1991), 16-17.

<sup>650</sup> Lewis, “Electronic Music,” 161.

with experience in electronic music that would feature live electronics and works whose medium could not be designated.<sup>651</sup> Some of the suggested works included John Cage's *Cartridge Music* and *Variations VI*, Steve Reich's *Pendulum Music*, and Robert Moran's *Titus No. 1*. Five members were proposed, four of them being EMS students, including Michael Schell, Chad Barker, Jeff Mumm, Russ Pedigo, and Michael Geary, (now percussionist for the Des Moines Symphony and percussion instructor at Luther College). Other ensembles have included two laptop orchestras: iLork (2010-12) and LOUi (2014-present).

### **Tape-beatles**

Of all the ensembles mentioned, one of the most famous ensembles to have been associated with the EMS is the Tape-beatles (also known as Public Works). Formed in December 1986 in Iowa City, the band was focused on anti-copyright advocacy. Its main members Lloyd Dunn, Ralph Johnson, and John Heck promoted the band with the motto: "Plagiarism: A Collective Vision."<sup>652</sup> Paul Neff, Chuck Hollister, and Linda Morgan Brown were also members of the group, either as former members or as occasional additions to the group's performances. They first worked with analog tape recorders, and later digital technology and film. Dunn considered Gaburo to be a musical mentor for the ensemble when its three main members enrolled in his EMS classes, partly to work with

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<sup>651</sup> Michael Schell, Letter to Kenneth Gaburo, September 26, 1983, University of Iowa Electronic Music Studios Archives, Iowa City, Iowa.

<sup>652</sup> Kembrew McLeod, *Freedom of Expression: Overzealous Copyright Bozos and Other Enemies* (New York: DoubleDay, 2005), 156.

the tape recorders.<sup>653</sup> They also performed in Gaburo's "ENOUGH! ---(not enough)---;" in December 1988.<sup>654</sup> The band's main focus was on challenging the idea of intellectual property through discourses on social issues. Its members would take sounds from a variety of recordings, including U.S. Army propaganda, evangelical sermons, and presidential speeches, to form audio collages, which were difficult for some people to understand without repeated listening, and they would release their music to the public domain.<sup>655</sup> Dunn elaborated on the band's central role and gave his perspective on intellectual property in 1995:

We got together in 1986 to pursue what we thought of as a new form of audio production: using the principle that anything that could be put on tape had potential musical usefulness. We felt that audio tape was a medium that had not been thoroughly explored artistically, and we wanted to do that in a sort of pop music context. We were, for the most part visual artists dabbling in what was for us a new medium. We wanted a fresh, lively sound and we wanted real content that everyone could relate to.

Over the years since 1986 we have taken on the related project of liberating sounds and images from copyright strictures, believing them to be inherently fluid and transitory in nature, and thus, in some deep sense, un-ownable.

Our purpose is to make, first of all, good "music" that is fun and interesting to listen to, and second of all, to put that labor at the service of ideas that we believe in. It should be clear from our work what we believe in.<sup>656</sup>

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<sup>653</sup> Lloyd Dunn, *A Brief History of the Photostatic Project*, [http://psrf.detritus.net/texts/brief\\_history.html](http://psrf.detritus.net/texts/brief_history.html).

<sup>654</sup> Ibid.

<sup>655</sup> Paul Ferguson, "Tape-beatles headline 6-band benefit concert," *The Daily Iowan*, November 3, 1994, <http://dailyiowan.lib.uiowa.edu/DI/1994/di1994-11-03.pdf>.

<sup>656</sup> Deuce of Clubs, *Conversation with a Tape-beatle*, <http://www.deuceofclubs.com/write/tapebeat.htm>.

They released three albums between 1988 and 1995: *A Subtle Buoyancy of Pulse* (1988), *Music with Sound* (1991), and *The Grand Delusion* (1993). Other albums released in subsequent years included *Matter* (1996), *Good Times* (1999), and *Numbers* (2000).<sup>657</sup>

### **Electronic Music Studios in Collaborations**

From the beginning collaboration has always been a part of the EMS. Besides Gaburo's Institute for Cognitive Studies at the University of Iowa in the 1980s, other opportunities for student composers, especially in electronic music, to work with other disciplines have shaped the culture of the University of Iowa and its composers. Among the earliest collaborations were those with the Center for New Performing Arts under Hibbard's direction and the Intermedia program under the direction of Hans Breder. The CNPA involved music, dance, theater, film, creative writing, and visual arts. With more than \$400,000 of funding from the Rockefeller Foundation going into the organization, interdisciplinary collaboration was highly expected in the arts. The EMS found ways to contribute through its faculty and students. Lewis worked with filmmaker Franklin Miller on a number of works with an electronic score for film, including "Signal-messe" (1971), "Forest" (1973), "Sondo" (1975), "Ekstasis" (1975), and "Domain" (1975). Two of his EMS students, Julie Weber and Igor Demjen, collaborated separately with guest choreographer Robert Wilson to create music for "Handbill" (1970) and the world

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<sup>657</sup> These later albums were released under Public Works, which was a change in name for the group in 1997 from Tape-beatles because of changes in group membership and uncertainty of the group's existence, since John Heck had moved away to Prague.

premiere of highly acclaimed “Deafman Glance” (1970).<sup>658</sup> In addition, Lewis’s assistant Kenneth Baker was recruited as a technical assistant for the CNPA from 1971 to 1973.<sup>659</sup> As for the Intermedia program, Lewis and Breder collaborated together on a number of works, including “Eclipse I” (1970), “Carib” (1970), “Voces I” (1971), and “Voces II” (1971). In turn some of Breder’s students enrolled in the EMS classes taught by Lewis in the 1970s and Gaburo in the 1980s.<sup>660</sup> Some of Gaburo’s students, including Robert Paredes, studied with Breder and enrolled in his Intermedia class. Another course taught by Breder’s technical assistant Stephen Bundy known as “Technomedia”<sup>661</sup> was a kind of creative course for Physics majors that went into detail about holography, electronics, optics, and audio.

In the late 1990s Fritts attempted to form international ties between different institutions, which led to International Exchange concerts from 2000 to 2002. These

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<sup>658</sup> Robert Wilson, *Chronology – Performing Arts*, <http://www.robertwilson.com/chronology-theater/>. This work would later be adapted to television in the early 1980s.

<sup>659</sup> William Hibbard, “Center for New Performing Arts: Final Report 1970-75,” ca. 1975, Center for New Performing Arts Records, box 2, folder 1, University of Iowa Libraries, Iowa City, Iowa.

<sup>660</sup> Siegling, “Intermedia at Iowa,” 232.

<sup>661</sup> *Ibid.* One should be wary of the term “Technomedia,” as this was most likely not the formal designation of the course(s). The general catalogs of the mid-1970s do not mention a course by the title “Technomedia” under the Physics and Astronomy section. It is likely that the course under consideration refers to two courses taught in the 1970s known as “Physics for Artists” (29:157 and 29:158). There is no distinction in title between the two courses other than the course numbers. The 29:157 course was a discussion and laboratory course for students who were non-majors in the sciences that focused on the “properties of different kinds of waves leading to understanding of holography.” The 29:158 course was a continuation of the former, a “study of many aspects of production and detection of color.” For more information, one should refer to *University of Iowa General Catalog: 1974-76* (Iowa City: University of Iowa, 1974), 142.

exchange concerts came about during a three-week trip in Europe in 1999 from a conversation Fritts had with Robert Doati of the Conservatorio Giuseppe Tartini in Trieste. While the idea seemed initially sound, the project was very difficult to control. The students lost interest in these concerts, especially when an international exchange concert was taking place in Iowa. “They wanted their music played in Europe,” Fritts recalled, “but too many of them didn’t attend any of the concerts here at Iowa, unless their piece was going to be on the concert.”<sup>662</sup>

Another form of collaboration for composers in the 2000s was Spatial Intersections. These concerts were founded on interdisciplinary projects that combined the skills of composers of electronic music with students from the School of Art and the Intermedia program after Breder’s retirement. These concerts could include performers from the Department of Cinema and the Department of Comparative Literature. Four such concerts were hosted between 2003 and 2006. EMS students Tohm Judson, Jean-Paul Perrotte, and Karen Koch, as well as Mark NeuCollins, an MFA student in Intermedia, were the program coordinators for these concerts. Fritts remembered:

Every spring, some composers would collaborate with Intermedia people to produce a multi-media (not the best word) event where both components, audio and visual, were done by the students with those particular skills. It was a precursor to the Digital Arts Program.<sup>663</sup>

Audiences for these concerts could expect a variety of compositions, even some with live electronics. One example of this was a work by composer Billy Gomberg in collaboration with Kelli Spengler called “ION GLAM CONTINENT my air/my self”

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<sup>662</sup> Lawrence Fritts, e-mail message to author, August 9, 2015.

<sup>663</sup> Lawrence Fritts, e-mail message to author, March 10, 2017.

(2003) for live electronics and video. Other kinds of works could involve sound diffusion and sculptural instruments.

Today, collaborations involving electronics at the University of Iowa continue to be a part of student and faculty projects. One of the oldest ongoing collaborations for composers has been with the Department of Dance, particularly for composers of electronic music. Since the 1970s, composers have written many compositions for tape, and/or performers that have been performed for a number of dance productions.

Beginning in the 2000s, the Department of Dance has annually hosted a concert at Space Place Theater that focuses on creating an interdisciplinary production with composers, dancers, actors, artists, and other associated areas. This collaboration stems from a collaborative dance performance class that meets twice a week during the fall semesters to put on a production at the end of the semester. One production from this class is *No Armistice* (2014), a “choreopoem” based on a number of poems that were set to dances. Concerning the issues of propaganda and war, this production was the collective effort of a poet, two choreographers, four composers, a lighting technician, a stage manager, and many dancers that graced the stage. The composers Paul Duffy, Nima Hamidi, Barry Sharp, and Jonathan Wilson each composed an individual work and then collaborated in pairs on another work for a sum of eight compositions: seven for fixed media, and one for fixed media and setar.

LOUi has played increasingly a greater role in collaborations with other disciplines across the Iowa City campus. The ensemble has performed and improvised with a number of different local artists since the fall of 2014, including the Department of Theatre Arts, the Comparative Literature-Translation program, the Department of



Computer Science, and the Department of Dance. In the process members of LOUi have performed with actors, dancers, poets, and even robots. The Buchla Music Easel has seen frequent use in the ensemble since its arrival. It is hoped that LOUi will continue to grow, maintain its presence in the School of Music, and keep reaching out to other artistic areas that will bring about further opportunities for interdisciplinary performances.

### **Recognition**

The success of any program is the product of good work. The EMS is no different in this regard. A composer's success in this medium is the product of good work in the Studios. Those students who have worked hard there and received a good education through the electronic music program have many life-long lessons to take away from their academic experiences. Some of these are prizes, honors, distinctions, and invitations to conferences and festivals.

The program has brought success to a number of students in the Composition Program. One album in particular demonstrated the increased sophistication of the Studios and the students who worked there. The Iowa Ear Music album, released on vinyl in 1976, was the most successful album to be realized at the EMS. It was the combined work of a large number of musicians, including Michael Lytle, Will Parsons, Jon English, Peter Tod Lewis, Candace Natvig, Pat Hazell, William Hibbard, and Eric Jensen. The album earned critical acclaim from the *Downbeat Magazine* and received a five-star review. Most of the recording sessions consisted of improvisations, and they involved the interconnections between multiple rooms in the Voxman Music Building, including Studios 1 and 2. Parsons remembered:

There were four rooms that we used for our main sessions. The only connection was headphones. Everybody could hear each other through their headphones, but it was all connected—that was a nice thing about that, that you could get true isolation—and we had a four-hour schedule...we got...18 separate sessions, some of which were really good...we did all the editing in Studio 2 [Room 2062], splicing tapes, and we were kind of the guys that were doing it. One or the other of us would go in there alone and make the perfect version. We'd hand it to the other guy and say, "Now don't mess with this. This is perfect." And then a week later the other guy would come back and say, "Now don't mess with this. This is perfect." We did that for about two years...<sup>664</sup>

Other students have found success through prizes and competitions. Douglas Fulton became the First Prize Winner of the 1979 Rutgers Center for Electronic Music Competition for his work *Baby Death*. When Lewis had a performance of his tape piece *Samarkandko* at the 7<sup>th</sup> Festival International de Musique Experimentale in Bourges on May 28, 1977, Mark Schubert's *The Merchants* was performed at the Concert des Lauréats du 5<sup>th</sup> Concours Internationale de Musique Electroacoustique and was awarded 4<sup>th</sup> place in the 1978 Festival International de Musique Experimental. Many years later, Scott Adamson, a student of Fritts, received honorable mention for "a scent of lilacs drifts the bank of county 272" at the 24<sup>th</sup> International Electroacoustic Music Composition in Bourges. Many electronic works, besides these, by a number of composers have been selected for performances at ICMC, NYCEMF, SEAMUS, SCI Inc., Electroacoustic Barn Dance, Midwest Composers Symposium, the Exchange of Midwest Collegiate Composers, and even the Sound for Music Computing (SMC) conferences.

The prestige of Iowa's electronic music program has grown over the years and brought with it international recognition worldwide. Once, in 1976, Luciano Berio contacted Lewis for information about the work that was occurring in the program.

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<sup>664</sup> Dave Olive, Michael Lytle, and Will Parsons, interview by Lawrence Fritts, September 15, 2015.

When he was designing a presentation on the history and development of electronic music for the opening of IRCAM at Centre Beaubourg in Paris, Berio wished to use some work from Iowa's EMS for his presentation. He felt that its developments at that time were of great importance to the community and ought to be shared with the world.<sup>665</sup> As Iowa's studios have become increasingly renowned academically across the globe, the program has maintained some form of relationship with the community since the 1970s. In one aspect they were a learning resource for various people during the summer who wished to learn and study electronic music, which were led by instructors such as Eric Jensen and Kirk Corey. In 1973, Jensen, who was then teaching at Grinnell College, was positive about the energy that seemed to come both from the quality of the studios and the students who attended his classes:

Teaching in Iowa City this summer was such a super experience for me...the students were quite different from those at Grinnell: less "verbally smart," and more open and artistic in general. Inspired by its facilities, I got a lot of creative work done, mostly new ideas.<sup>666</sup>

Kirk Corey taught these classes during the summers in the 1990s. The program was a learning resource not only for enrolled students, but also for schools of younger children in Iowa. The students of Shirley Smith, a vocal music instructor at Tipton Middle School, were one such example. Annually, during the 1970s, Shirley would bring a small group of middle school students on a field trip to see the new facilities and a demonstration of electronic music. On one occasion, in early 1977, she had as many as

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<sup>665</sup> Luciano Berio, Letter to Peter Tod Lewis, May 28, 1976, University of Iowa Electronic Music Studios Archives, Iowa City, Iowa.

<sup>666</sup> Eric Jensen, Letter to Peter Tod Lewis, August 10, 1974, University of Iowa Electronic Music Studios Archives, Iowa City, Iowa.

ninety-seven 7<sup>th</sup>-grade students interested in electronic music, which made the possibility of a presentation at the studios very difficult.<sup>667</sup>

Adolescents in Iowa City during the 1970s could find electronic music as one of many resources for self-expression. More significantly, it was an outlet for them to obtain self-individuation and delinquency prevention. Jim Swaim, a member of the United Action for Youth, created an art workshop for them called Synthesis. This program received funding from a number of organizations, including the Law Enforcement Assistance Administration, the United Way, the Johnson County Board of Supervisors, the City of Coralville, and the Iowa Arts Council. Sufficient support and funding awarded through grants enabled this program to acquire instruments, amplifiers, and tape recorders to help children between the ages of 12 and 18. This program consisted of three phases, each phase enabling the child to form a commitment to a particular project and reaching a goal while in the program, with phase I as an acquaintanceship phase, to find out if the program was something compatible with their interest; phase II as the contract phase, to complete a project that interested the child and that he would be committed to in exchange for training in the use of electronic equipment; and for those who demonstrated an exceptional interest in the program, phase III, the staff phase, which allowed a child to participate in the program as a “peer instructor,” attend meetings, and have a voice in its development. Chuck Hollister, a student in Iowa’s electronic music program and sound studio coordinator for Synthesis,

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<sup>667</sup> Shirley Smith, Letter to Peter Tod Lewis, October 12, 1976, University of Iowa Electronic Music Studios Archives, Iowa City, Iowa.

noticed that the students were able to shape “not only their skills, but also their personalities...a little more relaxed, a little more sensible about things.”<sup>668</sup>

Today, the Studios continue to provide assistance for certain events that aid the community. One such event is iHearIC, an event that showcases local individual artists once a month during an academic year, which is coordinated by University of Iowa alumnus Justin Comer and Carlos Cotallo-Solares, a PhD student in music composition at the University of Iowa. The Electronic Music Studios and the Center for New Music accommodate its various gigs around the city with speakers, amplifiers, microphones, laptops, video camera, hemisphere speakers, mixers, and cables. Sometimes, the program can assist other students in the School of Music to realize their projects or dissertations through recordings or the checkout of equipment. Finally, the Music Instrument Samples Database continues to be an important resource for composers, scientists, and audio engineers around the world who are looking high-quality samples of orchestral sounds. Thanks to the Electronic Music Studios, the University of Iowa continues to be a leading institution in the world for the advancement and study of electronic music.

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<sup>668</sup> Winston Barclay, “I.C. arts workshop helps kids develop self-esteem,” *The Daily Iowan*, November 23, 1979, <http://dailyiowan.lib.uiowa.edu/DI/1979/di1979-11-23.pdf>.

## CHAPTER 16

### CONCLUSION

The Electronic Music Studios continue to inspire creativity for student and faculty composers at the University of Iowa with its vast library of sounds. The presence of the old analog equipment in Studio 1 is evidence of the wisdom of the professors who have directed this program to hold onto instruments of great potential while acquiring new machines and tools to further enhance the imagination and empower the inner workings of the mind. When one considers the potential of this equipment, one may consider the Electronic Music Studios as a representation of the two-faced Roman god Janus, the god of beginnings, transitions, time, doorways, and endings. The depiction of Janus as a two-faced god is a demonstration of how he looks to the past and to the future. Similarly, students in the program have access to technologies of the past and future for inspiration and source material for their compositions. They can explore the old analog equipment from the 1960s and 1970s, or they can pursue the technologies of modern-day computer programs and equipment. Whatever they decide, students can use any of this equipment to further their musical language.

The dream behind this program lives on. What began with a 96-step arbitrary waveform generator in a small Quonset hut has transformed into a fundamental part of the compositional activities that take place at the University of Iowa in the basement of the new multi-million-dollar Voxman Music Building. Here, exploration rules. Students of the EMS continue to give birth to possibilities, to challenge their various assumptions

of sound, to develop initiative, and to move forward while making new discoveries along the way. When they graduate, they take with them the fruits of their labor, the lessons of their studies, and their memories of the program. One particular letter written by graduate student James Wilson to Marilyn Somville in early 1981 touches on his experiences at the Studios and his high regards for the quality of instruction he received, the blessings of a time well spent:

I first visited the music school at the University of Iowa in February of 1975, when the school was hosting the joint national conventions of the American Society of University Composers and the College Music Society. I became interested in composition activities at the university after hearing several compositions by members of the faculty there, and I was particularly impressed with an electronic work by Mr. Peter Lewis—certainly the best piece at the convention—which had been inserted into the convention program only at the last minute to fill in for a cancellation by a composer at another college...

On my next visit to the University the following summer, my favorable impression of the composition department was further enhanced upon visiting some classes and finding the composition students—and particularly the electronic music students—so well informed on the issues of contemporary music and also quite advanced in the progress of their own work. These impressions continued to be strengthened as I pursued my studies there, beginning in the fall of 1977.

I am still unaware of any school that surpasses Iowa in the quality of its students' consistent electronic music production, and few schools compare favorably. The presence of such healthy and ongoing faculty-student relations as you have there—so commonly lacking or at question in some institutional quarters—is, I feel, an important and perhaps the most significant factor contributing to the success and development of that program. I consider the combination of Mr. Lewis' compositional and artistic guidance and Mr. Elsea's technical aid (along with each frequently playing the opposite role) really hard to beat; it was helpful training for me in the three years' time that I was able to spend there...the studio was always easy to use and well maintained, and we were always able to produce and receive good suggestions and criticism...<sup>669</sup>

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<sup>669</sup> James Wilson, Letter to Marilyn Somville, January 24, 1981, Peter Tod Lewis Papers, box 1, University of Iowa Archives, Iowa City.

The window to creativity will remain open to all interested in the riches that are possible to obtain from their studies and experiments through this program, so long as there are students willing to compose electronic music and grow with it; so long as there are assistants to maintain the equipment and keep it running; so long as there is a vision in the mind of the professor that can enrich the program and imbue each student with a voice; so long as there are administrators who support the Composition Program; and so long as there is funding to keep it going. If the fuel for exploration is endless, and an abundance of aesthetic styles perpetuates, the Electronic Music Studios of the University of Iowa will continue to be strong and vital to the needs of the Composition Program, the University of Iowa, Iowa City, and the worldwide community.



## APPENDIX A: ELECTRONIC MUSIC STUDIOS EQUIPMENT

### Computer

- 2 Mac Pro (2<sup>nd</sup> Generation)
- 2 Mac Pro (1<sup>st</sup> generation)
- 3 MacBook Pro (3<sup>rd</sup> generation)
- 2 MacBook Pro (2<sup>nd</sup> generation)
- 2 G-Technology G-RAID STUDIO Storage System

### Recording

- 2 Earthworks Microphone Preamp 1024
- 1 Zener TG 12413 Limiter
- 2 Focusrite ISA828 microphone preamps
- 1 Nagra SD Digital Recorder

### Interfaces and Mixing

- 1 Lynx Aurora 8
- 3 Metric Halo 2882
- 2 Metric Halo ULN-2
- 2 MOTU MIDI Express 128
- 1 MOTU MIDI Express XT
- 1 Behringer Virtualizer Pro DSP2024P
- 1 Allen&Heath GL4800
- 2 Allen&Heath GL2800 Mixer
- 2 Allen&Heath Mix Wizard WZ3 14:4:2
- 1 Mackie CR1604-VLZ 16 channel

### Monitoring

- 8 Genelec 8260 SAM
- 10 Genelec 8040A Bi-Amplified Monitor Systems
- 8 Genelec 8040B Bi-Amplified Monitor Systems
- 6 Alesis Monitor One MK1
- 16 Alesis Monitor One MK2
- 8 EV Sx80
- 2 Optimus PRO X7
- 1 Blue Sky Sub8 Universal subwoofer
- 4 JBL Eon
- 2 Samsung 60" TV Screens
- 2 Sony 60" TV Screens

### Synthesizers

- 1 ARP 2600 Synthesizer
- 1 Buchla Music Easel
- 1 Moog IIP Modular Synthesizer

- 2 901 Voltage-controlled Oscillators
- 2 901-A Oscillator Controllers
- 6 901-B Oscillators
- 4 902 Voltage-controlled Amplifiers
- 1 903-A Random Signal Generator
- 1 904-A Voltage-controlled Low Pass Filter
- 1 904-B Voltage-controlled High Pass Filter
- 2 904-C Filter Couplers for Bandpass/Band Reject
- 4 911 Envelope Generators
- 1 911-A Dual Trigger Delay
- 1 912 Envelope Follower
- 1 914 Fixed Filter Bank
- 3 4-input complementary-output AC/DC mixers
- 1 950 Keyboard
- 1 Sequencer Complement B:
  - 2 960 Sequential Controllers
  - 1 961 Interface
  - 2 962 Sequential Switches
- 1 991 Filter and Attenuator
- 1 994 Multiples

#### Analog Equipment

- 1 360 System 20/20 Frequency Shifter
- 1 Allen&Heath GL2800
- 1 Advocate Noise Reduction Unit - Model 101
- 1 Alesis ADAT XT20
- 1 Allison Labs 2BR High/Lowpass Filter
- 11 BBE 882i Sonic Maximizer
- 1 Big Briar Etherwave Theremin
- 1 Bode Dual Ring Modulator - Model 6402
- 1 Brüel &Kjaer Instruments Model 125 Graphic Spectrum Equalizer
- 1 Crown D-60
- 1 DBX PB-48-point patch bay
- 1 Dingman Probability Controller
- 1 Fender Reverb
- 1 Gentle Electric Model 101 Pitch&Envelope Follower
- 1 Hewlett Packard Model 2000DR Oscillator
- 1 Kenton PRO-2000 MkII MIDI-CV converter
- 1 Lexicon Prime Time Digital Delay
- 1 Marantz CD player
- 1 McIntosh MC 2505 Amplifier
- 1 Panasonic AG-1830 S-VHS Super VHS Recorder-Player
- 1 Panasonic SV-3800 Professional DAT Recorder
- 1 ProCo DB-4 four channel direct box
- 1 Roland SRV-2000 MIDI Digital Reverb
- 2 RV-10 Variable Decay Reverberation System

1 Shure Auxpander  
1 Symetrix 522 Compressor/Limiter/Expander/Gate/Ducker  
1 Tascam 102 Cassette recorder  
1 Tektronix R5103N Mainframe Oscilloscope  
1 Yamaha REV7 Digital Reverberator

#### Microphones

6 Shure SM57  
1 Audio-Technica 4041  
1 Audio-Technica AT822  
3 Beyer-Dynamic M201 TG  
2 Neumann KM84  
2 Heil PR40  
2 Earthworks QTC50  
1 Avantone CK33  
1 Blue Baby Bottle  
1 Sontronic Omega  
3 CAD Trion 8000  
1 MXL R77  
1 CAD 7000  
1 Audix Micro-D  
1 Sennheiser MKH 70  
3 Blue Yeti  
1 Rode NTG-1 Shotgun  
1 Shure KSM313  
1 Shure KSM44A  
1 AEA R84  
1 Audio-Technica BP 4027  
1 Audio-Technica AT8015  
1 Blue Reactor  
1 Avantone CR 14  
3 Rode NT1-A  
1 Holophone H3D  
1 AKG CBL 99  
1 Beyer-Dynamic MM1  
1 Argonne AR-57  
1 Argonne 99-4501  
1 Amperite PGAH  
1 Electro Voice M-43U Turner S98  
1 Turner 124  
1 Neumann U87  
1 Neumann U47 FET

#### Guitar Amplifiers and Speakers

1 Cornell Romany Pro  
1 Fender Champion 600

1 Fender Deluxe Reverb  
1 Orange Tiny Terror

Power Amps

6 Crown XLS 1000  
1 Crown D-75A  
4 Mackie M1400  
1 Alesis RA-100  
3 Alesis RA-150

## APPENDIX B: LIST OF EMS ASSISTANTS

### List of Research Assistants (1964 – 1978)

1. James R. Cessna 1964 – 1965
2. Richard L. Auld 1965? – 1968
3. Steve O’Neill 1968 – 1969
4. Kenneth J. Baker 1969 – 1973
5. Paul T. Dingman 1973 – 1974
6. Peter Elsea 1974 – 1978

### List of Audio Specialists (1978 – 1986)

1. Peter Elsea 1978 – 1980
2. Thomas Henry 1980 – 1981
3. Jon Curtis Palmer 1982 – 1984
4. Dave Muller 1984 – 1986

### Undergraduate Scholar Assistants

1. Adam Cain 1987 – 1991

### List of Audio Engineers (1986 – 1994)

1. Dave Muller 1986 – 1990
2. Kirk Corey 1991 – 1994

### List of Electronic Systems Administrators

1. Kirk Corey 1994 – 1997

### List of EMS Assistants (Fall 1981? - present)

1. Douglas Fulton Fall 1981? – Spring 1982
2. Michael Farley Spring 1982 – Spring 1989
3. Kirk Corey Fall 1989 – Spring 1990/1991

————— Six or seven-year gap —————

4. Matthew Hallaron Spring 1997 – Spring 1998
5. Scott Adamson Summer 1997 – Fall 1998
6. John Ritz Fall 1997 – Spring 2002
7. Eric Durian Fall 1997 - Spring 1999
8. Joss Nichols Fall 1997 – Spring 1999
9. Michael Cash Fall 2000 – Spring 2002
10. Matthew Grusha Spring 2002
11. Tohm Judson Fall 2002 – Spring 2004
12. Jean-Paul Perrotte Spring 2003 - Fall 2003
13. Chris Diehl Fall 2003 – Spring 2005
14. Evan Kuchar Fall 2004 – Spring 2005

15. Peter Rosewall	Fall 2004
16. Anne Guthrie	Spring 2005
17. Rachel Foote	Spring 2005 – Spring 2006
18. Paul Alan Brenner	Summer 2005 – Spring 2007
19. Jean-Paul Perrotte	Fall 2006 – Fall 2007
20. Patrick Fitzgibbon	Fall 2006
21. Israel Neuman	Fall 2007 – Fall 2008
22. George Marie	Spring 2008
23. Matthew Dotson	Spring 2009 – Spring 2010
24. Chris Shortway	Spring 2009
25. Israel Neuman	Fall 2009 – Spring 2010
26. Zach Zubow	Fall 2010 – Spring 2012
27. Shane Hoose	Fall 2010 – Spring 2012
28. Daniel Frantz	Fall 2012 – Spring 2014
29. Will Huff	Fall 2012 – Spring 2014
30. Jonathan Wilson	Summer 2014 – present
31. Jonah Elrod	Summer 2014 – Summer 2016
32. Carlos Toro	Summer 2016 – present

Music Instrument Samples Database Managers and  
Anechoic Chamber Recording Technicians

1. Andrew Struck-Marcell	Fall 2001, Fall 2003 – Spring 2005
2. Nik Francis	Fall 2003
3. Ketty Nez	Fall 2003
4. Christopher S. Diehl	Spring 2004 - Fall 2005
5. Anne Guthrie	Fall 2005
6. Brian Penkrot	Fall 2011 – Spring 2012

APPENDIX C: LIST OF EMS ALUMNI IN ACADEMIA

<b>Academic</b>	<b>Location</b>
Allemeier, John	University of North Carolina, Charlotte
Arnold, Larry	University of North Carolina, Pembroke
Bilal, Yousif	US Department Defense Language Institute
Blaha, Joseph	Roanoke College
Bourassa, Linda	Hiram College
Brakel, Christopher	Conservatory of Music at Chapman University
Carroll, Gregory	University of North Carolina, Greensboro
Chenoweth, Gerald	Rutgers University, University of Iowa
Crockett, Edgar	Black Hawk College
Custer, Seth	Bob Jones University
Dahn, Luke	University of Utah
Dangerfield, Joseph	University of Florida
DeVasto, David	Elmhurst College
Donofrio, Anthony	University of Nebraska-Kearney
Durham, Thomas	Brigham Young University
Elrod, Jonah	University of Wisconsin - Stevens Point
Elsa, Peter	University of California, Santa Cruz
Erickson, Elaine	Central College, Drake University
Ertz, Matt	University of Louisville
Farley, Michael	St. Lawrence University
Faust, Randall	Western Illinois University
Fisher, John	Texas Wesleyan University
Gainey, Christopher	University of Iowa
Gee, Erin	Brandeis University
Godfrey, Daniel	Northeastern University
Gregory, Jason	The Governor's School of the Arts
Griffin, John	Western Michigan University
Hallstrom, Jonathan	Colby College
Harkins, Edwin	University of California, San Diego
Hatmaker, Ted	Northern Illinois University
Heinrichs, William	University of Wisconsin-Milwaukee
Hollister, David	Hofstra, CUNY, Long Island University
Hoose, Shane	Eastern Kentucky University
Houglum, Daniel	University of Hawaii
Hu, Ching-chu	Denison University
Husarik, Stephen	University of Arkansas - Fort Smith
Karlins, M. William	Northwestern University
Kempf, Davorin	University of Zagreb Academy of Music

Kikou, Evangelia	Aristotle University - Thessaloniki
Kim, Minpyo	Korea Baptist Theological University, South Korea
Kim, Shinjung	Hoseo University, South Korea
Lang, David	Yale University
Lubet, Alex	University of Minnesota
Lunsqui, Alexandre	Universidade Estadual Paulista
MacCombie, Bruce	Juilliard and Boston University
Maki, David	Northern Illinois University
Marie, George	University of Utah
Matthews, William	St. Bates College
McCreary, Richard D.	Governors State University
McKinnon, John	Eastern Oregon University
McTee, Cindy	University of Northern Texas
Miller, Thomas	DePaul University
Monhardt, Jonathan	University of Wisconsin-Milwaukee
Monhardt, Maurice	Luther College
Monner, Derek	The University of Maryland
Naigus, James	University of Central Missouri
Neuman, Israel	Iowa Wesleyan College
Nielson, Lewis	Oberlin Conservatory, University of Georgia
Omelchenko, Stas	University of Tampa, Florida Southern College
Owen, Jerry	Coe College
Paccione, Paul	Western Illinois University
Palamara, Jason	Iowa State University, Indiana University Purdue University Indianapolis
Papageorgiou, Dimitri	Aristotle University - Thessaloniki
Paredes, Robert	University of Iowa
Pederson, Donald	University of Tennessee-Knoxville
Penkrot, Brian	Northern Illinois University
Perrine, Aaron	Cornell College
Perrotte, Jean-Paul	University of Nevada
Petrella, Nick	University of Missouri - Kansas City
Pieczynski, Stephanie	Northern Illinois University
Pierce, Leighton	California Institute of the Arts
Poulsen, Jamie	Simpson College
Purswell, Patrick	University of New Orleans, Loyola University
Reiprich, Bruce	Northern Arizona University
Riley, Dennis	California State University, Columbia University
Ritz, John	University of Louisville
Rivadeneira, Pedro	Chattahoochee Technical College
Rogers, Rodney	Arizona State University
Ronsheim, John R.	Antioch College
Roseman, Dennis	University of Iowa



Ross, John	Pittsburg State University
Rowe, Robert	New York University
Salibian, Ohannes	University of Southern California
Schick, Steven	University of California, San Diego
Schietroma, Robert C.	University of North Texas
Scott, Cleve	Ball State University
Sharp, Barry	Cornell University, New York
Sheppard, C. James	Miami University of Ohio
Shifflet, John	San Jose State University
Siegfried, Kevin	Boston Conservatory and Capitol Hill Chorale
Stone, Michael	Northwestern Oklahoma State University
Syverud, Stephen	Northwestern University
Taube, Heinrich	University of Illinois
Tekippe, Joseph	New York, New York
Thierauf, Andrew	Kutztown University
Urness, Mark	Lawrence University
Veeneman, Curt	University of Alberta, Canada
Wallace, Kristen	Bainbridge, Washington
Warner, Scott	University of North Carolina, Chapel Hill
Welstead, Jon	University of Wisconsin-Milwaukee
White, John David	Talladega College
Wilson, Jonathan	St. Ambrose University
Ziolek, Eric	Cleveland State University
Zonn, Paul Martin	University of Illinois, Urbana-Champaign
Zubow, Zach	Queens University-Charlotte

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