

# The First Brazilian Symposium on Computer Music presents Brazilian computer music potentials - Caxambu, MG, 1994

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**Abstract.** *The main objective of this talk is to report on the First Brazilian Symposium on Computer Music, which occurred in August 1994, at the city of Caxambu, Minas Gerais, promoted by the UFMG. The meeting occurred one year after the creation of NUCOM, a group of young academics dedicated to this emerging research field in Brazil gathered as a discussion list. This quite exciting and fancy event at Hotel Gloria in Caxambu was able to imposingly launch the group to the national, as well as to the international academic community. First, due to the excellency of the event's output and its daring program, that included 34 selected papers by researchers from various institutions from Argentina, Brazil, Canada, Denmark, France, Hong Kong, Mexico, UK, and USA, five lectures and two panels of discussion offered by researchers from the most advanced computer music research centers all over the world. The program also included eight concerts, two of them featuring traditional music, such as Bach, Mozart, and Brazilian music. Six computer music concerts presented 48 selected compositions submitted to the symposium. Second, as the symposium happened as apart of the 14th Congress of Brazilian Computer Science Society (SBC), the excellency of its output was able to attract the interest of SBC's board of directors. They invited NUCOM to integrate the society as a Special Committee, which are sub-groups of SBC dedicated to specific computer science topics. At the end of the description, this report aims at raising questions, arguments, and debates about today's format of NUCOM meetings, considering more seriously the interdisciplinary character of the methodologic approaches adopted by the field. Interdisciplinarity should be pursued by striving to contaminate a growing number of different topics of musical sciences, as well as of other research fields.*

## 1 The history

In 1990 Wilson de Pádua Paula Filho, a professor at the Computer Science Department of the Federal University of Minas Gerais (UFMG), created the Laboratory for Analysis and Synthesis of Image and Sound (OASIS). In 1991, I was appointed lecturer at the Music School of UFMG and joined OASIS in the following year. Chairing the music section of the Twentieth Fourth Winter Festival of UFMG in 1992, I invited Arcela to conduct a computer music workshop, Music and Artificial Intelligence, at Wilson's laboratory OASIS. He accepted the invitation, provided the whole team of his Lab, Márcio Brandão, Anselmo Guerra de Almeida, and Geber Ramalho could come along.

In July 1993, Geber Ramalho set up a computer music discussion list on the Esquina das Listas server of

the State University of Campinas, launching the Brazilian computer music group, the NUCOM. The list included Arcela's team, Eduardo Miranda, in a doctoral residency at Edinburgh University, Wilson de Pádua, and me, among others. One of the topics discussed on the list was the need for organizing a computer music meeting in Brazil in order to map what would be going on in this field within the Brazilian academic community.

In August 1993, I participated for the first time on the congress of ANPPOM, the National Association for Research and Graduate Studies on Music, held at the Federal University of Rio de Janeiro, where I reported the ongoings towards the emergence of computer music as an institutionalized academic research field. During the meeting, I also had the opportunity to get to know the musicians and researchers involved in computer music by conducting studies and producing artwork. Convinced about the urgency to organize a Brazilian computer music meeting, I began to consider the possibility of a short event at the UFMG in the second semester of next year (1994). The event would happen at the School of Music of the UFMG. Although very well located in the middle of the city of Belo Horizonte, the School of Music could not offer adequate equipment for the meeting. Wilson pledged to make sure his department provides all the necessary equipment for the event. The first step would be to submit a funding project to research agencies, CNPq, the National Research Council, and FAPEMIG, the Minas Gerais State Research Foundation, for which I counted on Wilson's vast experience on this kind of fundraising.

Coincidentally, Wilson's department was organizing the 14th Congress of the Brazilian Computer Science Association – SBC, to take place at the balneary city of Caxambu, Minas Gerais, around the same date we were planning our meeting. It was Wilson who had the brilliant idea to consider realizing our meeting as a sub-event of the SBC Congress. His colleague Nívio Ziviani, the congress' general chair, was moved by the idea of having a section dedicated to music, which, according to him, would bring a "certain charm" to the congress. Nívio introduced me to the organizing committee, to which I presented the project, after shortly describing the history and the state of the art of computer music, as well as the emerging isolated efforts in Brazil. The committee welcomed the proposal unanimously. Some of them were very attracted by the idea of having art production side by side to science. The benefit to our meeting was evident. Other than the immediate visibility the congress would offer to NUCOM's initial efforts,

the congress organization made available to us all the necessary infrastructure, equipment and logistic for housing, transport, registration and above all, and the possibility of launching the first Brazilian Computer Music Symposium at the super fancy Caxambu Hotel Gloria within the advantageous contract facilitated by the over 1200 participants of SBC congress. At the end of the meeting, Nivio, as a great connoisseur of classical music, jokingly set a condition for the congress to shelter us: the realization of a classical music concert for the opening ceremony. I took it seriously and committed to making it happen, as long as the congress organization would provide house and transport for a group of musicians of the UFMG School of Music. The joking deal yielded not only a Congress opening concert where we played Mozart, Bach, and Brazilian folk music but also made it possible for our symposium to have a resident musical ensemble. Formed by high-level professional musicians, the group performed computer-mediated compositions, specially composed for the symposium, as described below. About that time, I received positive responses from the funding agencies for the projects I submitted. Upon such unexpected massive support from SBC and research agencies, we could afford to extend the event to a three-day full symposium and finance at least one international key-note speaker. The acceptance at the NUCOM list was overwhelming.

In June 1993, I organized the visit of Robert Willey, an American composer and computer music researcher of the Centre for Research in Computing and the Arts (CRCA), at the University of California San Diego (UCSD). Bob Willey stayed for a short residency at UFMG campus, lecturing at Wilson's lab and the School of Music. He also collaborated with the Grupo de Música Contemporânea da UFMG, an instrumental ensemble of faculty members dedicated to exploring new forms of expression involving improvising, acting, dancing, and computer-aided live performance, coordinated by me since its creation in 1992. With Bob Willey, I established contact with Chris Chafe from the Centre for Computer Research in Music and Acoustics (CCRMA) at Stanford University. I invited him for the key-note talk of the Symposium. He not only accepted the invitation immediately but also proposed to take along John Chowning plus three other researchers from CCRMA. Later in 1993, I was invited for a one-month-long residency sponsored by the Rockefeller Foundation, at the Centre for Research in Computing and the Arts (CRCA). During this residency, Chris Chafe organized a meeting with several researchers from both CCRMA and CRCA. The Argentinian electroacoustic composer, Francisco Kroepfl, director of the Laboratorio de Investigación y Producción Musical (LIPM) at Buenos Aires, also participated in this meeting. The Foundation had sponsored the development of computer music massively at both research centers, other than offered financial support for international interchange promoted by them, including Kroepfl's lab, benefited with researchers' mobility, as well as equipment acquisition. Further financial support for international interchange with Latin America was also discussed in this meeting. Chris Chafe pro-

posed to extend the Foundation's support to foster the field in Brazil, an attempt already made the year before with the Music Department of the Universidade de São Paulo (USP), through Prof. Marcos Branda Lacerda. Among other planned proposals, it was decided that the Foundation would fully finance the participation of CCRMA and CRCA members at our symposium, other than sponsoring short residencies for Brazilian faculty members dedicated to computer music, at CCRMA and CRCA. Among them, Sergio Freire and Gilberto Carvalho from the School of Music of UFMG and Aluizio Arcela from the Computer Science Department of Universidade de Brasília (UnB) attended the program.

Rockefeller Foundation support guaranteed the impressive participation of some of the world's most prominent computer music researchers: David Jaffe, Fernando Lopez-Lezcano, Dexter Morril and Xavier Serra from CCRMA, Robert Willey from CRCA and Francisco Kroepfl from LIPM. Chris Chafe was not able to attend the symposium but came to the second edition in the following year. With the funds raised at Brazilian research agencies, we were able to invite Stephen Travis Pope, from the Centre for New Music and Audio Technology (CNMAT) at the University of California Berkeley.

## 2 The Symposium

Over one hundred people enrolled for the First Brazilian Symposium on Computer Music, happened between 3 and 5 August 1994, in conjunction with the Fourteenth Conference of the Brazilian Computer Society. Constituted the scientific committee Aluizio Arcela (Computer Science Department, University of Brasília - UnB), Eduardo Reck Miranda (Edinburgh University), Geber Ramalho (Universite Paris VI), Jamary de Oliveira (School of Music, Federal University of Bahia - UFBA) and Wilson de Padua Filho (Computer Science Department, UFMG). Joined me at the concert committee, Conrado Silva (Music Department, UnB), Francisco Kroepfl (LIPM, Buenos Aires), Robert Willey (CRCA, University of California San Diego).

On the eve of the I SBCM opening ceremony, Ivan Moura Campos, the Brazilian federal secretary for Information Technology, came to us enthusiastically commenting on our proceedings. He called us for a meeting with Ricardo Reis, the President of SBC, to convince us that our Symposium met all requirements to be granted the status of an SBC's Special Committee. These committees are sub-groups of SBC dedicated to specific computer science topics, such as computer architecture, database, computer graphics and image processing, educational informatics, artificial intelligence, robotics, among others. Aluizio Arcela confirmed with much joy that we should certainly accept the invitation. I then invited Ricardo Reis to be joining the SBCM opening ceremony, where he made public SBC's interest in hosting our group as a Special Committee. In the morning of August 5th, NUCOM's members met SBC's President to formalize the invitation. Present at this meeting were Aluizio Arcela, Rodolfo Cae-

sar, Régis Faria, Osman Gioia, Ricardo Jacobi, José Augusto Mannis, Jônatas Manzolli, Silvia Matthews, Eduardo Miranda, Axel Mulder, Jmary Oliveira, Wilson de Paula Filho, Conrado Silva, Francisco Kroepfl, Robert Willey, Bernadete Zagonel. We approved the creation of the Special Committee on Computer Music of the Brazilian Computer Society unanimously. In 1995, during the II SBCM, promoted by the Federal University of Rio Grande do Sul, in the city of Canela, the SBC board of directors approved the creation of the Computer Music Special Committee, for which I was appointed the coordinator.

Subsequent SBCMs maintained the participation of researchers from the most prominent computer music research center from all over the world. In 1995, the Rockefeller Foundation financed the participation of Chris Chafe (CCRMA) and Richard Moore (CRCA), as promised in 1994. The II SBCM was also able to invite Heinrich Taube (ZKM, Karlsruhe, Alemanha) and Marc Leman (Institute for Psychoacoustics and Electronic Music - IPeM, Belgium). Subsequent SBCMs brought Barry Vercoe (Media Lab, MIT), the Bell Laboratory computer music legend Max Mathews, the electroacoustic composer Denis Smalley (City University of London), Curtis Roads (CREATE, University of California Santa Barbara), Jean-Claude Risset (Université Marseille) and others.

## 2.1 Paper Presentations

Thirty-four selected papers were presented by researchers from various institutions from Argentina, Brazil, Canada, Denmark, France, Hong Kong, Mexico, UK, and the USA grouped into six subjects: (1) Systems and Languages for Sound Synthesis, Signal Processing, and Sound Transformation; (2) Music Notation Systems; (3) Systems and Languages for Composition; (3) Musical Analysis and Education; (4) Artificial Intelligence, Psychoacoustics, and Cognitive Models; (5) Performance, User Interface, and Instrument Design.

## 2.2 Lectures

The symposium's special guests presented five lectures:

- *The Well-Tempered Object: Musical Applications of Object-Oriented Software Technology*, presented by Stephen Travis Pope (CNMAT – University of California Berkeley).  
Chosen to be a key-note talk to the XIV Congress of Brazilian Computer Science Society, Pope spoke to over 1200 participants. He showed how computer music makes use of computer science, favoring the creation of new technologies. As a practical example, Pope established a link between object-oriented software technology and the essential features in computer music technology.
- *Os Caminhos da Pesquisa em Computação & Música no Brasil*, presented by Aluizio Arcela (Universidade de Brasília).  
Arcela described his research efforts from the 1970s to the present, presenting the development of his "Time Trees" method for composition, an approach that at least

partially owes its originality to Arcela's isolation from international research centers.

- *Computer Music at LIPM - Foregoing Music Productions in Argentina*, presented by Francisco Kröpf1, Miguel Calzón, and Carlos Cerana (LIPM, Buenos Aires).  
They described the development of a pioneering South American computer music laboratory, presenting equipment developed at LIPM, which has consistently proven ingenious, despite the recent use of relatively high-tech devices such as NeXT computers.
- *Composing for Interactive Instruments-Conductor, Soloist, and Improvisation Paradigms*  
David Jaffe (CCRMA – Stanford University).  
David presented three possible ways to interpret and perform with interactive instruments, using the MIDI Baton developed at the CCRMA. The third, in particular caught special attention for its ability to seek and find the balance between interpretative and creative gestures, a fertile area for further development of live-performance instruments.
- *Current Directions in Digital Synthesis: Physical Modeling and Spectral Modeling*  
Xavier Serra (CCRMA – Stanford University).  
Despite the technical complexity of some issues, Serra's exposition was clear. Using sound examples, he demonstrated the musical possibilities of using physical and spectral modeling as compositional tools.

## 2.3 Panel Discussions

- *Perspectives for Educational Programs in Computer Music in Brazil*  
Aluizio Arcela (UnB), Fernando Lezcano and Xavier Serra (CCRMA), Francisco Kroepfl (LIPM), Jmary Oliveira (UFBA), Mauricio Loureiro (UFMG), Robert Willey (CRCA)  
Different proposals for interdisciplinary educational programs at the graduate level on Computer Music were described, with a discussion on the adoption of such programs in the Brazilian context. Undergraduate computer music curricula was also discussed. An international instructional program via the INTERNET, currently developed by CCRMA and CRCA, was also presented. An outline of the current situation of institutional financial support for educational and research projects within the Music area opened a discussion on funding perspectives for computer music projects.
- *Main Research Efforts in Computer Music*  
Conrado Silva (UnB), David Jaffe and Dexter Morrill (CCRMA), Eduardo Miranda (University of Edinburgh), Rodolfo Coelho de Souza (São Paulo), Stephen Travis Pope (CNMAT)  
Current lines of Computer Music research at the world's leading research centers were discussed, as well as possible directions in the next future. Some research projects carried out by Brazilians were described, pointing out their historical importance for the development of Computer Music in the country. Joint projects and

perspectives for financial support by international foundations, the current direction, and criteria for project evaluation were also discussed.

## 2.4 Concerts

The symposium put together eight concerts:

- The opening ceremony of the XIV SBC Congress began with a concert directed to all participants. The program included: the Suite No. 2 in B minor by J. S. Bach, with Mauricio Freire playing the flute and Oiliam Lana playing the harpsichord and conducting; the Quintet for Clarinet and String Quartet in A Major by Mozart, with Mauricio Loureiro at the clarinet.
- A second concert featured Brazilian music: Villa-Lobos, Mignoni, Valsas, Choros, Sambahas and Baiões.
- Six computer music concerts presented the 48 selected compositions from the submissions in two sessions each day. On every afternoon tape only music was played. Another concert, dedicated to live performance, was presented every evening, with the participation of the contemporary music ensemble of UFMG, the Grupo de Música Contemporânea (GMC): Benjamin Coelho (bassoon), Dilson Florencio (saxophone), Edson Queiroz (violin), Mauricio Freire (flute), Mauricio Loureiro (clarinet), Oilian Lana (conductor/ keyboard), and Paulo Lacerda (trombone), all UFMG faculty members.

Two reports published by the Computer Music Journal, on its 1995 summer issue, highlighted some compositions presented at the concerts (Manzollí, J. Cerana, C. 1995. "Two reports on the First Brazilian Symposium on Computer Music." Computer Music Journal. Cambridge, Massachusetts: MIT Press, 19(2):102-105.).

One of the authors, Jônatas Manzollí, from the Universidade de Campinas (UNICAMP), listed compositions that were "memorable" to him. Tape only pieces were: Barry Truax's *Sequence of Later Heaven*, Servio Marin's *Lost Villages*, Stephen Pope's *Kombination XI*, Conrado Silva's *Espaço dos Mistérios*, Flo Menezes's *La (Dé) marche sur les grains*, Fernando Lopez Lezcano's *Tree Dreams*, Francisco Kröpff's *Mutación II*, John Chowing's *Turenas*, Jose Augusto Mannis's *Duo organum II*, Rodolfo Caesar's *Volta Redonda*, Eduardo Miranda's *Italo Calvino takes Forges Borges to a Taxi Journey in Berlin* and Aluizio Arcela's *Time Leaves*. Mixed with instrumental interaction were: Dexter Morrill's *Salzburg Variations* for trumpet and interactive system, Mauricio Loureiro's *On Behalf* for E flat clarinet and tape, and Gilberto de Carvalho's *Maelstrom* for clarinet and tape. Specially composed for the Grupo de Música Contemporânea were Sergio Freire's *Sexteto*, David Jaffe's *Impossible Animals*, and Robert Willey's *Dream Team*. "I would jump at the chance to hear any of these works again," said Manzollí.

The second author, Carlos Cerana, from LIPM, Buenos Aires, specially highlighted Dexter Morrill's *Salzburg Variations* and the collective composition by the GMC ensemble, *Os Sonhos de Little Boy*, in which "... performers played their instruments while moving about the

stage in a precise interaction among instrumental gestures, displacements, and tape sounds." A similar approach was developed in Robert Willey's *Dream Team*, "... where musicians interacted with real-time computer processing of the sound." Carlos Cerana concludes his report: "Good memories of the first symposium remain with me; the high quality of the presentations, the happiness of meeting colleagues from all over the world, the gigantic work of Mauricio Loureiro (who was capable not only of coordinating an international event but also of playing the clarinet in several concerts), and the marvelous kindness of the Brazilian people. We anxiously await a similar experience at the second symposium, being scheduled for 1995. Saudades do Brasil!"

## 3 Computer Music as an academic research field in Brazil

Since its creation, NUCOM has always understood that there is no way to generate relevant products in computer music without the participation of highly qualified musicians and scientists. Despite having solidified itself as a subgroup of the Brazilian Computer Science Society SBC, a community consisting only of computer academics, NUCOM, at its first symposium in 1994 in Caxambu, sought to bring together researchers and artists from both music and computer science, differing from the other Special Committees of SBC for its intrinsically interdisciplinary character. The vast majority of NUCOM members were researchers and academic artists from most fields of music, such as composition, performance, musicology, and music education. However, the fact that NUCOM was institutionalized within a computer science organization seemed to have justified a tendency to define NUCOM's profile according to computer science standards.

The pertinence of an eventual institutional circumscription of the field of computer music into the music sciences became a relevant issue. Should we propose to create a new subarea of music that would stand side by side with composition, performance, musicology, and music education? Certainly not, since computer music has already been able to interweave all major fields of music. Alternatively, it should be stimulated that computer music production in Brazil would participate in the meetings of the music research community, such as the annual congresses of ANPPOM, the National Association for Research and Graduate Studies on Music. Special topic would be created to welcome works dedicated to the field. This should facilitate that computer music interdisciplinary studies continue to infiltrate into different topics of musical sciences. An important panel discussion on computer music, happened at the 1997 ANPPOM annual congress, held at the Federal University of Goiás, which gathered academic computer music researchers from music departments of universities all over the country.

Back as the general chair of the 5th edition of SBCM, held at the UFMG, in Belo Horizonte, in August 1998, I proposed a round table among NUCOM members to discuss the profile the group would or should pur-

sue in the face of issues of academic evaluation, and the perspectives of funding for research and graduate programs in computer music. Titled, *NUCOM and Computer Music Research in Brazil: history and perspectives*, the round table was held within the official program of the V SBCM, on August 3rd, 1998. It was chaired by Bernadete Zagonel (Department of Music, UFPR ). Participants were: Aluizio Arcela (Department of Computer Sciences, UnB); Rodolfo Caesar (School of Music, UFRJ); Maurício Loureiro (School of Music, UFMG); Geber Ramalho (Department of Computer Sciences, UFPE); Conrado Silva (Department of Music, UnB). Below is the report presented by the chair, Bernadete Zagonel.

### **3.1 Round table: NUCOM and Computer Music Research in Brazil: history and perspectives**

The table began with Conrado Silva's exhibition listing the wide range of topics that have been addressed internationally in meetings occurred in this area, namely: aesthetics, artificial intelligence, equipment (audio), signal processing, composition, history of electroacoustic music, recognition audio and music, MIDI and applications, analysis, music and the brain, music education, music grammar, music languages, notation, interfaces with interpretation, psychoacoustics, scales and tuning, sound for multimedia, sound synthesis methods.

Then Mauricio Loureiro did a retrospective of the V Brazilian Symposium on Computer Music and NUCOM. He clarified the impact of the creation of the Special Commission of Computer Music within the SBC, which also included music researchers and artists from the academic community. The committee facilitated the continuation of the computer music symposia and contributed to the establishment of the area as such.

Completing these ideas, Rodolfo Caesar warned the community not to lose sight of the fact that the target element of work is music and not computing, and there is a need for more work focused on aesthetics. He brought to the forefront the problem of product evaluations by research agencies that mostly relate to the number of articles published in English on indexed journals. He then questioned an eventual academic evaluation in the area of music that might eventually exclude the production of composition or interpretation.

It was followed by Aluizio Arcela, raising the same problems about evaluation, and questioning about the types of production effectively recognized by academic institutions. Arcela sparked some controversy by asking if Computing and Music were not just serving as a garnish ("the cherry on top," or "the icing on the cake") for the SBC Congress. He noted that it would be necessary for NUCOM production to be relevant by standards of the academic computer science community.

Finally spoke Geber Ramalho, the legal representative of NUCOM at SBC at the time. He emphasized the question of the relationship between computing and music, and the interdisciplinarity that it suggests in its essence. He pointed to the seriousness and relevance of the scientific

production presented at the symposia until then, highlighting the incidence of works on electroacoustic music. He identified electroacoustic music as aesthetic, while computer music would be within the technology area, covering segments, such as music education and musical analysis, by providing work tools: technology at the service of art. He raised concerns about funding, noting that all the symposia have so far been funded by the computer science area. In order to justify this, we should increase the production of computer work, a statement he has made from musicians (which were the majority), annoyance reactions, especially his argument that "all the symposia have so far been funded by the computer science area," which is far from being correct.

I hope this text may illustrate the successful trajectory traced by the computer music community emerged in this country and its contribution to the production and exposure of Brazilian art and science.

## **4 Acknowledgements**

The organization of the first edition of the Brazilian Symposium of Computer Music, held in Caxambu, in 1994 and its fifth edition held at UFMG, in Belo Horizonte in 1998, both chaired by me, as well as the tenth edition, held at the Catholic University of Minas Gerais (PUC-MG), in Belo Horizonte, in 2005, chaired by Hugo Bastos de Paula (PUC-MG) and me, were made possible with the financial support partially provided by three research and graduate funding agencies, the National Council for Scientific and Technological Development – CNPq, the Coordination for the Improvement of Higher Education Personnel – CAPES and the Foundation for Research of the State of Minas Gerais - FAPEMIG.