Recent and emerging work in music technology in Southeast Asia

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Music technology work in Southeast Asia faces challenges unique to this region. Economic, religious and cultural factors hinder its progress. Despite these factors, pockets of development have occurred, most notably in Singapore and Malaysia. Academic programmes have been introduced; strides have been made in research and development; and commercially viable music technology products have been invented and marketed. Various centres in the region are active in music technology-related work: the Music Department at Universiti Putra Malaysia, the Electronic Music Lab at the National University of Singapore, and Creative Resource at the International Business Park in Singapore. The First International Music Technology Conference in Southeast Asia held in Kuala Lumpur recently received lukewarm response in terms of turnout and contributions. People from this region have produced a relatively small number of music technology-related publications. Music technology work in Southeast Asia can thus be said to be in its infancy with small but significant steps being taken to expand; however, for the region to become a major contributor on the international level, the various hindrances identified will need to be addressed and overcome.

1. INTRODUCTION

To understand the spread, or lack thereof, of music technology in Southeast Asia, one must first fully grasp the cultural and economic background of people in this region. The international leaders in music technology are unquestionably the developed nations, specifically the USA and Japan. The main consumers of these technologies also comprise the developed nations, including North America, Europe and Japan. In comparison, music technology is relatively unknown in Southeast Asia, at least to the vast majority of its residents. The main reason for this is simple – the technology is simply too expensive for the average person, and therefore irrelevant. Other factors such as cultural and religious resistance to music also exist, and these are discussed in later paragraphs; however, the cost factor is perceived to be the most significant for reasons that will be elaborated upon.

This is not to say there have been absolutely no inroads in music technology in this region. Creative Labs, the inventors of the Sound Blaster series of soundcards and its related SoundFont technology, is a Singaporean company. Universiti Putra Malaysia (UPM) has introduced the one and only music technology degree programme in this region, and has also hosted the First International Conference on Music Technology in Southeast Asia. Several other institutions have introduced elements of music technology at various levels and in varying quantities into programmes for multimedia or audio engineering. A few research centres do exist, mainly focusing on audio research for music-related products. All these and more will be discussed in greater detail.

This article serves to introduce the state of music technology in Southeast Asia, including current developments in the field in this region. Southeast Asia is defined as comprising the nations commonly grouped together under the banner of ASEAN or the Association for Southeast Asian Nations. This article will first look at some of the hindrances and pseudo-hindrances to the spread of music technology in the region. This will be followed by a description of significant progress made in spite of these hindrances. We will finish off with other broad developments related to music technology in this region and a look at what the future may hold.

2. BACKGROUND INFORMATION

Southeast Asia consists of many different nations, with different cultural, religious and economic backgrounds. Islam dominates Malaysia, Indonesia and Brunei, while Buddhism dominates Thailand, Laos, Cambodia, Vietnam and Myanmar. The Philippines is religiously Catholic. Singapore is the only fully developed country in this region, and its residents are largely secular in outlook. This religious context is necessary as the Southeast Asian world view is largely dominated by religion, influencing every aspect of life including ventures into music and music technology. Religious minorities also exist, but these are not considered here as the majority religions largely overshadow the minority. The specific influence of religious belief on emerging work in music technology is discussed further shortly.

There is also considerable misunderstanding about what is 'music technology' in this part of the world. Those who use the computer for simple sequencing, who utilise entry-level music notation software, who use various types of audio editing software – all these are claimed to be working in 'music technology'. Some even claim to be experts in this field.

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Table. Cost of identical music technology example products compared with average monthly income (all prices quoted in local currencies).

Country		Malaysia		Singapore		USA	
Currency		RM		Singapore $		US $	
Average income[1] of a new graduate (first degree holder)		1,800		2,000		2,850	
Product category	Specific product chosen	Cost	% of income	Cost	% of income	Cost	% of income
Entry-level desktop PC	Pentium III, 500 MHz with 64 MB RAM, 10 GB HDD, FDD, CDD, entry-level soundcard	2,000	111%	2,000	100%	830	29%
Pro audio card	Yamaha DSP Factory	3,500	194%	1,045	52%	600	21%
PC audio card	Creative Labs Soundblaster Live! Platinum	800	44%	315	16%	200	7%
Sequencing software	Cakewalk Pro Audio 9	1,765	98%	805	40%	438	15%
Audio editing software	Cool Edit Pro	1,655	92%	755	38%	408	14%
Keyboard synthesizer	Korg Trinity	8,990	499%	3,795	190%	2,175	76%
Digital mixer	Yamaha O2R	24,000	1,333%	9,753	488%	5,600	196%
Book	Howard & Angus, *Acoustics and Psychoacoustics*. Oxford: Focal Press	139	7.7%	67	3.4%	43	1.5%

[1]The average income of new graduates in Malaysia and Singapore was obtained through reference to current advertisements for jobs in these countries. The figure for the USA was obtained from the average salary survey by JobsOnline.com

The significant hindrances to the progress of music technology in this region stem from several different factors, each which is discussed separately below.

3. HINDRANCES

Hindrances are defined as real deep-rooted factors obstructing the development, use and understanding of music technology in Southeast Asia. Pseudo-hindrances are defined as factors that appear to obstruct progress, but which are actually easily addressable and thus surmountable in a definite period of time. Factors are discussed in order of perceived importance.

3.1. Cost

Perhaps the single most significant factor hindering advancement into deeper levels of music technology utilisation and development in this region is cost. With standard tools of the trade costing enough to discourage any but the committed and knowledgeable, it is not surprising that home studios are certainly the exception rather than the norm. The table provides an example comparison of relative costs[1] of products useful to an average individual user. The sample products chosen to represent each item category were based on the product's availability in this region; as will be explained in later paragraphs, many items easily available in the West are not easily available in Southeast Asia.

The table clearly indicates that music technology products are far more expensive for Malaysians than for Singaporeans, who in turn incur greater relative cost than the American buyer for the same product. It is therefore not surprising that few embark on music technology-related activities. In the USA, for example, such products may even be purchased by parents for their children, who having had the experience of 'playing' with such 'toys' may in later life decide to take up a career in music technology, being well equipped to delve into its deeper dimensions. The same is clearly not true of someone in Malaysia, who enters the field with relatively little experience in its tools, and hardly any knowledge of its inner workings. Other ASEAN countries may provide even less opportunities than this due to generally lower income levels and even higher costs (Sirithaveeporn 2000, The World Bank 2000). Unless income levels in this region increase substantially, or relative costs of music technology products drop significantly, cost may be viewed as a real hindrance to emerging work in music technology in this region.

[1]The costs of products in Malaysia and Singapore were obtained from various dealers in these countries. The costs of products in the USA were obtained from various online retailers.

3.2. Religious beliefs

Southeast Asian society is unlike Western society in that its entire world view is religious. Daily life and its decisions are all strongly influenced by religious beliefs. This has profound impact on career choices and even leisure activities. In Malaysia, Indonesia and Brunei, where Islam is the dominant religion of the majority, music in general has faced considerable difficulty in gaining acceptance as a viable career option. Despite the fact that many modern Muslims claim that music is good, the majority of believers in this region hold the

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fundamentalist view that music is in fact forbidden (Abu Bilal Online, Veliankode Online) according to the Quran, Hadith and Sunnah. This fact is reflected in the disproportionately low numbers of Muslims seriously involved in music at any level. In Malaysia, for example, very few Muslim parents allow their children to pursue formal study of music. As a point of illustration, at Universiti Putra Malaysia the intake for the Bachelor of Music degree programme between 1996 and 2000 included only 9.9 per cent Muslim students, although the general population of Malaysia is approximately 65 per cent Muslim – and this was in spite of the government quota policy that specifies at least 50 per cent of students admitted to local degree programmes must belong to the Malay or *Bumiputera* Muslim community. Concerted efforts to recruit such students were not fruitful, and this can only be attributed to the deep-rooted religious beliefs as explained above.

Buddhism, on the other hand, uses analogies from music to teach certain spiritual truths (BuddhaNet Production Online), thus associating it with positive values, but cautions against excessive indulgence, as it does for any 'pleasurable' activity. In Buddhist-dominated countries, however, religion is not perceived to be a major hindrance to musical work. Christianity, of course, places great importance on the positive role of music, so the fact that Filipinos are renowned musicians throughout the region should not come as a surprise. In countries where religion is not a significant hindrance to emerging work in music technology, other factors can be seen to exert a greater influence on current developments.

3.3. Prior investment

Prior investment is closely related to cost factors. In Malaysia and Singapore, the main consumers of music technology products are the recording studios. Many of these were set up and equipped in the days before desktop music systems became sufficiently powerful to be usable. Self-trained individuals or those who were trained on-the-job run many of these studios. Few, if any, hold degrees in music technology or sound engineering. Many have invested huge amounts of money in their businesses. Consequently, there is a stiff resistance to change. Work in computer-based systems is commonly denounced as being mere 'child's play' and not worthy of attention or investment by those in the industry. Closer analysis of the situation reveals a deep-seated fear among those currently working in this area – a fear that the younger, better trained, more skilled music technology or sound engineering graduates may be able to produce better results with newer and cheaper equipment. To understand this hindrance to emerging work in music technology in Southeast Asia, the reader needs to first understand that the Asian workplace is seldom a meritocracy – it is often 'who you know' that counts more than 'what you know'. It is very difficult for a newcomer to break into the existing marketplace without community support. This hindrance may, however, be overcome if a newcomer can obtain sufficient financial backing to start out on his or her own.

3.4. Availability of tools

This is another factor related to cost. All kinds of music technology-related hardware and software are difficult to obtain, besides being expensive. Showrooms seldom display such products, and users are often required to purchase items merely by looking at a catalogue. In many cases, even catalogues are unavailable, and only Internet searches reveal what tools are available in the rest of the world. Salespersons who are well versed in music technology products are extremely rare in Southeast Asia. The best resource remains the Internet, though online shopping usually results in orders being placed to US-based companies, with huge shipping costs incurred. A recent research trip by the present author to Japan revealed that the major corporations such as Korg are reluctant to open branches in this region due to our lack of purchasing power. Even companies such as Yamaha and Roland that are represented here do not make available many of their top-line products or expertise to potential customers in this region, for the same reason. This lack of accessibility to various music technology products is a real hindrance to music technology development in this region, and one that is not easily overcome under present economic considerations.

3.5. The Asian mentality

The Asian mentality is distinguished from religious beliefs in that not all its consequences stem directly from religious teaching, but rather from cultural and community expectations. Specifically, even those communities that purportedly support music-making activities balk at the prospect of allowing any of their children to make a career of it – with the apparent sole exception of the Filipinos who make up the bulk of professional freelance musicians working in the region. Many Southeast Asian parents – those not constrained by religious beliefs – are of the opinion that music is a reasonable hobby, but nothing more. Some may attend concert performances; many more may spend considerable amounts of money on their music CD collections; and many even send their children for formal music lessons, but most discontinue these lessons when schoolwork beckons. Southeast Asian parents still generally view the traditional professions of doctor, engineer, accountant and lawyer as being the most desirable. This Asian mentality may, however, be viewed as a pseudo-hindrance because when such parents become aware of the relationship between music and technology, especially computer

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technology, many objections dissipate as careers in computer-related fields are currently viewed very favourably.[2] The general lack of understanding about 'what is music technology' prevalent in this region may therefore be addressed by positive publicity and a wider dissemination of information.

4. RECENT AND EMERGING WORK

In spite of the many hindrances identified and discussed in the preceding paragraphs, some advances have nonetheless been made. These are described in the following paragraphs.

4.1. Universiti Putra Malaysia Music Department

The Music Department at Universiti Putra Malaysia (spelt in the Malay language) was opened in 1996, offering the first and still the only music technology degree-level programme in Southeast Asia. Its Bachelor of Music honours degree programme's music technology major trains students in three main areas of music technology, besides providing basic music degree subjects such as harmony, history and instrumental instruction: computer music, audio engineering and contemporary composition. Students focus on only one of these areas for their final year project, which may be in the form of a piece of work such as an electroacoustic composition, a pop music album or a computer application, or in the form of a research thesis. A breakdown of subjects included within the music technology B.Mus. degree programme is given below:

- *University courses*. Malaysian Nationhood, Islamic Civilisation, Asian Civilisation, Introduction to Multimedia, Communication Skills, English Skills.
- *Core courses*. Musical Language, Music Awareness, Orchestration, Aural Skills, First Study Instrumental Skills, Second Study Instrumental Skills, Choir, Orchestra.
- *Major courses*. Basic Composition, Introduction to Music Technology, MIDI and Digital Audio Theory, Sequencing Software, Desktop Music Publishing, Mathematics and Physics for Music Technologists, The Physics of Music and Sound, Audio Systems, Studio Recording Techniques, Multimedia Composition, Music Technology Project. Choice of: Film Composition, Commercial Jingle Writing, Computer Composition, Pop Composition, Art Composition, Electroacoustic Composition.
- *Minor/elective courses*. Minimum of two from this list (can be more): Further Acoustics, Electronic Music, Musical Instrument Maintenance, Introduction to Multimedia Programming. Minimum of one from this list (can be more): Film Composition, Commercial Jingle Writing, Computer Composition, Pop Composition, Art Composition, Electroacoustic Composition. Remaining credits from this list: Psychology and Sociology of Music, Music and Child Development, Introduction to Music Therapy, Music Criticism, Jazz Music Appreciation, Choir II, Choir III, Orchestra II, Orchestra III, Computer-Aided Music Instruction, Philosophy & Psychology of Music Education in Schools, Music Industry, Introduction to Jazz Improvisation, Basic Conducting Technique, or any other free electives from any other department or faculty.

The department also offers Masters degrees by research (M.Sc.). Examples of graduate student research areas are listed below:

- Automatic Sound Source Recognition,
- Comparative Study of Binaural Sound and Recording against Conventional Stereo with respect to Sound Localisation, Fidelity and Convenience,
- Evaluation of Current Music Synthesis Software for Rendering of Various Synthesis Algorithms,
- Sampling Synthesis Technique Applied for the Digital Generation of Musical Tones of Malaysian Folk Instruments,
- Time-Varying Spectral Modelling of the Solo Violin Tone, and
- Composition with Video Clips: A Creative Project Applying Audio Samples and Malay Sound Fonts.

Further details on the department and its programmes, including examples of student work, are available from its website at http://www.music.upm.edu.my/

4.2. National University of Singapore Electronic Music Lab

The Electronic Music Lab (EML) is an extra-curricular facility based at the National University of Singapore's (NUS) Centre for the Arts, where members can create, record and experiment with Electronic Music. The EML was founded in the mid-1980s. The studio contains analogue and digital synthesizers, modules, samplers, analogue and digital mixers, analogue and digital recorders, and alternative MIDI controllers. Its website at http://www.eml.org.sg/ provides further details on its activities and includes some examples of student work. The following quote taken from the website provides an interesting indication on the perception of music technology by Singaporean society:

> If you want to pursue a career in Electronic Music, you should be warned that the audience (or market) in Singapore and South-East Asia is still pretty small. So don't quit your day job yet. (Quotation from http://www.eml.org.sg/faq.htm)

[2]It is perhaps inconceivable to the Western way of thinking, but many Asians enter into careers based on their parents' desire. Parental approval is thus supremely important for most Asian undergraduates.

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4.3. Creative Labs Singapore

Creative Technology Limited was founded in Singapore in 1981. Its worldwide corporate headquarters, known as 'Creative Resource', is located within the International Business Park on the island republic. Best noted for its award-winning Sound Blaster line of audio cards, Creative Labs has focused its research and development efforts on new ways to experience games, music and entertainment through the desktop personal computer. Over time, Creative has built upon the popularity and demand of its PC audio success to include many other applications and technologies for the desktop computer. Creative was listed on the US NASDAQ stock exchange in the summer of 1992, making Creative the first genuinely Singaporean company to be listed on the NASDAQ.

Creative has designed, developed and successfully marketed a number of music technology products. Its SoundFont technology and format, originally developed for its Sound Blaster AWE and Sound Blaster Live family of audio cards, has been incorporated in the industry standard MPEG-4 Structured Audio Sample Bank Format or Downloadable Sounds Level 2 (MIDI Manufacturers Association 1998). SoundFont technology has opened the door to affordable sampling synthesis for many in this region, and has spawned work in developing more SoundFonts, especially of regional folk instruments (Ang and Ang 1999, Ang and Huang 2000, Ang and Huang Online, Chew Online). Creative's EAX™ three-dimensional positional audio encompasses both hardware- and software-based technologies developed by the company. Its Nomad line of portable MP3 players and its BlasterKey MP3 MIDI controller keyboard are among other highly successful music technology products developed by the company.

The other significant contribution of Creative Labs to the advancement of music technology in this region is its outstanding websites, filled with educational tutorials and free software resources. Many of the fundamental concepts of music technology may be found clearly explained within the different websites for the different products utilising different technologies. This freely available well-organised information is a goldmine resource to those from this region who are new to music technology in general. All the different sites may be accessed from the parent site at http://www.creative.com/

4.4. First International Music Technology Conference in Southeast Asia

A total of five research papers, three review papers, four philosophical or discussion papers, seven electroacoustic compositions and four poster presentations were presented at this conference, organised by the UPM Music Department and held at the Mines Resort Hotel near Kuala Lumpur from 16 to 18 March 2000. Regional participants were limited to those from Malaysia and Singapore, although the Call for Papers and Invitations for Participation were sent throughout the region. International participants and contributors ranged from Japan, the USA, Switzerland, the United Kingdom and Argentina. Conference Proceedings are available online at http://www.music.upm.edu.my/MusTech.htm

While significant in that this conference was the first of its kind in this region and succeeded in its attempt to bring together those working in music technology, it also highlighted several of the challenges faced by this emerging field in the region. First and foremost was the lack of in-depth work in music technology by the peoples of this region – a look at the content of the papers submitted for presentation will verify this (Ang 2000). Not a single paper or composition from any ASEAN country other than Malaysia or Singapore was submitted for consideration, neither was there any participant from these other countries. This reflects a singular lack of interest in music technology in the region. Another challenge faced was the lack of sponsorship or even willingness to participate in the form of product exhibitions by local companies selling music technology-related products. As mentioned in an above paragraph, not many products are available locally anyway, but local companies were unwilling to expend any effort at all in promoting what little products they did have available. A third challenge faced was in attracting participants from regions outside ASEAN as the distance and travel costs involved hindered many who expressed interest from taking the final step of actually coming to Malaysia for the conference.

One very positive outcome resulted from the conference, however – those of us working in music technology in this region, especially here at UPM, built many useful and productive links with our counterparts in other parts of the world, not only through conference participants but also through interest generated through its publicity and contacts established as a result of this interest. Several concrete outcomes have resulted from this so far – Creative Labs of Singapore and the UPM Music Technology Lab are now working on various projects in collaboration, and the Japan Society for the Promotion of Science sponsored a visit by a Music Technology Researcher from UPM to Japan, to view work at its leading centres of music technology research, development and teaching.

5. OTHER DEVELOPMENTS

The following paragraphs touch on other music technology-related activity occurring in the Southeast Asian region. Information on such activities was not readily available, thus the introductions below are not exhaustive or all encompassing.

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5.1. Teaching institutions

The International College of Music (ICOM) is a private college in Kuala Lumpur offering a Music Technology diploma programme, as well as a diploma programme in Music Arranging that includes modules in music technology. Other institutions in Malaysia offering modules in music technology-related subjects include the privately owned Multimedia University and the government-owned Universiti Malaysia Sarawak, which both offer the modules as part of multimedia courses. The Singapore Polytechnic Music Technology Center (Ellis-Geiger 1999) comprises a computer music laboratory and a recording studio. The Center, which is a part of the School of Info-Communications Technology, focuses primarily on teaching and offers modules in music and digital audio as part of a diploma in multimedia technology. A few other companies in the region have set up training programmes for audio technicians.

5.2. Audio Engineering Society Country Sections

While not all aspects of audio engineering pertain to music technology, there are areas of overlap. AES Sections are by no means widespread in this region, with only Singapore, the Philippines and Malaysia opening Sections of their own. AES Singapore was set up in 1994, and has regularly organised seminars on various topics in audio since then. The interested reader should visit http://www.mediav.com.sg/aess/ for further details. AES Philippines was involved in PALA Philippines 2000, The Philippine International Trade Exhibition on Professional Audio and Lighting Systems, Audio-Visual Technology and Music Related Products. AES Malaysia held its first meeting in February 2001.

5.3. Related research centres

Various other research institutions, mainly in Singapore, such as the Center for Signal Processing at the Nanyang Technological University and the Kent Ridge Digital Labs have been conducting research in music technology-related areas. The main focus of these organisations is to produce commercially viable products, usually consumer and professional audio hardware and software products.

5.4. Miscellaneous developments

Pockets of interest in computer-aided music learning do exist in Malaysia, initiated by two government-sponsored workshops on computer-aided music instruction for school music teachers and teacher trainees held in 1996 (Ang 1996a, b). At UPM, students on the music education degree programme are taught to design their own web-based music learning resources, besides being introduced to the various computer-aided music learning software available. The Musical Malaysia website (Ang 1997), which provides a comprehensive introduction to the music of Malaysia, and whose design and development was documented in a previous issue of *Organised Sound* (Ang, Abu Talib, Ramani, Gan and Matusky 1998), was built with the aim of providing an online teaching aid for music teachers in Malaysia and has subsequently been successfully utilised in this capacity.

Those involved in commercial music and jingle writing are another obvious group of music technology users. The situation with respect to the recording studios has already been discussed in previous paragraphs. Electronic organs and consumer-level keyboards are easily available and relatively popular throughout the region. While all these developments may be said to involve music technology, no real recent or emerging work exists in these spheres – in the SEA region these users can be primarily considered consumers or end users, they do not dictate or even influence the direction of music technology development but instead follow trends and practices set by other regions in the world.

6. CONCLUSIONS

This article has presented an overview of recent and emerging work in music technology in Southeast Asia. In general, it may be concluded that the state of events at the present time is still somewhat behind the Western world, due to various reasons including high relative costs involved, religious and cultural inhibitions, lack of availability of music technology tools, and lack of knowledge and information about music technology in general. Computer-based original music-making activity in particular is limited to a very small number of centres; however, a great deal of interest exists among the general population in the region in playing back MP3 files only, as evidenced by online downloads and ubiquitous availability of pirated MP3 CDs throughout the region.

In closing, it may be concluded that although significant progress has been made in the region, especially within the last five or six years, for future work in music technology to blossom something has to be done to make its tools more affordable and accessible to people in this region.

APPENDIX: URL REFERENCES FOR WEBSITES OF ORGANISATIONS MENTIONED IN THE ARTICLE

1. Universiti Putra Malaysia (UPM) University Conservatoire: http://www.music.upm.edu.my/
2. National University of Singapore (NUS) Electronic Music Lab (EML): http://www.eml.org.sg/
3. Creative Labs: http://www.creative.com/

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4. International College of Music (ICOM): http://www.icom.edu.my/
5. Multimedia University (MMU) Faculty of Creative Multimedia: http://mmu.edu.my/~mmcampus/
6. Universiti Malaysia Sarawak (Unimas) Faculty of Applied and Creative Arts: http://www.unimas.my/FACA.htm
7. Singapore Polytechnic School of Info-Communications Technology: http://www.sp.edu.sg/schools/ict/index.htm
8. AES Singapore: http://www.mediav.com.sg/aess/
9. Center for Signal Processing, Nanyang Technological University: http://www.csp.ntu.edu.sg:8000/
10. Kent Ridge Digital Labs: http://www.krdl.org.sg/

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