
Editorial

A.L. Brooks*

Esbjerg Institute of Technology,
Aalborg University,
Esbjerg 6700, Denmark
E-mail: tonybrooks@aaue.dk
*Corresponding author

Ana Monção

Department of Linguistics,
Faculdade de Ciências Sociais e Humanas,
Universidade Nova de Lisboa,
Av. de Berna 26 C,
1069-061 Lisboa, Portugal
E-mail: anamoncao47@sapo.pt

Biographical notes: A.L. Brooks (aka Tony) is a Lecturer in Medialogy and Director of the SensoramaLab at the Esbjerg Institute of Technology, Aalborg University in Denmark. His research focus is on gesture/auditory control of interactive multimedia through non-invasive sensor-based virtual interactive spaces (VIS). The research centres upon human performance in the arts and (re)habilitation with a focus on inclusion and well-being for all abilities, ages and standing. He is the Founder of the internationally recognised ArtAbilitation movement that is realised via international conferences and workshops.

Ana Monção is a Professor in the Department of Linguistics at the Universidade Nova de Lisboa (UNL). She is trained as a psychotherapist and has a Phd in Psycholinguistics. She was the Founder of the investigation unit *Psycholinguistics and Clinical Linguistics* and was Director from 2004 to 2009 under the UNL's Centre of Linguistics (CLUNL). Currently, she is an Active Researcher at the LAMCI – CESEM/UNL (Laboratório de Música e Comunicação na Infância/Laboratory of Music and Communication in Infancy, Centro de Estudos de Sociologia e Estética Musical).

1 Introduction

Welcome to this special issue of the *Int. J. Art and Technology*. This issue celebrates the second Art, Brain and Languages congress (CONGRESSO INTERNACIONAL SOBRE ARTE, CÉREBRO E LINGUAGENS) held at the magnificent Casa da Música, in Porto,

Portugal, in September 2008. The event was held in association with the seventh International Conference on Disability, Virtual Reality and Associated Technologies and the 3rd *ArtAbilitation* (Forum Maia and Casa da Música).

The Art, Brain and Languages congress was founded by the guest editor of this special issue, Ana Monção (Depto. de Linguística da Faculdade de Ciências Sociais e Humanas da Universidade Nova de Lisboa, Psycholinguistics and Clinical Linguistics Investigation Unit (2004–2009), Centro de Linguística da Universidade Nova de Lisboa, CLUNL, Portugal). The inaugural event was held in Lisbon at Calouste Gulbenkian Foundation in November 2007.

The congress combines various areas of knowledge such as neuropsychology, musical sciences, theatrical arts, arts therapy and linguistics, among others. Its aims include discussions on holistic and interdisciplinary approaches to education, disability and rehabilitation. It intends to question how the inter-related practice and processing of different types of languages (musical, psychomotor, verbal, technological and aesthetics) can contribute to enhance interventions in education and disability (motor, verbal or mental).

The 2008 congress investigation units were coordinated through working teams from the Psycholinguistics and Clinical Linguistics (Centro de Linguística da Universidade Nova de Lisboa) and Casa da Música's Education Service, Porto. Scientific Coordination was by Ana Monção (CLUNL, Portugal) and vice-coordination by Tony Brooks (Aalborg University, Denmark). The scientific committee consisted of Ana Monção and Rute Costa (CLUNL, Portugal), Eva Petersson and Tony Brooks (Aalborg University, Denmark) and Paul Sharkey (University of Reading, UK). The organising committee consisted of Paulo Rodrigues (coordinator of the Education Service of Casa da Música), Ana Monção, Ana Rebelo and Andreia Periquito (CLUNL).

Bridging the closing ceremony of ICDVRAT/ArtAbilitation and the opening of the Art, Brain and Languages congress was a session by Professor Tony Brooks (Aalborg University, Denmark) on how music can be interpreted through invisible (non-invasive) digital sensing technologies integrated to enhance the experiences of those with hearing impairment and other cognitive and motor disabilities. This session, held in the main auditorium of Casa da Música featured the 64 piece Orquestra Nacional do Porto, which is widely recognised as the national symphony of Portugal. Brooks designed the environment such that the performer's (orchestra musicians and conductor) expressive nuance of motion, together with the sound produced by the orchestra were collected as data at a multiple computer workstation. The concept involves the data being interpreted by Brooks as an improvised real-time performance where the live performance information was used to produce interactive live graphics and lighting effects with corresponding vibrations through tactile displays that all responded to the musical performance, thus enhancing the audience experience. Previous performances of this work have included a choir for the hearing impaired.

'Orquestra Nacional do Porto' performing whilst simultaneously creating their own visual accompaniment (graphics and lighting responding to expressive gesture and music data captured through an array of sensors). *Interpretations* by Tony Brooks at Casa da Música, Porto (picture Casa da Música – João Messias)



Tony Brooks' *Interpretations* real-time improvisation performance at the workstations used to collect and map gesture and audio data sourced from 'Orquestra Nacional do Porto' musicians and conductor that enabled simultaneous control of visual ambience to support the music (picture Paul Sharkey, University of Reading, UK)



Tony Brooks describing his *Interpretations* concept to the Casa da Música audience (picture Casa da Música – João Messias)



Presentations in the congress were by Semir Zeki (University College London, Institute of Neuroesthetics – Berkeley, California), Régine Kolinsky and José Morais (Université Libre de Bruxelles, Research Unit in Cognitive Neurosciences), Manfred Clynes (Georgetown University, Washington, DC), Tony Brooks and Eva Petersson (Aalborg University Esbjerg, Denmark), Ivar Hagendoorn (Arnhem School of Dance, Netherlands), Ana Paula Almeida and Zé Paulo Neto (Casa da Música), Eduardo Reck Miranda (University of Plymouth, UK – Interdisciplinary Centre for Computer Music Research), Ana Monção and Rute Costa (Centro de Linguística da Universidade Nova de Lisboa), Richard Gaulin and Isabelle Côté (Aphasic Theatre, Montréal, Canadá). Highlights included a piano recital by Manfred Clynes on the opening evening and a closing ceremony performance titled “Sobre Rodas” (that can be translated as “On Wheels” – a transdisciplinary extravaganza (dance, theatre, music, circus) performed by Vo’ ARTE (Portugal) under the Artistic Direction of Ana Rita Barata in collaboration with Vento do Norte, a saxophone ensemble directed by Henk van Twillert. See the Vo’ ARTE closing ceremony showcase reportage at end of editorial.

Papers for this special issue commemorating the congress event were solicited from congress presenters as well as via an open call to the related scientific communities. All submissions were subject of multiple blind peer review by experts who are graciously thanked and all involved take this opportunity to congratulate the successful authors whose papers appear in this issue. A truly global group of authors present their work under the Art, Brain and Languages association.

The opening paper in this special issue is from UK. It is authored by Eduardo R. Miranda who informs of the Plymouth Brain–Computer Music Interfacing (BCMI) Project. The piece informs of latest developments in the author’s ongoing BCMI

research, which is aimed at special needs and music therapy and the entertainment industry. The contribution surveys the technology developed to date in the Plymouth labs and glances at work-in-progress designs informed by cognitive experiments. Specific focus is on two challenges that introduce three proof-of-principle systems, which use EEG power spectrum information to control an audio mixer, compose melodies and activate rules of a generative music system, respectively. Two experiments aimed at identifying patterns of brain activity associated with cognitive tasks deemed to be musical, with a view on using them to control BCMI systems is also presented. Overall, the paper focuses on the creative computer music component of the Plymouth team's research rather than on the minutiae of its underlying scientific protocols and experimental methods.

The second paper is by José Morais, Aurélie Périot, Pascale Lidji and Régine Kolinsky and is on Music and Dyslexia. The authors investigate association between phonological processing deficits and poor musical skills, specifically questioning beliefs of others who suggest that dyslexia may result from a musical or, more generally, auditory impairment, suggesting that music therapy can assist dyslexics to overcome their reading difficulties beyond phonological training. In this paper, the authors confront such beliefs with their findings that clearly suggest dyslexia results from a specific phonological deficit rather than direct relation between dyslexia and amusia (musical deficiency).

The third paper is by Baingio Pinna who reports of his investigations into the problem of perceptual organisation of colour through an integrated and multidisciplinary study based on Art, Vision Science and Biology. The paper opens by introducing phenomenal notions of modal and amodal completion of colour in the three multidisciplinary domains to explain the inherent organisational traits. Principles of occlusion are explained alongside detailing how modal completion of colour was studied through Kandinsky's work, whilst amodal completion of colour was investigated through the lighting illusion and the Renaissance chiaroscuro that created the illusion of depth. Results highlight the effectiveness of amodal completion of colours as used by artists and by nature in biological colouration and accordingly four general principles of the phenomenon are suggested.

The fourth paper is titled 'Dance, Language and the Brain', its author is Ivar Hagendoorn. The contribution informs how dance is related to language as is movement related to communication. Advances in understanding language and its cognitive underpinnings are explored. The paper opens by discussing the pros and cons of considering dance as a language. It continues by expounding cognitive foundations of language to develop an argument based on coevolution of dance and language. The author challenges current research paradigms suggesting cognitive mechanisms by which meaning may emerge in language and dance. The paper concludes with demonstrating how analytical tools of language can be implemented as instruments of choreographic creation to relate to such targeted meanings.

The fifth paper is by Carla Montez Fernandes and Rute Costa. The aim of the authors is to enlighten readers in understanding how a linguistic approach can assist the study of creative processes. It also illuminates how an idiosyncratic choreographic and verbal language can reflect its author's metaphorical mental process during an original creation. In focus is the work of contemporary dance guru Rui Horta and his creative process.

Products from the work include a new video annotator and related software, a prototype for an interactive digital archive and a motion capture plug-in for applied

research. A theoretical reflection is shared on how implicit knowledge is involved in the making of processes of contemporary dance performances as well as on the relations between concepts and their corresponding terms. Additionally, a practice-oriented case study is detailed that is based on original video recordings of the creation and rehearsal process of a Horta choreography (setup). The title is 'Looking for the linguistic knowledge behind the curtains of contemporary dance: the case of Rui Horta's creative process'

The sixth paper is by Nicholas Wade. Simply titled 'Literal visions' discusses the languages of art and science and how they share a common concern with representing concepts visually by both employing images. However, image use differs and this is explored in the piece by highlighting how in art images are typically extended and often bear some spatial relationship to their referents. Wade informs the readers how they often overlook the fact that written language also communicates by images, thus, the interplay between written words and vision is explored both theoretically and graphically throughout the piece.

The final paper discusses 'Moon illusion' as depicted by infants in their drawings. Moon illusion refers to how the moon appears larger near the horizon than it does when higher up in the sky. The illusion has been known since ancient times, and recorded by numerous different cultures. Subsequently, an abundance of theories have been posited by different illusion researchers as to what causes the illusion. In their paper – 'The moon illusion in children's drawings' – authors Ross and Cowie broaden the theories by suggesting age as an important factor in how the illusion is perceived.

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Special thanks to the 'Vo' ARTE' team, namely – Ana Rita Barata (artistic director), A. Roque (executive director) and co-authors/performers: Rita Judas, António Oliveira, Julieta Rodrigues; Henk van Twillert and Performers from Vento do Norte, Associação Paralisia Cerebral de Lisboa: José Marques, Zaida Pugliese, Adelaide Oliveira, Jorge Granadas with Support Team AP CL and Performers António Paiva, Carolina Santos.

Last but not least, heartfelt thanks to Paulo Rodrigues and the Casa da Música education administration team who hosted the Art, Brain and Languages event; Andrew Bennett (Artistic Director), conductor/musicians and supporting team Orquestra Nacional do Porto; Ernesto Costa and technical crews Casa da Música; Professor Paul Sharkey (University of Reading, UK) founder/chair of The International Conference Series on Disability, Virtual Reality and Associated Technologies (ICDVRAT).

(Following pages contain - 'Vo' ARTE' *reportage*: 8 black and white pictures by A. Roque and *Interpretations reportage*: 10 colour pictures by João Messias)











Following is the Interpretations reportage by photographer João Messias (permission Casa da Música). *Documentation reference:* A.L. Brooks, 'Interpretations: inter-sensory stimulation concept targeting inclusive access offering appreciation of classical music for all ages, standing, & disability', *Proceedings of 7th International Conference on Disability, Virtual Reality and Associated Technologies with ArtAbilitation*, in P.M. Sharkey, P. Lopes-dos-Santos, P.L. Weiss and A.L. Brooks (Eds.), Maia, Portugal, 8-11 September 2008, pp.15–22. Available at: <http://www.icdvrat.reading.ac.uk/2008/interpretations.htm>.

Additional images: Available at: http://www.icdvrat.reading.ac.uk/2008/photos/photos_interpretations.htm.













Guest conductor Luís Carvalho and members of 'Orquestra Nacional do Porto' take their applause after the Interpretations event

