Second Announcement

3 rd SONORUS Summer School

Computational Soundscape Analysis

will be held in Napoli/Sorrento

13 April 2015 – 17 April 2015

Important information:

Transfer
From Napoli to Sorrento on **Monday evening** (after the opening) is organized by the Second University of Napoli with a private bus
For arrival on other dates or for the journey back to Napoli (by train, bus, directly to central station, directly to airport)
please visit http://www.sorrentotourism.com.

Hotel in Napoli
If your arrival in Napoli is before Monday 13 we suggest to make Hotel reservation in Napoli by your own. Napoli is full of Hotels and B&B and it depends which side of the city you prefer (sea side, old town). Consider anyway that the Rectorate is in the historic part of the city (near Spaccanapoli).

Hotels in Sorrento.
Also Sorrento is full of Hotels but also full of tourists in April !!!
To avoid problems and to have more people in the same venue, we pre-booked a limited number of rooms in the Hotel Mediterraneo Sorrento **(deadline 25 February)** and we engaged the PCO Meeting&Words* to handle anyway the registration to the Meeting and **eventually the booking and the payment of the Hotel room.**
From tomorrow the procedure is available at:
http://meetingwords.onlinecongress.it/SpringSchool2015
Please

1. fill up anyway the registration form for the meeting with arrival and departure (these information will be used only for internal organization: dinners, coffee breaks)
2. if you want to handle the Hotel booking through the procedure please continue after the first form
3. if you want to share the room with another participant please indicate this (there is a field in the booking procedure). We strongly suggest this for the ESR

The fees of the Hotel Mediterraneo
(http://www.mediterraneosorrento.com/it/) are:

Rate are per room per night in BB
Double single use: garden view € 110.00; sea view: € 150.00; sea view SUP: € 190.00
Double use garden view: € 140.00; sea view: € 180.00; sea view SUP: € 220.00

*For any inquiry on Hotel accommodation please contact (indicating SONORUS):
Meeting&Word sas
e-mail info@meetingwords.it
http://www.meetingwords.it/
tel. 0039 0823.437898
fax 0039 0823.403141
cell. 0039 335.1051113

The didactic program will be available at the end of February.

Summer School on : Computational Soundscape Analysis — Napoli/Sorrento, 13-17 April 2015

	*Monday 13th	**Tuesday 14th	**Wednesday 15th	**Thursday 16th	**Friday 17th
8:30-9:30	Soundwalk in Napoli Meeting point in *	SONORUS Steering Committee	Semantic Analysis of Soundscape JIAN KANG	Design methodologies GIOVANNI BRAMBILLA	Field Experience Analysis
9:30-10:30			Soundscape design framework JIAN KANG	Design methodologies GIOVANNI BRAMBILLA	Field Experience Analysis
10:30-11:00		*Coffee Break*	*Coffee Break*	*Coffee Break*	*Coffee Break*
11:00-12:00		SONORUS Steering Committee	Computational Intelligence BERT DE COENSEL	practical exercises assessment & design	Cultural heritage and Soundscape LUIGI MAFFEI
12:00-13:00			Computational Intelligence BERT DE COENSEL	practical exercises assessment & design	New tools for design LUIGI MAFFEI MASSIMILIANO MASULLO
13:00-14:30	*Welcome Light Lunch*	*Lunch*	*Lunch*	*Lunch*	**Summing Up**
14:30-15:30	**Opening**	Environmental Psychology TINA IACHINI	Statistical processing- PAOLO SENESE	practical exercises assessment & design	
15:30-16:30	Managing the acoustic environment: How soundscape planning and design complement environmental noise management ALAN LEX BROWN	Introduction, Evaluation and Use of Psychoacoustic Field Descriptors JOACHIN SCHEUREN	Gaining a better understanding in soundscapes for setting design goals DICK BOTTELDOOREN	practical exercises assessment & design	
16:30-17:30	New approaches to study the perception and brain processing of environmental sounds MARC SCHONWIESNER	Planning and soundscape JIAN KANG	Soundscape prediction DICK BOTTELDOOREN	practical exercises assessment & design	
18.00	Travel by private bus to Sorrento and Social Dinner at 21.00				

*** Conference Room of the School of Medicine of the Second University of Naples Via Santa Maria di Costantinopoli 104, Napoli, Italy**

**** Meeting Room Hotel Mediterraneo Sorrento. Corso M. Crawford, 58 - Sant'Agnello (NA)**

Summer School on :
Computational Soundscape Analysis
Napoli/Sorrento, 13-17 April 2015

LECTURES' CONTENT

MONDAY 13 April, 2015
Conference Room of the School of Medicine of the Second University of Naples
Via Santa Maria di Costantinopoli 104, Napoli, Italy

14.30-15.30
Welcome and Presentation of the FP7 ITN Marie Curie "Sonorus"
Giuseppe Paolisso, Rector of the Second University of Naples
Luigi Maffei, Second University of Naples, Italy
Wolfgang Kropp, Chalmers University of Technology
Jens Forssén, Chalmers University of Technology
Maarten Hornikx, Eindhoven University of Technology
Dick Botteldooren, Ghent University

15.30-16.30
Managing the acoustic environment: How soundscape planning and design complement environmental noise management
The role and application of the concept of the soundscape, vis-à-vis that of environmental noise management, needs elaboration. In noise control, sound is a waste product, managed to reduce the immision of sounds that cause human discomfort. The soundscape approach, by contrast, considers the acoustic environment as a resource, focussing on sounds people want, or prefer. Quiet is not a core condition for acoustic preference in the outdoor acoustic environment. Congruence of soundscape and landscape is, and that wanted sounds in a place are dominant over, or not masked by, unwanted sounds. Acceptance, and further development, of the soundscape approach is facilitated by distinguishing it, both conceptually and in measurement and management approaches, from environmental noise management. Soundscape design, planning and management, based on soundscape concepts, augment environmental noise management approaches, expanding the scope of application of the tools of acoustic specialists.
Lex Brown, *Griffith University, School of Environment/Urban Research Program*

16.30-17.30
New approaches to study the perception and brain processing of environmental sounds
There is a new push in neuroscience and psychology to move experiments out of the highly controlled, but often artificial, laboratory environment and into the complex, multisensory, and poorly controlled real world. This innovation is made possible by new technologies and new data analysis methods, such as miniaturized wearable computing hardware to influence sound perception and measure brain activity, and accurate computational models and machine learning methods to analyse the data gathered with these devices. As examples of these techniques, I will discuss sound modification with digital earplugs, brain activity recording with mobile and in-ear EEG, recording of unconstrained behaviour with motion capture, and some ways of analyzing such data.
Marc Schönwiesner, *Université de Montréal, International Laboratory for Brain Music and Sound Research (BRAMS)*

From TUESDAY 14 April 2015 to FRIDAY 15 April 2015
Meeting Room Hotel Mediterraneo Sorrento. Corso M. Crawford, 58 - Sant'Agnello (NA)

TUESDAY 14 April 2015

14.30-15.30
Environmental Psychology and multisensory representation of the environment.
Environmental Psychology stresses the fact that physical, social and psychological factors are closely interwoven in their influence on human behavior. The environment, then, is a multisensory set of stimuli for which human beings developed a special sensitivity. Accordingly, Environmental Psychology can be defined as the study of interrelationships between the individuals and their physical context.
Here, a brief definition of this domain, its basic principles and a short survey of some relevant issues will be given. Moreover, I will present a short look on the effects of the auditory stimuli (sounds and noise) on individuals. As it is common in the Embodied Cognition perspective, these effects will be considered from a neurally plausible model that highlights the intrinsic multisensory nature of human brain.
Tina Iachini, *Second University of Naples*

15.30-16.30
Introduction, Evaluation and Use of Psychoacoustic Field Descriptors
Any individual perception and assessment of sound is a multidimensional subjective evaluation of multimodal sensations which are coupled varyingly only to energy-based sound field descriptors like sound pressure or energy levels. It is thus most desirable to use metric descriptors which are better correlated to subjective hearing impressions. Psychoacoustics is the discipline which has investigated the phenomena of subjective hearing and established independent descriptors for most relevant hearing impressions. The rules how to evaluate and determine these descriptors from measured acoustic data have been validated by continuous practical experience and today have mostly found acknowledgement by international standards. The lecture will introduce into the field of psychoacoustics, illustrate its use and benefit by practical examples of sound assessment and finally outline the potential of psychoacoustic metrics in assuring product sound quality and planning urban sounds.
Joachim Scheuren, *Müller-BBM GmbH*

16.30-17.30
Planning and soundscape
This talk explores relationships between sound field and texture of built-up areas, namely urban morphology. A number of typical urban areas have been considered, including relatively high-density city built-up area and low-density town areas, covering a range of building heights, from high-rise to two-story buildings. The effects of building arrangements in a given urban area have also been explored based on genetic algorithms. Traffic sources are taken into account. In terms of sound field, a series of indices have been considered, including spatial noise level Ln. While the work is mainly based on simulation using noise-mapping techniques, Matlab program and Grasshopper in Rhino are also used.
Jian Kang*, University of Sheffield*

WEDNESDAY 15 April 2015

8.30-9.30

Semantic Analysis of Soundscape

The main objective of this research was to identify factors that characterise the soundscape in urban open public spaces. The research was carried out through a series of field surveys. Stage one, as a pilot study, was a soundscape walk with 48 students in four typical urban open public spaces in Sheffield. Stage two was a detailed soundscape evaluation in two of the sites, with a total sample size of 491 from the general public. Stage three examined the soundscape evaluation by designers, with 223 architectural students. Semantic differential analysis of the results shows that although the description and evaluation of the soundscape in urban open public spaces is rather complicated, it is still possible to identify major factors which include relaxation, communication, spatiality and dynamics. In terms of the general soundscape evaluation, differences between sound level and acoustic comfort evaluation, sound preferences, and effects of demographic factors are briefly discussed. Compared to the general public, designers have stronger preferences to natural sounds and green spaces, and there is also more diversity in their evaluation.

***Jian Kang**, University of Sheffield*

9.30-10.30

Soundscape design framework

Whilst most previous studies on soundscape in urban open public spaces have considered soundscape as a passive perception factor, it is important to put soundscape into the intentional planning and design process comparable to landscape, integrating the theories of soundscape. In this talk a framework on key factors in soundscape planning and design in urban open public spaces is proposed, including four components: characteristics of each sound source, acoustic effects of the space, social/demographic aspect of the users, and other aspects of the physical conditions. Moreover, the potentials of planning and designing the four key components, namely sounds, space, people and environment, are explored. Furthermore, two design tools/models for soundscape in urban open public spaces are outlined, including an auralisation software package for design modification and public participation, and a neural network model for predicting acoustic comfort based on various design variables. Some planning and design guidelines are also introduced.

***Jian Kang**, University of Sheffield*

11.00-13.00

Computational intelligence techniques for soundscape assessment

Computational intelligence encompasses a diverse set of approximation, learning and optimization techniques for analyzing and modelling real-world data, which all have in common that they are inspired by biology. In the first part of this lecture, a general overview will be given of the three most common computational intelligence methodologies: artificial neural networks, fuzzy systems and evolutionary computation. In the second part of this lecture, a series of application examples will be discussed, in which computational intelligence techniques are applied to problems in acoustics in general, and in soundscape assessment in particular.

***Bert de Coensel**, Ghent University*

14.30-15.30

Statistical Approach. Non linear predictive models: The Logistic Regression

The Logistic Regression is a predictive nonlinear probabilistic model that can be used when the dependent variable is a dichotomy. As a predictive model, the Logistic Regression has became

popular since it allows to model a probability of success/failure without requiring restrictive assumptions on the independent variables, which can be either categorical or continuous. In the first part of this lecture the Logistic model will be presented and the parameters interpretation will be explained. In the second part, a series of application examples will be discussed.
***Vincenzo Paolo Senese**, Second University of Naples*

15.30-16.30
Gaining a better understanding in soundscapes for setting design goals
This lecture will start from the knowledge on perception of sound and environment that is presented by Marc Schonwiesner and Tina Iachini and explore where it can help the soundscape researcher and practitioner to more precisely set goals and derive methodologies to achieve them.
For this, results obtained in soundscape research will be contrasted against overall findings presented in these earlier lectures and general knowledge to identify knowledge gaps and to fine tune existing methodologies. Listening in an environmental context, attention mechanisms, meaning, and appraisal and quality judgment will be discussed. In addition the potential long term benefits of positive soundscapes and restorative spaces will be discussed. Rather than to provide final answers, this lecture will mainly attempt to trigger the students' innovative thinking.
***Dick Botteldooren**, Ghent University*

16.30-17.30
Soundscape prediction
For designing soundscape, one of the main tools is predictive modeling. This lecture will discuss both ab initio modeling and prediction of the effects of mitigation and intervention. In ab initio modeling the future sound environment is predicted based on non acoustical factors such as the presence of traffic, people, nature, … This can result in auralisation of the designed sound environment or in evaluation using soundscape indicators. Accurate representation may require the use of audio tracks for specific sources or parts of sources (e.g. car engines).
For interventions the starting point could be a recording of the before situation. Adding or removing sounds than becomes a matter of mixing and attenuating. For the latter, it is necessary that the sound to be eliminated can be separated either in time or in space from the whole. Attenuating unwanted sound can unmask both energetically or perceptually wanted sounds.
Translating the modeled sonic environment to soundscape may require the use of computational models for soundscape perception. Due to the complexity of human perception of sound, such models inevitable rely on biologically inspired modeling techniques that were discussed in the lecture given by Bert De Coensel
***Dick Botteldooren**, Ghent University*

THURSDAY 16 April 2015

8.30-10.30
Soundscape design: methodologies
According to Schafer (1977), acoustic design means discovering the principles by which the aesthetic qualities of the acoustic environment may be improved. These principles include:
-elimination or restriction of certain (unwanted) sounds through noise abatement;
-preservation of sounds that give character or sense of place to a location ("soundmarks" as the acoustical equivalent of visual landmarks);
-addition of sounds to create attractive and stimulating environments.
Spaces amenable for soundscape planning and design will be outlined and relevant methodologies will be described, from the starting step of setting the acoustic objective, based on the information content of sounds, to the census of noise sources both in space and time, the disaggregation of

wanted and unwanted sounds in the context, as well as considering the interaction between auditory and visual stimuli on perception of the pleasantness of environment. An holistic approach and the participation of local experts, residents and other users and inhabitants of the sonic environment are crucial in the design process development and its outcome.
***Giovanni Brambilla**, CNR, Institute of Acoustics and Sensors "O.M. Corbino", Rome, Italy*

11.00-17.30
Practical exercises: assessment & design
This part of the Summer School will be dedicated to Field Experiences (Measurements for Assessment and Design of a specific area)

FRIDAY 17 April 2015

8.30-10.30
Field Experience Analysis
This part of the Summer School will be dedicated to Field Experiences (Measurements for Assessment and Design of a specific area*)

11.00-12.00
Cultural heritage and soundscape
The modern definition of cultural and natural heritage includes monuments, group of buildings, sites but also the different intangible cultural expressions, which without a written codification, the communities, groups and, in some cases, individuals recognize as part of their cultural heritage. Inside cultural and natural heritage, tangible and intangible elements can then mix together. So far the preservation guidelines for cultural and natural heritage (buildings, squares, landscape) consider as unique element of any modification and/or restoration the visual sensation. Nevertheless the way people perceive and enjoy cultural and natural heritage is multi-sensorial and the Soundscape as intangible, intrinsic and irreplaceable value, which contributes to their outstanding universal value, making them unique, recognizable by the community and attractive for tourists, can be as important as the Visualscape. In this chapter the implications that the Soundscape (as resource) has in parallel with the Visualscape on the best conservation and restoration of cultural and natural heritage are discussed; techniques for the recognition of the Soundscape as a "trademark" of the cultural tangible and intangible properties are implemented; improvement of tools such as management plans suggested by UNESCO are suggested and several applications are presented
***Luigi Maffei,** Second University of Naples*

12.00-13.00
New tools for multisensorial design and validation
Policy makers, under several economic and demographic condition, have to plan and manage new infrastructures, new transportation technologies, new urban plans. It is then extremely important to develop techniques that permit to predict in a sustainable way the impact of these projects on the perceived quality of the sonic environment and involve in the whole process the local population.
The techniques of auralization and visual rendering available today make possible to create virtual environments which can be, in an immersive way, experienced and evaluated by people in laboratory settings and, therefore, their ratings can be considered at the design stage in order to match their preferences as much as possible.
Equipments and tools are presented. Examples of application for the design and evaluation of the Soundscape are illustrated.
***Luigi Maffei, Massimiliano Masullo** Second University of Naples*