

**Symposium**  
**“Musique et Cognition.**  
**Autour de l'apport de John Sloboda”**

Vendredi 23 janvier 2009

Ircam, Salle I. Stravinsky  
1, place I. Stravinsky 75004 Paris  
(Entrée libre dans la mesure des places disponibles)

**Programme:**

- 10h00-10h10 **Moreno Andreatta & Irène Deliège:** Welcoming
- 10h10-10h50 **Jane Ginsborg:** An expert singer's very long term recall for words and melody
- 10h50-11h30 **Daniel Müllensiefen and Geraint A. Wiggins:** Sloboda's recall paradigm for melodic memory: A new, computational perspective

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- 11h40-12h20 **Mario Baroni, Rossana Dalmonte, Roberto Caterina:** Perception of melody. An empirical approach
- 12h20-13h00 **Michel Imberty:** Sur les neurones-miroir, l'intentionnalité et l'apprentissage instrumental : John Sloboda à la croisée des chemins
- Discussion

*Lunch break*

- 15h00-15h40 **Nicholas Cook:** Psychology, performance, and history: the evidence of recordings
- 15h40-16h20 **Barbara Tillmann and Emmanuel Bigand:** Perception and memory of syntactic structures in music and language
- 16h20-17h00 **Adam Ockelford:** Another Exceptional Musical Memory

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- 17h15-17h55 **Richard Parncutt:** The role of music in cultural integration
- 17h55-18h35 **John Sloboda:** Music in everyday life: the role of the emotions
- Final Discussion

**Abstracts:**

Jane Ginsborg (Royal Northern College of Music, Manchester, UK)  
*An expert singer's very long term recall for words and melody*

Although long-term recall has been studied for many years there have been comparatively few investigations of long-term recall for music. The present study examined an expert singer's long-term recall for the words and melody of Stravinsky's *Ricercar 1*, for soprano and small instrumental ensemble, and investigated the extent to which this was predicted by practice. The singer recorded nine practice/rehearsal sessions with the conductor as accompanist over four weeks. Post-performance annotations identified musical features and performance cues salient in rehearsal and

performance respectively. Their effect on behaviour during practice and rehearsal (starts, stops and repetitions) was analysed. Six free recalls were made over a period of five years after the performance. Errors of all types made in practice and rehearsal, and in each of the free recalls were compared. A regression analysis using distance from musical features and performance cues was used to investigate serial position effects on recall. Performance cues, both individual and those shared with the conductor, predicted practice from the outset. Memory for melody appears to be more durable than memory for words, although it too becomes attenuated over time and words eventually may be recalled in the absence of melody.

Dr Daniel Müllensiefen and Prof. Geraint A. Wiggins (Centre for Cognition, Computation and Culture Goldsmiths, University of London)

*Sloboda's recall paradigm for melodic memory: A new, computational perspective*

Sloboda & Parker (1985) proposed a new experimental paradigm for research on melodic memory in which participants are asked to listen to novel melodies and to sing back the parts they can recall from memory. In contrast to the many varieties of melodic recognition paradigms frequently used in memory research this sung recall paradigm can answer questions about how mental representations of a melody build up in memory over time, about the nature of memory errors, and about the interplay between different musical dimensions in memory. Although the paradigm has clear advantages with regard to ecological validity, Sloboda and Parker also note a number of difficulties inherent to the paradigm that mostly result from necessity to analyse 'dirty musical data' as sung by mostly untrained participants. This contribution reviews previous research done using the sung recall paradigm and proposes a computational approach for the analysis of dirty melodic data. This approach is applied to data from a new study using Sloboda and Parke's paradigm. We discuss how this new approach not only enables researchers to handle large amounts of data but also makes use of concepts from computational music analysis and music information retrieval that introduce a new level of analytic precision and conceptual clarity and thus provide a new interface that connects Sloboda's paradigm to rigorous quantitative data analysis.

Mario Baroni, Rossana Dalmonte, Roberto Caterina (Univ. Bologna & Trento, Italy)

*Perception of melody. An empirical approach*

In past years Mario Baroni Rossana Dalmonte and Carlo Jacoboni proposed a theory of melody based on grammatical rules organized in a system of different structural levels. Such a theory has been conceived as principally linked to procedures of music composition. The present proposal has the aim of testing its pertinence also for music listening. The incipit of a famous aria by Mozart and a number of its versions with one note changed has been proposed to a number of subjects with different musical competence. They had to recognise the collocation of the changed note. The results show different perceptual impacts of the melodic rules and the influence of particular aspects of their structural context.

Michel Imberty (université de Paris X, Nanterre)

*Sur les neurones-miroir, l'intentionnalité et l'apprentissage instrumental : John Sloboda à la croisée des chemins.*

Intentionnalité et réseaux de neurones miroir sont au centre des questions récentes de la psychologie cognitive. Aussi bien dans le domaine de l'étude des émotions que suggère ou exprime la musique, dans celui de l'étude des capacités musicales coordonnées par la musicalité comportementale, que dans celui de l'apprentissage instrumental, l'intentionnalité joue un rôle fondamental. Depuis de nombreuses années, J. Sloboda s'est intéressé à ces questions, notamment à travers son expérience de pianiste et d'enseignant. Ses travaux scientifiques ont également abordé ces questions, et par cet exposé, on souhaite ouvrir avec lui le débat.

Nicholas Cook (Royal Holloway, Centre for the History and Analysis of Recorded Music, CHARM)  
*Psychology, performance, and history: the evidence of recordings*

Empirical approaches to the study of recorded performance are opening up new areas of music history and analysis. However empirical approaches were originally developed in the context of music psychology, and the theoretical frameworks in common use—which might largely be traced back to John Sloboda's seminal text *The Musical Mind* (1985)—reflect the dominant orientation of psychology: towards the general characterisation of human cognitive processes and faculties. Only now is it becoming clear how such putative processes and faculties need to be understood in the context of the radical shifts in performance style which the legacy of recordings evidences. How are we to understand the unfamiliar performance styles of a hundred years ago? One obvious source which has been little exploited to date is the theoretical writings on performance of the late nineteenth and early twentieth centuries, such as Mathis Lussy's *Traité de l'expression musicale* (1874) and the many detailed performance prescriptions scattered through Heinrich Schenker's writings from the 1890s to the 1920s: such sources have been neglected because they make little sense when related to late twentieth-century performance styles. The solution of course is to relate them to the performance styles of their own day, and so read they may offer otherwise unobtainable insights into those styles.

My paper will take as its starting point one or more piano roll recordings by Eugene d'Albert, and will document a performing style that in key respects deviates from current music-theoretical and psychological assumptions about performance. Through triangulating these recordings, which date from as far back as 1905, with both contemporary and present-day approaches, I aim to throw light on two larger questions: the relationship between theory and practice, and the nature of creativity in performance.

Barbara Tillmann (CNRS, UMR 5020, Lyon) & Emmanuel Bigand (LEAD/CNRS UMR 5022, Dijon).  
*Perception and memory of syntactic structures in music and language*

Next to Lerdahl and Jackendoff (1983), John Sloboda, in his book "The Musical Mind" (1985), discussed the parallels between music and language processing, with a particular emphasis on syntactic structures. For music listening and reading, perceivers do not remain at the musical surface, but process the underlying musical structures. Starting with examples of Sloboda's work, we will review research investigating musical structure processing by musicians and nonmusicians, also considering the challenge to use real music. We will present comparative investigation of music and language processing, which has become one focus of cognitive psychology and neurosciences aiming to understand cognitive and brain functioning. First results on the applicability of these findings for clinical and health sciences are contributing to the social benefits this research domain can provide (see Sloboda, 2005, "Assessing music psychology research: values, priorities and outcomes").

Adam Ockelford (Southlands College, Roehampton University, London)  
*Another Exceptional Musical Memory*

This paper describes research that builds on the empirical work reported by Sloboda, Hermelin and O'Connor in 1985, in which a musical savant ('NP') attempted to learn a tonal piece by Grieg and a whole-tone composition by Bartók. NP's error rate was 8% in the former and 63% in the latter, suggesting his ability to reproduce music (at least in the short-term) was confined to tonal music and was structurally based. In the current study, a second savant ('DP'), publicly renowned for his capacity for reproducing many thousands of pieces from memory, attempted to learn an atonal piece by Schoenberg and a specially-composed tonal 'equivalent', which are far as possible matched the original in terms of global structure, number of notes, frequency of occurrence of melodic intervals, density and rhythmic complexity. The results show that DP too, despite having AP and the ability to disaggregate simultaneous clusters of four pitches with 100% accuracy, found the atonal music more difficult to memorise than the tonal. Indeed, he imposed conventional structures upon the Schoenberg, altering pitches so they fitted within a quasi-tonal framework. The implications for DPs creativity are discussed, and the potential contribution of the findings to the ongoing debate on the place of 'compositional' and 'listening' grammars in the musical experience.

Richard Parncutt (Univ. Graz, Austria).  
*The role of music in cultural integration*

Cultural integration involves multiple interactions among majority and minorities. What is the role of music? Students in an advanced musicology seminar interviewed 74 Graz residents from Albania, China, Egypt (Copts), Iraq (Kurds), Italy, Nigeria, Serbia, and Austria. Topics addressed included music in everyday life, performed music, cultural identity, social contacts, favourite CDs, and music and integration. Content analysis suggests that music often, but not always promotes integration.

John Sloboda (University of Keele and Royal Holloway, University of London)  
*Music in everyday life: the role of the emotions.*

Considerable recent attention has been given to the way in which listening to music in everyday life (home, car, office) may have different characteristics to listening to music in deliberative cultural settings (e.g. concert-hall, psychological laboratory). This means that psychological data and theory derived from one context may not be straightforwardly applicable to the other. Most research on emotional response to music has been gathered in deliberative, rather than everyday, contexts. This paper attempts to systematise what we now know about the contrasts between the deliberative and the everyday by identifying ten distinctive characteristics of music in everyday life, and examining the implications of each for the nature and dynamics of emotional responses to such music. These characteristics relate to the quality (intensity, memorability, integration), content (valence, reference, focus, level), and context (elicitation, referent, attitude) of everyday musical experiences. Such characteristics collectively delineate a distinctive and coherent psychological world which, for many listeners, may be more paradigmatic than the deliberative immersion of the classical concert-goer.

#### Planning du séminaire MaMuX:

- Vendredi 7 novembre 2008 : Autour de la complexité dans les arts / Around Complexity in the Arts
- Vendredi 5 décembre 2008 : Processus concurrents en informatique musicale (séance organisée en collaboration avec le LIX, Laboratoire d'Informatique de l'Ecole Polytechnique)
- Samedi 17 janvier 2009 : Mathématiques et Cognition.
- Vendredi 23 janvier : *Musique et Cognition. Autour de l'apport de John Sloboda (séance exceptionnelle du séminaire organisée en collaboration avec Irène Deliège et sous l'égide de l'ESCOM, Association européenne pour les sciences cognitives de la musique)*
- Vendredi 6 février 2009 : Combinatorial Block-Designs. Avec la participation de Reinhard Laue (Universität Bayreuth, Allemagne), Franck Jędrzejewski (CEA Saclay, INST/UESMS) et Tom Johnson (compositeur)
- Vendredi 6 mars 2009 : Mathématiques/Musique et Sémiotique. Les unités sémiotiques temporelles (séance organisée en collaboration avec le MIM, Laboratoire Musique et Informatique de Marseille)
- Vendredi 3 avril 2009 : Séance à définir
- Vendredi 8 mai 2009 : Séance à définir

#### Contacts :

Le Séminaire est organisé par L'Equipe Représentations Musicales de l'IRCAM, en collaboration avec Guerino Mazzola (MultiMediaLab de Université de Zürich / School of Music, University of Minnesota), Franck Jędrzejewski (CEA Saclay - INSTN/UESMS), Thomas Noll (Escola Superior de Musica de Catalunya) et avec le soutiens du CNRS (UMR STMS - Sciences et technologies de la musique et du son). Pour tout renseignement, contacts et propositions :

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