

# Consciousness in a Natural and Cultural Context (CNCC) Highlights



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## EUROCORES

The aim of the European Collaborative Research (EUROCORES) Scheme is to enable researchers in different European countries to develop collaboration and scientific synergy in areas where European scale and scope are required to reach the critical mass necessary for top class science in a global context.

The scheme provides a flexible framework which allows national basic research funding and performing organisations to join forces to support excellent European research in and across all scientific areas.

Until the end of 2008, scientific coordination and networking was funded through the EC FP6 Programme, under contract no. ERAS-CT-2003-980409. As of 2009, the National Funding Organisations provide the funding for the scientific coordination and networking in addition to the research funding.

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# 1. Introduction

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The EUROCORES Programme Consciousness in a Natural and Cultural Context (CNCC) was launched in November 2006. It has involved 33 research teams from 11 countries and must be considered one of the largest initiatives on consciousness studies ever attempted. The programme was from the beginning driven by the conviction that the study of consciousness constitutes an urgent and unique scientific challenge, and that real progress in the field requires a truly collaborative effort that draws on all the available resources and succeeds in integrating a variety of theoretical and empirical disciplines and methods. Interdisciplinary collaboration between the humanities and the social, natural and biomedical sciences was consequently encouraged and expected. This is also why the scientific content of the CNCC programme from the outset was problem-driven rather than discipline-driven. It concentrated on questions and topics that were unlikely to be answered if pursued in a traditional mono-disciplinary manner. Eight areas were selected for further study: conceptual and methodological challenges, the metaphysics and phenomenology of consciousness, the sense of self, consciousness and emotion, norms and abnormalities in the study of consciousness, the phylogenetic and ontogenetic development of consciousness, consciousness and language, and consciousness in history and anthropology.

Some of the world's foremost researchers in the field of consciousness studies have been involved in the CNCC EUROCORES Programme. The following pages will document the first-rate research that they have conducted. Looking back at the accomplishments, it is evident that the programme has succeeded in making the European contribution to the scientific study of consciousness more visible, even managing to attract some of the leading US scientists across the Atlantic. It has also shown how fruitful a non-trivial integration of empirical and conceptual research can be. Consciousness is an immensely complex and intriguing topic. Apart from illuminating and clarifying central facets, the initiated research has also unearthed a number of new questions that now need to be addressed. There are consequently still many challenges lying ahead but, by facilitating increased collaboration and networking among international research groups, the programme has established an interdisciplinary platform that will prove decisive for future consciousness research – within Europe and beyond.

**Professor Dan Zahavi,**  
University of Copenhagen, Denmark  
*Main proponent of the original CNCC research programme*

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**The proposal for a EUROCORES Programme on Consciousness in a Natural and Cultural Context (CNCC) was submitted to the ESF at the beginning of 2005 by the following scholars:**

- **Professor Tim Crane**  
Department of Philosophy  
University College London, UK
- **Professor Axel Cleeremans**  
Cognitive Science Research Unit  
Université Libre de Bruxelles, Belgium
- **Professor Dr. Ingolf U. Dalferth**  
Institut für Hermeneutik und Religionsphilosophie  
Universität Zürich, Switzerland
- **Professor Chris Frith**  
Wellcome Department of Imaging Neuroscience  
University College London, UK
- **Professor Vittorio Gallese**  
Department of Neuroscience –  
Section of Physiology  
University of Parma, Italy
- **Professor György Gergely**  
Department of Developmental Research,  
Institute for Psychology  
Hungarian Academy of Sciences, Hungary
- **Professor Wolfram Hinzen**  
Department of Philosophy  
University of Amsterdam, The Netherlands
- **Professor Marc Jeannerod**  
Professor of Physiology  
Université Claude-Bernard Lyon I, France
- **Professor Alva Noë**  
Department of Philosophy and Institute  
of Cognitive and Brain Sciences  
University of California, Berkeley, USA
- **Professor Dan Zahavi**  
Center for Subjectivity Research  
Danish National Research Foundation  
University of Copenhagen, Denmark

## 2. CNCC Programme Description

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### Interdisciplinary revolution in consciousness studies

The problem of consciousness has long been the exclusive domain of philosophers. Nowadays, consciousness research is becoming an interdisciplinary enterprise, with researchers from the humanities, social and natural sciences working in close collaboration. The EUROCORES Programme Consciousness in a Natural and Cultural Context (CNCC) intended to lead this revolution in consciousness studies, offering a powerful platform for international and interdisciplinary research on the nature, origins and dynamics of consciousness.

### Consciousness as both a cultural and biological phenomenon

The leading idea behind the CNCC programme was that consciousness is both a cultural and a biological phenomenon. This implies overcoming the debate between dualism (according to which consciousness cannot be reduced to physical phenomena) and neurophysiological reductionism (maintaining that the central nervous system is the sole physical cause of conscious experience). There is more to consciousness than just brain activity, but this does not make consciousness something apart from physical reality. On the contrary, we must broaden the scope of our theoretical and empirical models, investigating consciousness as emergent from complex interactions across different dimensions: the neurophysiology of consciousness is embedded in skillful body activity, ongoing interactions with relevant features of both natural and social environments, and processes of cultural transformation.

All CNCC Collaborative Research Projects shared this novel perspective on consciousness, and developed it in greater detail, tackling specific features of conscious experience: the interplay between phenomenology, neurophysiology and intersubjectivity (BASIC); the role of the extended mind hypothesis for understanding the effects of reconceptualisation (BOUNDARIES); the ways in which spatial perception and sensory-motor dynamics influence each other (CEWR); the processes by which skillful interaction with natural and social environments can enable conscious experience (CONTACT); and the study of different forms of metacognition as a precursor to self-consciousness (METACOGNITION).

### Joint research and the European CNCC Network

The EUROCORES Programme Consciousness in a Natural and Cultural Context (CNCC) offered a framework for researchers from the humanities, social and natural sciences to create links and strengthen exchange and cooperation between these different approaches



and perspectives. CNCC aimed to support the emergence of an integrated science of consciousness that develops prospects for the renewal of research through mutual interaction across disciplinary boundaries.

The programme did so in two ways. First, it supported multi-national collaborative research, allowing researchers to work “at the bench” together and to develop joint research projects across disciplinary and national boundaries. In their mid-term evaluation, the international scientific CNCC Review Panel rated the CNCC programme as “*Excellent*” in this respect. In their report, the Panel stated that

*“The work in the CNCC programme looks set to have pivotal and lasting impact on contemporary research agendas. The CNCC programme is associated with some of the most important thinking in consciousness studies at the moment and there is real interest worldwide in the activities of the CNCC Collaborative Research Projects. The new wave of ideas emerging from the CNCC programme is becoming more and more accepted as part of the broader, mainstream scientific community on consciousness, hereby strengthening the visibility of the European contribution to the scientific study of consciousness.”*

Second, with the selected projects as its core, the programme offered ample opportunities for dialogue that go beyond the programme. In the mid-term evaluation, these networking, training and dissemina-

## 2. CNCC Programme Description

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Jonathan Borofsky, "I Dreamed I Could Fly", stainless steel and polycarbonate, permanent installation since 2003, Toronto International Airport

tion activities in the programme appeared as the real strength of CNCC, leading the Review Panel to comment that these activities make "the CNCC programme exemplary for cross-disciplinary studies". In their report, the Review Panel said

*"This collaborative and integrative process, on a broad international and interdisciplinary basis, has been well prepared and managed since the CNCC Launch conference in November 2006, allowing for rich and valuable interactions with researchers in Europe and beyond. These have involved some of the very best scientists – both prominent, established scholars and young, promising researchers – and have been genuinely exploratory in their focus. This is a significant achievement and provides a model of how team-based interdisciplinary research can be successfully conducted on an international scale. Many of those involved in the programme manifestly benefited (directly or indirectly) from their association with such activities, but even more, the 'European CNCC Network' thus established generates effects outside the (immediate) boundaries of the programme".*

The panel concluded that "The CNCC programme has significantly enhanced the visibility of the "Consciousness in Context" approach and has opened up to an interface with more mainstream schools in the study of consciousness."

### About this brochure

In the following pages, the CNCC research projects will share with us their experiences in the programme and the influence on their work of their participation in the CNCC programme. There you will learn about the outcomes of the programme that are highlighted by the participating research teams as their most original and important scientific contribution to the CNCC programme and the research field in general. This shows the pivotal role the CNCC programme has played in creating conditions for dialogue and bears witness to the impact that the creation of synergy has had in this highly multidisciplinary, multi-national research field.



### Funding organisations participating in the Call for Proposals

- **Austria:** Fonds zur Förderung der wissenschaftlichen Forschung/Austrian Science Research Fund (FWF)
- **Belgium:** Fonds voor Wetenschappelijk Onderzoek – Vlaanderen/Research Foundation – Flanders (FWO)
- **Bulgaria:** Bulgarian Academy of Sciences (BAS)
- **Bulgaria:** Bulgarian National Science Fund (NSFB)
- **Cyprus:** Research Promotion Foundation (RPF)
- **Czech Republic:** Grantová agentura České republiky/The Czech Science Foundation (GAČR)
- **Denmark:** Forsknings- og Innovationsstyrelsen/Danish Agency for Science Technology and Innovation (FIST)
- **Estonia:** Eesti Teadusfond/Estonian Science Foundation (ETF)
- **Finland:** Suomen Akademia/Academy of Finland (AKA)
- **France:** Centre National de la Recherche Scientifique/National Centre for Scientific Research (CNRS)
- **Hungary:** Magyar Tudományos Akadémia/Hungarian Academy of Sciences (MTA)
- **Hungary:** Országos Tudományos Kutatási Alapprogramok/Hungarian Scientific Research Fund (OTKA)
- **Italy:** Consiglio Nazionale delle Ricerche/National Research Council (CNR)
- **Luxembourg:** Fonds National de la Recherche/National Research Fund (FNR)
- **The Netherlands:** Nederlandse Organisatie voor Wetenschappelijk Onderzoek/Netherlands Organisation for Scientific Research (NWO)
- **Portugal:** Fundação para a Ciência e a Tecnologia/Foundation for Science and Technology (FCT)
- **Slovakia:** Slovenská Akadémia Vied/Slovak Academy of Sciences (SAV)
- **Spain:** Comisión Interministerial de Ciencia y Tecnología/Interministerial Committee on Science and Technology (CICYT)
- **Sweden:** Vetenskapsrådet/Swedish Research Council (VR)
- **Switzerland:** Schweizerischer Nationalfonds zur Förderung der wissenschaftlichen Forschung/Swiss National Science Fund (SNF)
- **United Kingdom:** Arts and Humanities Research Council (AHRC)
- **United States:** National Science Foundation (NSF)

### Facts and Figures

Deadline for Outline Proposals:  
**15 September 2005**

Launch Conference: **12-14 November 2006, Copenhagen, Denmark**  
Final Conference: **2-4 October 2009, Edinburgh, UK**

Funded Collaborative Research Projects: **5** consisting of **25** Individual Research Projects and **8** projects with associated status in **11** different countries.

New budget for research: **4.3 M€**

Number of cross-project Networking/Dissemination/Training activities organised in the programme: **25**

Budget for cross-project activities: **519 k€**

## 3. List of CNCC Projects

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### **Brain, Agency, Self, Intersubjectivity and Consciousness (BASIC)**

This project examines the relation between phenomenologically relevant markers of self – e.g., a conceptual identification of the notion of “agency” and “ownership” – and particular patterns of brain activity. The aim is to further develop both empirical research and conceptual refinement, integrating into an interdisciplinary research field whose epistemological validity is supported by a solid anchoring in well-established research traditions.

**Project Leader:** Dr. Andreas Roepstorff, University of Aarhus, Denmark

#### **Principal Investigators:**

- Professor Christopher Frith, University College London, UK
- Professor Shaun Gallagher, University of Central Florida, Orlando, USA
- Dr. Anthony Jack, Washington University, St. Louis, USA
- Dr. Tatjana Nazir, Université Claude Bernard Lyon 1, France
- Professor Marcus Raichle, Washington University, St. Louis, USA
- Professor Dan Zahavi, University of Copenhagen, Denmark

#### **Associated Partners:**

- Professor Vittorio Gallese, Università degli Studi di Parma, Italy
- Professor Patrick Haggard, University College London, UK
- Professor Evan Thompson, University of Toronto, Canada
- Professor Kai Vogeley, University of Cologne, Germany

### **Unconscious Boundaries of Mind; research into the extended mind hypothesis (Boundaries of Mind)**

Interaction with the environment can alter our way of conceiving things. Think, for example, how drawing sketches may help to find the solution to a problem. This project studies (re)conceptualisation and the factors that facilitate or impede it. Further, it investigates the influence of preconceptions, the role of our visual system and the limits to the flexibility to switch concepts in normal and clinical populations.

**Project Leader:** Dr. Tjeerd Jellema, University of Hull, UK

#### **Principal Investigators:**

- Professor Johan Wagemans, University of Leuven, Belgium
- Professor Albert Postma, Utrecht University, The Netherlands

### **The Conscious Experience of What is Reachable: neural, behavioural, cultural and philosophical aspects (CEWR)**

Being conscious of our environment implies that we are conscious of the actions that can be performed within it. Spatial boundaries exist in the cognitive agent that organise the external world as a function of what is reachable with the body. The overall aim of the CEWR project is to investigate the phenomenological experience of the boundary of peri-personal space, and to evaluate to which extent it depends on interaction between sensory and motor representations.

**Project Leader:** Professor Yann Coello, Université de Lille, France

#### **Principal Investigators:**

- Dr. Joan Lopez-Moliner, Universitat de Barcelona, Spain
- Dr. Angela Sirigu, Université Claude Bernard, Lyon, France
- Professor Jeroen Smeets, Vrije Universiteit Amsterdam, The Netherlands

#### **Associated Partners:**

- Dr. Bernard Pachoud, Centre de Recherche en Épistémologie Appliquée, Paris, France
- Professor Alan Wing, University of Birmingham, UK

### **Consciousness in Interaction. The Role of the Natural and Social Environment in Shaping Consciousness (CONTACT)**

The brains and bodies of cognitive agents (humans and animals) interact dynamically with both their natural and social environments. The CONTACT project opposes the claim that brain activity by itself enables conscious experience and instead investigates the claim that explaining consciousness requires studying the interactions of animals and humans – and their brains – with the environment.

**Project Leaders:** Professor Cristiano Castelfranchi and Dr. Fabio Paglieri, Istituto Scienze e Tecnologie della Cognizione, Roma, Italy

#### **Principal Investigators:**

- Professor Andy Clark, University of Edinburgh, UK

- Professor Enrico Rambaldi, Istituto per la Storia del Pensiero Filosofico e Scientifico Moderno, Milano, Italy
- Professor Susan Hurley, Bristol, UK (until 2007), Dr. Finn Spicer, University of Bristol, UK (from 2007)
- Professor Ed S. Tan, University of Amsterdam, The Netherlands

**Associated Partner:**

- Professor Thomas Metzinger, Johannes Gutenberg Universität Mainz, Germany

**Metacognition as a Precursor to Self-Consciousness: evolution, development and epistemology (METACOGNITION)**

Metacognition – i.e., thinking about thinking – may not be uniquely human, according to new experimental paradigms. This project critically examines the existence and nature of metacognitive abilities in non-human primates and develops comparative knowledge of metacognitive processes, by exploring how similar these capacities are in non-human animals, human children and human adults. It will also examine how metacognitive processes contribute to self-consciousness.

**Project Leader:** Professor Joëlle Proust, CNRS, ENS-EHESS, Paris, France

**Principal Investigators:**

- Professor Johannes Brandl, Universität Salzburg, Austria
- Dr. Hannes Leitgeb, University of Bristol, UK
- Professor Josef Perner, Universität Salzburg, Austria
- Dr. Bernard Renault, CNRS, Hôpital de la Salpêtrière, Paris, France
- Professor John Smith, University of Buffalo/State University of New York, USA

**Associated Partner:**

- Professor Josep Call, MPI for Evolutionary Anthropology, Leipzig, Germany

**Obituary – Professor Susan Hurley**

In August 2007, the CNCC programme received the sad news of the death of Professor Susan Hurley. Susan Lynn Hurley (16 September 1954 – 16 August 2007) was appointed professor in the Department of Politics and International Studies at the University of Warwick in 1994, professor of philosophy at Bristol University from 2006 and the first woman fellow of All Souls, Oxford. She wrote on practical philosophy as well as on philosophy of mind, bringing these disciplines closer together. Her work draws on sources from the social sciences as well as the neurosciences, and can be broadly characterised as both naturalistic and interdisciplinary. Professor Hurley was a Principal Investigator in the CNCC Collaborative Research Project CONTACT and an impelling force behind the CNCC Networking activities. Shortly before her death she organised within the framework of CNCC the major conference “*Perception, Action and Consciousness: Sensorimotor Dynamics and Dual Vision*”, 1-3 July 2007, Bristol. Professor Hurley is and will be sorely missed by the CNCC community.



Poster of “*Minds, Brains and Beyond: an international conference in memory of Professor Hurley*”, 20-22 March 2009, organised by the CONTACT group in Bristol. This conference honoured Professor Hurley by being a vigorous discussion of the topics she was working on at the time of her death. The CNCC session included an introduction to Professor Hurley’s contribution to the programme and presentations by CNCC members.

## 4. Highlights of the CNCC Collaborative Research Projects

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### Brain, Agency, Self, Intersubjectivity and Consciousness (BASIC)

**Project Leader:** Dr. Andreas Roepstorff, University of Aarhus, Denmark

**Principal Investigators:**

- Professor Christopher Frith, University College London, UK
- Professor Shaun Gallagher, University of Central Florida, Orlando, USA
- Dr. Anthony Jack, Washington University, St. Louis, USA
- Dr. Tatjana Nazir, Hôpital Lyon Université, France
- Professor Marcus Raichle, Washington University, St. Louis, USA
- Professor Dan Zahavi, University of Copenhagen, Denmark

**Associated Partners:**

- Professor Vittorio Gallese, Università degli Studi di Parma, Italy
- Professor Patrick Haggard, University College London, UK
- Professor Evan Thompson, University of Toronto, Canada
- Professor Kai Vogeley, University of Cologne, Germany

**Funding organisations:**

- Arts and Humanities Research Council (AHRC), UK
- National Centre for Scientific Research (CNRS), France
- Danish Agency for Science Technology and Innovation (FIST), Denmark
- National Science Foundation (NSF), USA

#### Scientific results

Current cognitive neuroscience research is reshaping discussions on the nature of the self and of intersubjectivity. The rapid growth in research output from brain imaging laboratories calls for investigations that set these results in a broader perspective. Researchers in BASIC work on the interface between neuroscience, phenomenology and cognitive research. While some focus on making neuroscientific facts, others explore links between agency, intersubjectivity, self and consciousness and relate these to developments in brain science.

The identification by Marc Raichle and colleagues of the so-called “default mode network” has been one of the most discussed recent findings in neuroscience. This pattern of activity was first discovered during “resting state” in brain scanning experiments, but it has since been found also in many other modes of analysis. Kai Vogeley and colleagues have in a meta-analysis demonstrated overlap in patterns of activity between these areas and areas typically involved in social cognition. However, it is not clear whether this ubiquitous pattern of activity is a signature of a particular experiential state, like mind wandering and thinking of others, or whether it reveals more fundamental properties of the brain as an emerging dynamical system.

This addresses a crucial question, examined by a number of BASIC researchers: how to relate reports of experience with measures of neuronal processes? In a recent monograph, “Mind in Life”, Evan Thompson has argued for a biologically-grounded framework, which brings phenomenological analyses of experience into an illuminating relationship with scientific analyses of life and mind. This claim is echoed by Shaun Gallagher and Dan Zahavi who, in their book “The Phenomenological Mind”, identify a number of fields where phenomenological analysis provides distinct tools and approaches useful to philosophy of mind and to the cognitive sciences.

Another framework, which attempts to link processes in the brain and mind, is provided by a Bayesian approach. This suggests that the brain is concerned about predicting events based on, and leading to, inferred causes in the environment. This becomes particularly challenging when interacting with other people, as summarised by Chris Frith in his recent publication “Making up the Mind”. Some of the proxies, which allow inferring intentions and actions of other people, appear to rely on so-called mirror systems in the brain. They map actions and emotions of others on to areas involved in generating or representing similar states in the self. This suggests people can share minds because we share bodies, or, in Vittorio Gallese’s succinct recent formulation, “intersubjectivity is best conceived of

as intercorporeity". As argued by Tatjana Nazir, Marc Jeannerod and colleagues, activation in sensory-motor systems may also be a critical part of language understanding. Hence the body may be both a locus for the anchoring of the self, and for a meeting with others. Mapping out how in the brain the representation of the body and the self is intertwined, as has been done in a number of studies by Patrick Haggard, Manos Tsakiris and colleagues, may therefore be crucial for understanding also how we relate to others.

### Embedding in the CNCC programme

Many BASIC researchers have organised and participated in conferences and in research stays with other CNCC research projects. Key events include the co-organisation of the summer schools *The Sense of Body* (University of Bologna, June 2008) and *Social Cognition and Social Narrative* (San Marino, July 2009) and of the CNCC PhD Essay Award. One very important development, brought out via interactions primarily with the CONTACT group, has been an increased awareness among BASIC researchers of the importance of objects and other elements of the environment for creating and stabilising cognitive worlds. This exploration of an extended mind approach appears important for mapping out links between cognitive processes and cultural dynamics, e.g., expressed in work by Andreas Roepstorff and colleagues on cultural object use.

### Selected list of publications

- Frith, C.D. (2007) *Making up the mind: how the brain creates our mental world*. Malden, MA: Blackwell Pub.
- Gallagher, S. and Zahavi, D. (2007) *The phenomenological mind*, Routledge.
- Nazir, T.A., Jeannerod, M., and Hauk, O. (2008) *The role of sensory-motor systems for language understanding*. Foreword. *J. Physiol. Paris*, 102(1-3), 1-3.
- Raichle, M.E., and Snyder, A.Z. (2008) *Intrinsic Brain Activity and Consciousness*. In: *The Neurology of Consciousness: Cognitive Neuroscience and Neuropathology*, S. Laureys and G. Tononi (Eds.). London: Academic Press, pp. 81-88.
- Roepstorff, A. (2008) Things to think with: words and objects as material symbols. *Philosophical Transactions of the Royal Society*, B, 363(1499), 2049-2054.
- Thompson, E. (2007) *Mind in life: biology, phenomenology, and the sciences of mind*. Cambridge, Mass.: Belknap Press of Harvard University Press.

# Social Cognition and Social Narrative

7-13 July 2008

Collegium/Summer School  
University of San Marino  
Università degli Studi della Repubblica di San Marino

**Participating Faculty:**

Orsiero Casiraghi  
Psychology (ISTC-CNR, Rome)

Jonathan Cole  
Neurophysiology  
(Bournemouth and Bournemouth)

Stephen M. Fine  
Cognitive Science (Central Florida)

Shaun Gallagher  
Philosophy/Cognitive Science  
(Central Florida & Heriot Watt)

Vittorio Galassi  
Neuroscience (Pavia)

David Herman  
English/Project Narrative  
(St. Basil)

Jessica Hoban  
Psychology (Birkbeck/University  
College London)

Peter Hutton  
Developmental Psychopathology  
(University College London)

Dan Hutto  
Philosophy (Heriot Watt)

Tamar Jersak  
Psychology (StB)

Daniela Kloo  
Psychology (Saarburg)

Andreas Kuhlmann  
Developmental Psychology  
(Washington)

Julie Proust  
Philosophy (Levin Neod Institute)

Andreas Roepstorff  
Neuroscience (Aarhus)

Stephan Strub  
Philosophy (Pavia)

Kai Vogeley  
Psychiatry (Erlangen)

Patricia Volz  
Semiotics and Communication  
(Belgium & San Marino)

Dan Zahavi  
Philosophy (Oslo)

Organizers:  
Shaun Gallagher, Daniel D. Hutto  
and Dan Zahavi



A one-week interdisciplinary collegium/summer school sponsored by the European Science Foundation, on contemporary research in the area of social cognition, theory of mind, and narrative theory.

This collegium is designed to bring researchers from the EUROCORES programme "Consciousness in a Natural and Cultural Context (CNCC)" and major figures in the area of social cognition together with younger scholars, graduate students, and post-doctoral researchers to discuss the role of narrative and embodied intersubjectivity. Within the framework of a week-long summer school, research presentations, discussions, and tutorial sessions will allow researchers and students to share knowledge and interact. Researchers from outside the CNCC projects, together with researchers from CNCC projects will be participating.

Application deadline: 1 March 2008

Application materials and further information is available on the following website:  
<http://www.philosophy.ucf.edu/pcs/smCollegium.html>

A San Marino 800 Anniversary (1710) - John White, Marquette, National Museum, Lincoln, Lady Lever Art Gallery



This work, as part of the European Science Foundation EUROCORES Programme (CNCC), was supported by funds from the EU 6th Framework Programme under Contract No. 016042-2002-200208



Announcement of the CNCC Summer School "*Social Cognition and Social Narrative*", 7-13 July 2008, in San Marino, organised by the BASIC members Professor Shaun Gallagher and Professor Dan Zahavi, together with the CNCC Review Panel member Professor Dan Hutto.

### More information

BASIC website at the University of Central Florida:  
[www.philosophy.ucf.edu/pcs/basic.html](http://www.philosophy.ucf.edu/pcs/basic.html)

## 4. Highlights of the CNCC Collaborative Research Projects

### Unconscious Boundaries of Mind; research into the extended mind hypothesis (Boundaries of Mind)

**Project Leader:** Dr. Tjeerd Jellema, University of Hull, UK

**Principal Investigators:**

- Professor Johan Wagemans, University of Leuven, Belgium
- Professor Albert Postma, Utrecht University, The Netherlands

**Funding organisations:**

- Arts and Humanities Research Council (AHRC), UK
- Research Foundation – Flanders (FWO), Belgium
- Netherlands Organisation for Scientific Research (NWO), The Netherlands



The Boundaries team, with from left to right: Professor Albert Postma, Ms. Hollie Burnett, Dr. Stefan van der Stighele, Ms. Mijke Hartendorp, Dr. Tjeerd Jellema, Dr. Naoki Kogo, Professor Johan Wagemans.

### Scientific results

The major aim of our project was to explore the “boundaries” (possibilities/limitations) of the subconscious mind in its attempts to create certainties on the basis of an inherently ambiguous world. All three groups involved used visual stimuli which contained varying degrees of ambiguity or uncertainty, but differed in the specific approach they took (Leuven: computational, Utrecht: contextual, Hull: individual differences). One class of stimuli of great interest to us consisted of so-called bi-stable images, in which the same physical image of the stimulus can lead to two possible interpretations. A famous example of this phenomenon of perceptual ambiguity is the so-called “face or vase” image. Either the face or the vase is seen at any moment in time, and this perception alternates within observers over time. A major achievement was the development of a neuro-computational model to explain the underlying mechanisms of the perceptual ambiguity [refs. 1 and 2, Fig. 1]. The core of the model is a “top-down” feedback system. As soon as the model starts to detect one of the two objects (face or vase) as a figure, the top-down influence changes the response properties of the model in favour of the detected figure. We demonstrated that this model is able to reproduce various known aspects of human multi-stable perception. An important conclusion is that the adaptation and recovery processes need to be perception dependent (not physical input dependent) to reproduce human perception. This promising model is currently also tested with ambiguous stimuli that result from a morphing procedure between two known, unambiguous objects.

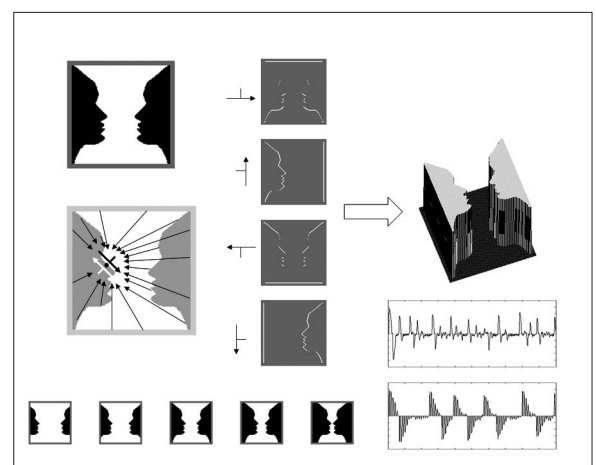


Figure 1: A famous example of the phenomenon of perceptual ambiguity: the so-called “face or vase” image. Either the face or the vase is seen at any moment in time, and this perception alternates within observers over time.

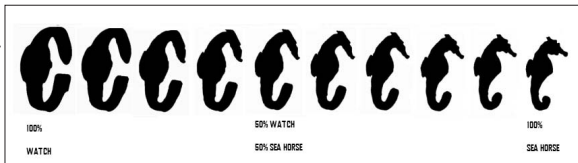


Figure 2: Individual interpolations from ambiguous stimuli that result from a morphing procedure between two known, unambiguous objects contain information in varying proportions belonging to each of the two extreme unambiguous objects.

Individual interpolations that make up such a morph series contain information in varying proportions belonging to each of the two extreme unambiguous objects [Fig. 2]. We were in particular interested in the influence of the perceptual context on the interpretation of the morphs. One of the major, and quite surprising, findings was that the non-dominant object, i.e., the object that contributes to the morphed object for less than 50%, did have a distinct influence on observers, even though it was never detected by them when the same morph was presented in isolation (i.e., without context) [refs. 3 and 4]. Priming experiments, in which words that were congruent/incongruent with the non-dominant object formed the prime stimulus, showed that the perceptual context could “bring out” the influence of the non-dominant object hidden in the morph. The importance of this finding is that it demonstrated that the subconscious mind initially processes both the dominant and non-dominant objects (and considers both as possible candidates), after which response competition takes over and determines the winner.

We further discovered highly specific individual differences in the ability to resolve the visual ambiguities, using individuals that occupied different positions on the Autism Spectrum Disorder dimension [ref. 5]. The ability to trade a current concept of an object for a new one (concept-switching) was increasingly compromised along the autism dimension when the new concept was of an animate nature. However, the ability to switch to inanimate, culturally-defined or man-made concepts remained intact, even in the most severe autistic individuals. In sharp contrast, the ability to form a new, animate concept from “scratch” (i.e., without already having a particular concept in mind) remained unaffected along the autistic continuum. These findings demonstrate that the boundaries of the human subconscious mind with respect to solving visual ambiguities/uncertainties are determined by the animate vs. inanimate nature of the image and that these boundaries differ hugely between individuals.

## Embedding in the CNCC programme

The intensive collaborations within the Boundaries consortium quickly extended to include input from groups in other CNCC consortia, which significantly broadened our conceptual framework. For example, the group of Jeroen Smeets (CEWR) made us appreciate the role of the motor system in resolving perceptual ambiguities (CNCC Workshop *Boundaries of What the Mind Can Reach*, Amsterdam, 2008). The group of Yann Coello (CEWR) was influential in delineating the relationships with language representations (CNCC Workshop *Representations and Language of Space*, Lille, 2009), and sparked some of our best experiments. Philosophical perspectives, including the extended mind theory, embodied simulation and low-level mindreading (CNCC Symposium *Narrative Consciousness and the Origins of Theory of Mind*, Hertfordshire, 2007; CNCC Symposium *Mindreading, Metacognition, and Self-consciousness*, Delphi, 2007; CNCC Summer school on *Social Cognition and Social Narrative*, San Marino, July 2008) have substantially influenced the way we interpret our work. A fruitful collaboration with Vittorio Gallese (BASIC) resulted from this. Furthermore, the opportunity to use ESF funding for a Short Term Visit gave one of our project members (Stefan Van der Stigchel) the opportunity to start a collaboration with Patrick Haggard (BASIC).

## Selected list of publications

- Kogo, N., Galli, A., Van Gool, L., and Wagemans, J. (2009) Switching dynamics of border ownership: a stochastic model for multistable perception (Submitted).
- Kogo, N., Strecha, C., Van Gool, L., and Wagemans, J. (2009) Surface completion by a 2-D differentiation-integration process: A neurocomputational model for perceived depth, lightness and contours in Kanizsa figures. (Submitted).
- Hartendorp, M.O., Van der Stigchel, S., Burnett, H.G., Jellema, T., Eilers, P.H.C., and Postma, A. (2009) Categorical perception of morphed objects using a free-naming experiment. (Under revision).
- Hartendorp, M.O., Van der Stigchel, S., Burnett, H.G., Jellema, T., and Postma, A. (2009) Categorisation of perceptual uncertain information: Do we process the non-dominant object in a morphed figure? (Submitted).
- Burnett, H.G., and Jellema, T. (2009) Concept-forming and concept-switching are differentially affected in individuals with low versus high scores on the Autism-spectrum Quotient (AQ) questionnaire. (Submitted).

## 4. Highlights of the CNCC Collaborative Research Projects

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### The Conscious Experience of What is Reachable: neural, behavioural, cultural and philosophical aspects (CEWR)

**Project Leader:** Professor Yann Coello, Université de Lille, France

**Principal Investigators:**

- Dr. Joan Lopez-Moliner, Universitat de Barcelona, Spain
- Dr. Angela Sirigu, Université Claude Bernard, Lyon, France
- Professor Jeroen Smeets, Vrije Universiteit Amsterdam, The Netherlands

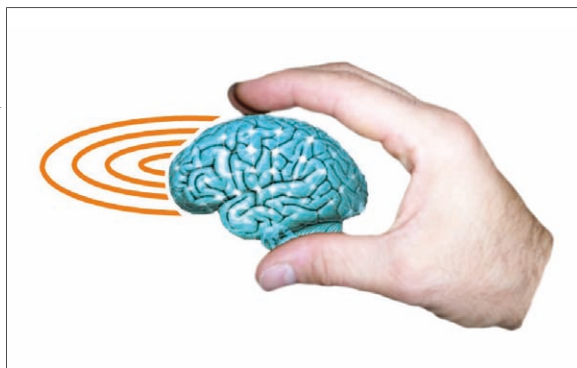
**Associated Partners:**

- Dr. Bernard Pachoud, Centre de Recherche en Épistémologie Appliquée, Paris, France
- Professor Alan Wing, University of Birmingham, UK

**Funding organisations:**

- Interministerial Committee on Science and Technology (CICYT), Spain
- National Centre for Scientific Research (CNRS), France
- Netherlands Organisation for Scientific Research (NWO), The Netherlands
- Région Nord-Pas-de-Calais, France

© Professor Yann Coello, Université de Lille



Logo CEWR: the **C**onscious Experience of **W**hat is **R**eachable.

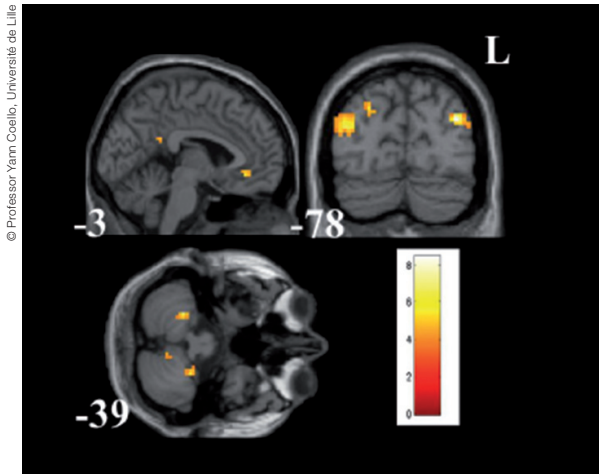
#### Scientific results

This Collaborative Research Project has been the opportunity to work in a collaborative way on the concept of perceptual thresholds for action. The main issue was how the cognitive agent determines which object in the external space is suitable to interact with – considering not only object physical properties but also the properties of the body and the human action system. In this context, the project focused essentially on the visual perception of what is reachable, in other words, the visual perception of the boundary of peripersonal space.

Because peripersonal space is dependent on the characteristics of the action system (arm length, muscular force...), we hypothesised that the perceptual system should be widely influenced by motor representations. Our work has suggested that motor representation can be viewed as a component of a predictive system, which includes a neural process that simulates the dynamic behaviour of the body in relation to the environment, enabling thus to anticipate sensory, postural and/or spatial consequences (ideomotor principle). Conceptually, this approach refers to the control theory based on the notion of internal model. Control theory states that, independently of whether a motor action is performed or not, a visual stimulus can be mapped in motor terms (inverse model) and a predictive model associated with action planning can be used to simulate the expected dynamic behaviour of the body in relation to the environment (forward model). The role of the predictive model is to optimise the control of motor activity and also to provide information about the feasibility of potential motor actions. Because it carries information about the predicted final state of anticipated action, the predictive model can be considered as being the support for spatial perception in relation to action (e.g., peripersonal space). Because it carries information about the predicted ongoing state of the body, the predictive model can also be considered as contributing to the understanding of movements performed by others. To demonstrate the validity of this theoretical framework, we have conducted several experimental works through psychophysical studies, functional magnetic resonance imagery and neuropsychological patient studies.

Psychophysical studies have shown that the judgments of what is reachable can change at a very short time scale (tens of trials, minutes) by giving subjects false visual information about their hand's location. This demonstrates that transiently modifying the sensory consequences of action (or body schema) directly affects the visual perception of what is reachable in peripersonal space. Furthermore, non-invasive brain analyses (fMRI and TMS) have revealed that the perception of what is reachable implicates a neural network that includes a fronto-parietal circuit in relation with the





Brain areas involved in the determination of reachable targets (including bilateral Superior and Inferior Parietal lobe, Precuneus, Middle Temporal Gyrus, Superior Occipital Gyrus, Anterior Cingulate and Cerebellum).

cerebellum. We indeed found that cerebellum bi-lateral activity was dependent on object distance up to the boundary of peripersonal space, with no activity for farther distances.

From a dynamical perspective, another issue was to investigate the underlying spatial and temporal aspects of the interception of moving objects and the main sources of sensory information that contribute to each one. The project has focused on demonstrating that where and when to intercept the object cannot be rooted on perceptual processing only, but requires close connections with the motor (action) system. Major findings of our research revealed that temporal and spatial accuracy depends on the direction of moving objects. Temporal errors are broader in lateral interception task, whereas spatial errors are broader in sagittal interception task.

Complementary investigations have shown that dynamical proprioceptive information available in the sagittal interception condition provided privileged information to optimise the interception's performance. As evidence for this, higher temporal errors were found in the sagittal interception task when removing kinematic information by preventing hand movement for the response.

### Embedding in the CNCC programme

Participation in the CNCC programme has definitely influenced the research of the collaborating teams for several reasons. The CRP provided the opportunity to associate research experts on perception, action and

consciousness within a multidisciplinary approach of the conscious perception of spatial thresholds. The benefit was important for the empirical data through collaborative research programmes, but also for the theoretical impact of the research as the outcome of the experimental work was deeply discussed inside the multidisciplinary team. The additional value came also from the contribution of philosophers and neuroscientists in the discussions concerning the interpretation of empirical data. The CNCC project has also influenced empirical research by considering the results in a more philosophical context.

The CNCC programme provided furthermore the opportunity to attend international conferences, usually multidisciplinary, and provided also the funding to organise a European conference in Lille in 2009 on *Motor Representation and Language of Space*. The CNCC programme also provided the opportunity for young researchers to travel across Europe and visit other scientific laboratories (Borja Rodrigues in Amsterdam, Angela Bartolo in Birmingham and Lyon...). Finally, it strengthened the connection between the teams sharing common scientific interests and made possible research that would have not been possible otherwise, for instance an fMRI study in Birmingham fully organised by the Lille research team.

### Selected list of publications/presentations

- Rodríguez-Herreros, B., and López-Moliner, J. (2008) The influence of motion signals in hand movements. *Exp. Brain Res.*, 191(3), 321-329.
- Coello, Y., and Delevoye-Turrell, Y. (2007) Embodiment, space categorisation and action. *Consciousness and Cognition*, 16, 667-683.
- Smeets, J.B.J., and Brenner, E. (2008) Why we don't mind to be inconsistent. In: *Handbook of Cognitive Science – An Embodied Approach*, P. Calvo and T. Gomila (Eds.). Amsterdam: Elsevier, pp. 207-217.
- Delevoye-Turrell, Y., Bartolo, A., and Coello, Y. (2009) Motor representation and the perception of space. In: *Perception, Action and Consciousness*, N. Gangopadhyay (Ed.). Oxford University Press.
- Papers presented at various conferences, e.g., Towards a Science of Consciousness (Tucson, 2008), European Conference on Visual Perception (Utrecht, 2008), Summer school "Sense of Body" (Bologna, 2008), Visual Sciences Society (Naples, 2009), Motor representation and language of space (Lille, 2009), European Conference on Visual Perception (Regensburg, 2009), Progress in Motor Control (Marseille, 2009), Human Brain Mapping (San Francisco, 2009).

## 4. Highlights of the CNCC Collaborative Research Projects

### Consciousness in Interaction. The Role of the Natural and Social Environment in Shaping Consciousness (CONTACT)

**Project Leaders:** Professor Cristiano Castelfranchi and Dr. Fabio Paglieri, Istituto Scienze e Tecnologie della Cognizione, Roma, Italy

**Principal Investigators:**

- Professor Andy Clark, University of Edinburgh, UK
- Professor Enrico Rambaldi, Istituto per la Storia del Pensiero Filosofico e Scientifico Moderno, Milano, Italy
- Professor Susan Hurley, Bristol, UK (until 2007), Dr. Finn Spicer, University of Bristol, UK (from 2007)
- Professor Ed S. Tan, University of Amsterdam, The Netherlands

**Associated Partner:**

- Professor Thomas Metzinger, Johannes Gutenberg Universität Mainz, Germany

**Funding organisations:**

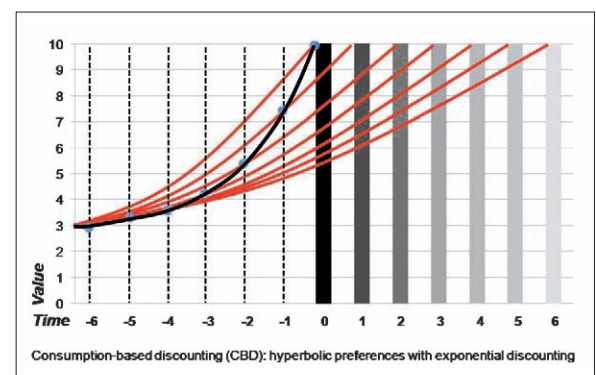
- Arts and Humanities Research Council (AHRC), UK
- National Research Council (CNR), Italy
- Netherlands Organisation for Scientific Research (NWO), The Netherlands

**Scientific results**

The CONTACT approach to consciousness assumes that this phenomenon cannot (and should not) be studied from a strictly internalist perspective, but rather requires appreciation of the subject's skillful interactions with the natural and social environment. This is tantamount to applying the embodied and situated approach – known from the scientific study of cognition – to the problems of consciousness. All different facets of conscious experience, from phenomenology to meta-representational contents, have been investigated under the assumption that they originate, develop and are modulated through (different kinds of) interaction. This interactionist approach is the main novelty of the CONTACT research programme. In addition, special emphasis was also given to the affective features and cultural dimension of consciousness, to add depth and perspective to our own research agenda.

All CONTACT Individual Projects initiated new, promising lines of research and produced substantial results in each of them:

- **IP-01 *The social dimension of consciousness.*** Special attention was given to how social interactions affect and shape internal dynamics, through development and evolution. We focused on self-control in intertemporal decision-making, developing a new theory in terms of goals and commitments, formal models of intertemporal choice (using game theory, discount functions and temporal framing), and empirical research aimed at verifying the theory, employing several methodologies: behavioural experiments with human subjects (children and adults) and non-human primates (Capuchin monkeys), as well as computer simulations based on multi-agent systems and neural networks.



IP-01, CONTACT.

- **IP-02 *Making up minds: Sensorimotor dynamics, social cognition, and consciousness.*** We have investigated the extent to which one's perceptual experiences are affected by one's potential for acting in the world, focusing on whether the agency's role in shaping perceptual consciousness is more profitably conceptualised in causal or constitutive terms. We have traced the ramifications of our work on agency and perception for the wider foundations of the philosophy of mind. We have also investigated how individuals' cognitive abilities mediate social dynamics: in particular how social interaction between agents is mediated by agents' capacity to keep track of the distribution of knowledge across the group.

- **IP-03 *Active consciousness, embodiment, and the sense of self.*** We have pursued a sustained critical assessment of the merits (and pitfalls) of attempts to apply insights from embodied and situated cognitive science to the scientific study of consciousness. We have critically probed the radical claim that the physical machinery that makes consciousness possible might

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extend beyond the brain/CNS, incorporating key contributions from body and world. We have investigated how embodied cognition might scale up to explain the complex cognitive capacities that underpin voluntary action. Finally, in collaboration with IP02, the implications of the “dual visual systems” hypothesis for theories of consciousness and embodied action was explored.

• **IP-04 *Emotional feelings and subject-object relationships.*** In this project we are examining variants of conscious activity. The main focus is on emotional experience, about which very different theoretical views exist because it strongly depends on the individual’s attitude towards the emotional events. That attitude varies between being engaged with the events or reflecting on the self and the experience. Our interest is focused on understanding unreflective experience, as it is linked to unreflective action in the exertion of skills, in being emotionally engaged, and in impulsive emotional response.

• **IP-05 *The conceptual roots of consciousness in interaction: Mapping the notion of consciousness in the European culture.*** We have examined the concept of consciousness in its historical and philosophical aspects. Specifically, we have focused on those moments and key authors that, more than others, can highlight its conceptual evolution. Particular attention has been given to the thought of Giambattista Vico, in order to show how he has developed a concept of consciousness as opposed to the Cartesian idea of cogito. The collaboration with the Chair of Philosophy of Science of the University of Milan (Professor Corrado Sinigaglia) has allowed IP05 to extend the research to the theoretical and philosophical aspect of the notion of consciousness.

• **AP-01 *Functional, intentional, and phenomenal layers in the human self-model.*** Building on the self-model theory of subjectivity (SMT), we investigated how different varieties of externalism may account for intentional and phenomenal content. Although we endorsed interactionism about cognition, we disputed that the very same neural activity can be correlated non-trivially with different conscious experiences. We also investigated the co-evolution of self-consciousness and self-directed cognition: while much of cognition is unconscious, the most interesting examples are those in which flexibility, selectivity and context-sensitivity have been maximised by elevating them to the level of phenomenal processing. We considered whether this indicates a co-evolution or simply an addition.



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Capuchin monkeys (*Cebus apella*) were used in behavioural experiments on inter-temporal choice by IP-01, CONTACT

### Embedding in the CNCC programme

The interactionist view of consciousness we favour is also the most significant contribution of our Collaborative Research Project to the CNCC programme. It resonates quite naturally with the emphasis on intersubjectivity characteristic of the BASIC research programme, and it was usefully applied to the study of metacognition conducted by the METACOGNITION project; many of the research assumptions behind the BOUNDARIES project are based on the externalist approach developed by Clark (IP-03), and the CEWR project shares with us a common interest on sensorimotor dynamics, as attested by a variety of joint research meetings. In light of these connections, the research developed by our CRP has often been instrumental in furthering the achievements of the whole CNCC programme, and vice versa. Moreover, in addition to its core expertise in philosophy, our consortium presents some disciplinary competences that are quite unique, and thus especially valuable, in the CNCC community: Artificial Intelligence (IP-01), psychology of emotions (IP-04) and history of philosophy (IP-05).

Collaboration and exchange of ideas within the CNCC programme have been a key factor in fostering our research. In general, we believe that the CNCC programme has been especially successful in quickly establishing a thriving and open-minded scientific community, with continuous interactions among researchers both within and across Collaborative Research Projects. In terms of scientific cooperation, the frequency and quality of our collaborations with other Collaborative Research Projects also helped our consortium to further broaden its multidisciplinary background: in particular, it allowed us to explore in greater detail issues in neuroscience

## 4. Highlights of the CNCC Collaborative Research Projects

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(BASIC, CEWR, BOUNDARIES), phenomenology (BASIC) and animal cognition (METACOGNITION), all of which are very relevant for our interactionist approach to consciousness.

### Selected list of publications

- Organisation of the *CNCC Essay Prize for Junior Scholars* (<http://www.esf.org/cncc-award>): F. Paglieri (IP-01), T. Vierkant (IP-03), M. Tsakiris (BASIC). (This resulted in a final event in Edinburgh on 28 June 2008, where the prizes were awarded; the six finalist essays were later published as a special issue of *Psyche*, 15 (1), 2009, <http://www.journalpsyche.org/ojs-2.2/index.php/psyche/issue/current>)
- Hurley, S. (2008) The shared circuits model (SCM): How control, mirroring, and simulation can enable imitation, deliberation, and mindreading. *Behavioural and Brain Sciences*, 31 (1), 1-58. (This target article by S. Hurley (IP-02) was published posthumously, with J. Kiverstein and A. Clark (IP-03) acting as editors and providing a response on behalf of the author)
- Clark, A. (2008) *Supersizing the mind. Embodiment, action, and cognitive extension*. Oxford: Oxford University Press.
- Frijda, N.H. (2009) Emotion experience and its varieties. *Emotion Review*, 1, 261-271.
- Rizzolatti, G., and Sinigaglia, C. (2007) *Mirrors in the brain. How our minds share actions, emotions, and experience*. Oxford: Oxford University Press.

### More information

CONTACT website:

<http://linus.media.unisi.it/cirg/contact/>

## Metacognition as a Precursor to Self-Consciousness: evolution, development and epistemology (METACOGNITION)

**Project Leader:** Professor Joëlle Proust, CNRS, ENS-EHESS, Paris, France

### Principal Investigators:

- Professor Johannes Brandl, Universität Salzburg, Austria
- Dr. Hannes Leitgeb, University of Bristol, UK
- Professor Josef Perner, Universität Salzburg, Austria
- Dr. Bernard Renault, CNRS, Hôpital de la Salpêtrière, Paris, France
- Professor John Smith, University of Buffalo/State University of New York, USA

### Associated Partner:

- Professor Josep Call, MPI for Evolutionary Anthropology, Leipzig, Germany

### Funding organisations:

- Arts and Humanities Research Council (AHRC), UK
- National Centre for Scientific Research (CNRS), France
- Austrian Science Research Fund (FWF), Austria
- National Science Foundation (NSF), USA

### Scientific results

Metacognition is the capacity to predict and evaluate one's cognitive capacities in a specific task, thanks to which agents can rationally adjust their goals to the cognitive competences involved. The main aim of our Collaborative Research Project was to explore the phylogeny, development and functional properties of metacognition as a precursor of self-awareness. Research was conducted from four different perspectives: comparative, developmental, human adult (behaviour and brain correlates) and conceptual.

Smith and Beran scrutinised the validity of the opt-out paradigm, allowing the animals to accept or reject a cognitive task. A potential confound between responding to a "Middle" category in a continuous stimulus, and feeling uncertain about the nature of the stimulus, was cleared off: Capuchin monkeys did use the Middle



Jerome Bosch's "Conjurer" presents an illusionist transferring nutmegs from one jar to the other and inviting bets from the crowd. The main topic of the picture is the bent figure (a canon) and his metacognitive blunder: he is being robbed by the monk behind him, who takes advantage of too exclusive an attention to the nutmeg. The young couple illustrates a metarepresentational understanding of the scene, whereas the nun merely forms a moral judgment on the game.

response easily, but, unlike macaques, *did not use* the Uncertainty response. Furthermore, new evidence for metacognitive transfer in macaques was found. This finding suggests that monkeys have an uncertainty-monitoring capacity that is like that of humans in transcending task-specific cues and extending simultaneously to multiple domains.

It is plausible, however, that some metacognitive tasks require a mindreading ability. Perner's group has worked on children's understanding of identity statements, with a specific focus on children's insights into their own ignorance. Metacognitive awareness does not occur, in this task, before six years of age, which links up with earlier evidence by John Flavell on children's abilities to introspect their unintended mental activities, like intruding thoughts. These results, also discussed in Brandl's group, suggest that the mindreading abilities involved in understanding beliefs are a limiting factor in the metacognitive ability of evaluating the referential relations between one's own model of the world and the world.

Renault's group explored the brain activity associated with a metacognitive decision of asking for more information, when necessary (in a free choice condition) to complete a given face discrimination task. No evoked potential was found for *undetected* stimuli whether in a forced choice or in a free choice condition. For detected stimuli, however, the P300 brain wave is larger in the forced than in the free choice condition, suggesting that

metaperception involves comparatively more working memory updating than forced detection.

Proust's group conducted research on prospective and retrospective metaperception in a change-blindness task. They found that the sense of fluency generated by felt *initial* difficulty does not influence retrospective self-confidence, but modulates subsequent performance. If replicated, this result would suggest that the dynamics of metacognitive experience might be an important, although largely ignored dimension in schoolchildren's learning.

Important conceptual results were reached in Leitgeb's group: they show that Fuhrmann's impossibility result – which entails that rational agents cannot have complete sets of metabeliefs of the form "I believe that I believe that A" and "I believe that I consider it possible that A" – rests on flawed assumptions concerning how introspection should work. They stress the *context-sensitivity* of modal judgments, and provide a new set of axioms for doxastic introspective agents.

### Embedding in the CNCC programme

From the METACOGNITION participants' viewpoint, the CNCC programme has made possible a rare collaboration among researchers 1) from very diverse fields and 2) having competing, incompatible views on the phenomenon under study. While Perner and Brandl see metacognition as strongly dependent upon mindreading abilities, Call, Beran and Smith, Leitgeb, Proust, and Renault analyse metacognition in non-metarepresentational terms. This interesting blend of challenges allowed experimentalists to come up with more controlled empirical methods for testing metacognition in non-linguistic animals as well as in human children. It also allowed theorists to come up with more detailed answers to their opponents' objections, as reflected in a recent *BBS* issue in which Carruthers finally considers the merits of the case for nonconceptual forms of introspection. If it is recognised that metacognition has no uniform realisation, but is domain- or function- specific (metamemory being distinct from, e.g., metaperception), then our respective results do not contradict each other, because they involve tasks which do not rely to the same extent on theory-based cues.

Coming now to the wide theoretical exchanges made possible through CNCC networking activities, individual researchers from our Collaborative Research Project found the various workshops and conferences organised across projects very stimulating for their own research. CONTACT and BASIC were particularly involved in events organised by the METACOGNITION group, and contributed to the critical discussion of the concept of Metacognition, of the sense in which it involves simu-

## 4. Highlights of the CNCC Collaborative Research Projects

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lation (J. Kiverstein), inter-temporal coordination (F. Paglieri) or includes the dimension of evaluative control (T. Vierkant). Reciprocally, many members of the METACOGNITION group collaborated with BASIC and CONTACT on issues such as the significance of metacognition for Clark's "extended mind", for the nature of consciousness, or for the relations between social cognition and self-knowledge. Clearly, networking allowed Individual Projects to gain higher visibility and open additional collaborative opportunities, which materialised in various publications in preparation.

### Selected list of publications

- Brandl, J., and Perner, J. (2009) Simulation à la Goldman: pretend and collapse, *Philosophical Studies*, 144 (12), 435-446.
- Duca, S. (2009) Rationality and the Wason Selection Task: A Logical Account, *Psyche*, 15(1), 109-131.
- Nawroth, C. (2009) *Decision making in the great apes. How to deal with uncertainty*. Diplom thesis, Julius-Maximilians-Universität Würzburg.
- Proust, J. (2009) The Representational Basis of Brute Metacognition: A Proposal. In: *The Philosophy of Animal Minds: New Essays on Animal Thought and Consciousness*, R. Lurz, (Ed.), Cambridge: Cambridge University Press.
- Smith, J.D., Beran, M.J., Couchman, J.J., and Coutinho, M.V.C. (2008) The comparative study of metacognition: Sharper paradigms, safer inferences. *Psychonomic Bulletin and Review*, 15, 679-691.

### More information

METACOGNITION website:  
<http://mpscsf.free.fr/>

## 5. CNCC Networking, Training and Dissemination Activities

Networking and collaboration within a EUROCORES Programme take place at two levels:

- between the various Individual Projects within each Collaborative Research Project (CRP);
- and between the funded CRPs within the programme as a whole.

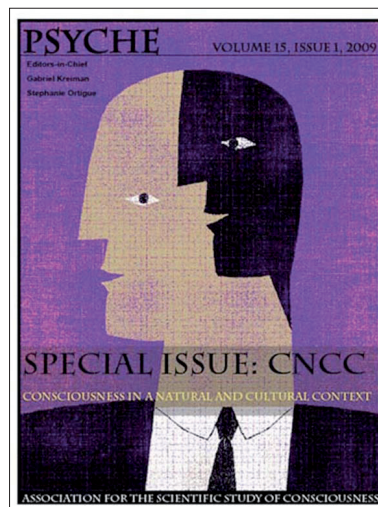
The intra-CRP collaboration is motivated by the nature of the CRP's research objectives, i.e., by the scope and the complexity of the questions it deals with. In a CRP, the participating groups have the opportunity to gather the required critical mass to successfully address the objectives and challenges of their project.

The cross-CRP networking and collaboration – more on which you will find in this chapter – is stirred by the aims and the nature of a particular EUROCORES Programme. The CNCC programme has been developed precisely because of its clear need for enhanced collaboration in this field. The funded CRPs have collectively set up and further streamlined this new collaboration. To this end, the CRPs have engaged their members and, when of clear benefit, colleagues from outside the programme, in joint activities such as seminars, workshops, expert meetings, conferences and training activities – either stand-alone or as part of other larger events.

Through active participation of scientists in the above-mentioned activities, not only have existing collaborations been enhanced but also new and strategic partnership opportunities have been identified. Furthermore, these activities provided opportunities to explore aspects of the CNCC programme which are not covered by the funded research projects.

The integrative activities between the CRPs have helped to strengthen the field by building coherence within this emerging research community and served as a platform for the research work which is done in the programme.

Further information can be found at the programme website [www.esf.org/cncc](http://www.esf.org/cncc), click on **Events**.



Cover of the special edition of PSYCHE, Vol 15, No 1 (2009), devoted to the CNCC Essay Award for Junior Scholars. Organisers: Dr. Fabio Paglieri, Dr. Manos Tsakiris and Dr. Till Vierkant.

- **CNCC Launch Conference**

12-14 November 2006, Copenhagen, Denmark

The aim of the CNCC Launch Conference was to give the programme a head start and to actively promote the exchange and cooperation between the different – natural and cultural – approaches and perspectives to the scientific study of consciousness and to plant the seeds for follow-up activities, within and across the CNCC programme.

*Organisers:*  
ESF office

- **CNCC participation at the NSF Workshop *Consciousness and the Brain in Context***

1-3 December 2006, UC Berkeley, USA

The purpose of the workshop *Consciousness and the Brain in Context* was to investigate the hypothesis that the source of our inability to bridge the gap between neural systems and consciousness is our neglect of the possibility that neural systems function to allow for consciousness only given a broader embedding. In other words, that consciousness only arises in context. The Workshop was funded by a grant from the NSF, co-sponsored by the EUROCORES Programme CNCC.

*Local organiser:*  
Professor Alva Noë, UC Berkeley, USA

## 5. CNCC Networking, Training and Dissemination Activities

- **Symposium: *Metacognition, Mindreading, and Self-consciousness***

14 May 2007, Delphi, Greece

Meeting at the 3<sup>rd</sup> conference of the European Society for Cognitive Science (EUROCOGSCI Conference 2007) discussing relevant facets of the connection between mindreading capacities and self-consciousness.

*Organisers:*

Professor Cristiano Castelfranchi, Dr. Fabio Paglieri, Istituto Scienze e Tecnologie della Cognizione, Roma, Italy

- **Workshop: *Perception, Interaction and Consciousness***

3 July 2007, Bristol, UK

What are the roles of interactions between perception and action, and between active organisms and their environments, in explaining consciousness? This event sought to explore this and similar issues from an interdisciplinary perspective by bringing together leading exponents in the field.

*Organisers:*

Dr. Nivedita Gangopadhyay, Professor Susan Hurley, University of Bristol, UK

- **Conference: *Fallibilities, Illusions and Metacognition***

12-13 July 2007, Paris, France

Cognition and metacognition are inherently error-prone. The conference aimed at understanding how failures, ambiguities and illusions arise, are detected and are corrected by metacognitive processes, and how the latter can themselves be subject to failures and illusions. Cognitive and metacognitive fallibilities were approached from a variety of cognitive science, philosophy, biology, and neuroscience perspectives.

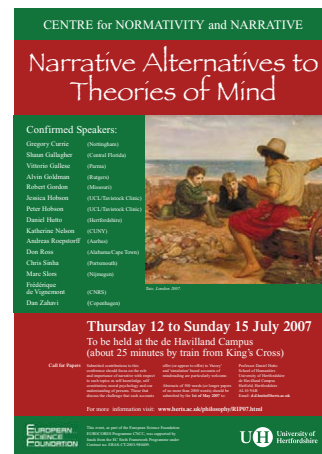
*Organiser:*

Professor Joëlle Proust, CNRS, ENS-EHESS, Paris, France

- **Conference: *Narrative Alternatives to Theories of Mind***

12-15 July 2007, Hertfordshire, UK

The purpose of this fully interdisciplinary conference was to bring together some of the most established, some of the most innovative, and some younger researchers to address and discuss different approaches to the problem of social cognition. It included debates concerning



Announcement for the CNCC conference “*Narrative Alternatives to Theories of Mind*”, organised by Professor Shaun Gallagher and Professor Dan Hutto.

the established theories that rely on folk psychology and simulation procedures, and a more recent approach based on embodied interaction and narrative.

*Organisers:*

Professor Shaun Gallagher, University of Central Florida, Orlando, USA

Professor Dan Hutto, University of Hertfordshire, UK

- **Presentation: Introduction to the EUROCORES programme *Consciousness in a Natural and Cultural Context and its activities***

13-15 September 2007, University of Indiana, USA

This CNCC dissemination activity at the conference on *Agency and Responsibility, Perspectives from Metaphysics, Ethics and the Emerging Sciences of Brain and Behaviour* – a presentation as well as the dissemination of the CNCC programme throughout the conference – brought the CNCC work to the attention of a high class audience and allowed the CNCC members to be in contact with top people who work on the very important questions in metaphysics and ethics that follow inevitably from our own work.

*Organiser:*

Dr. Till Vierkant, University of Edinburgh, UK

- **CNCC Session at the conference *Cognition: Embodied, Embedded, Enactive and Extended***

20-24 October 2007, University of Central Florida, USA

This CNCC dissemination activity was designed to bring a CNCC presence to a major international conference that is directly concerned with research themes pursued



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by the CNCC programme. The conference provided a venue for a special session that allowed researchers from the CNCC projects to discuss their work. With the greater majority of conference attendees not familiar with the CNCC research projects, this was a good opportunity to make this work known to a larger audience.

*Organiser:*

Professor Shaun Gallagher, University of Central Florida, Orlando, USA

- **Workshop: *Self and Other in Social Neuroscience and Philosophy of Mind***  
23-24 November 2007, London, UK

How can one mind know the content of other minds? Recently, what seemed to be intractable philosophical problems have been assumed to have been solved by neuroscience. Has neuroscience found the neural basis of intersubjectivity? If so, can philosophers make use of these findings to explain how the gap between self and other is bridged? At this meeting these questions were discussed by a number of internationally renowned scientists and philosophers within and outside the CNCC programme.

*Organiser:*

Dr. Julian Kiverstein, University of Edinburgh, UK

- **Workshop: *Subjective Pre-Reflective Experience and Action***  
29 January – 1 February 2008, Copenhagen, Denmark

The aim of this workshop was to study to which extent the notion of self-consciousness that is prevailing in contemporary cognitive sciences is grounded on *pre-reflective* self-consciousness, a notion that still remains to be explored in its specificity. The workshop contributed to the development of an approach to pre-reflective self-consciousness that is phenomenologically sound, empirically efficient and behaviourally/clinically relevant.

*Organisers:*

Professor Yann Coello, Université de Lille, France  
Dr. Dorothee Legrand, Center for Subjectivity Research, Copenhagen, Denmark

- **Workshop: *Boundaries of what the mind can reach***  
28-29 February 2008, Amsterdam, The Netherlands

The “what” and “where” of objects are frequently regarded as independent entities, processed in different

parts of the brain. However, in everyday actions, such as when we want to grasp a pen, we need to combine the “where” and “what”. The aim of this workshop was to build a bridge between two CNCC CRPs, CEWR and Boundaries of mind, that are concerned with these two aspects of vision. By bringing together these researchers we envisaged to deepen our understanding of the relation between the “where” and “what” in vision.

*Organisers:*

Dr. Denise de Grave, Professor Jeroen Smeets, Vrije Universiteit Amsterdam, The Netherlands

- **CNCC session at the conference *Toward a Science of Consciousness***  
8-12 April 2008, Tucson, Arizona, USA

This CNCC dissemination activity at a major international conference provided an excellent opportunity to showcase some of the scientific results achieved by the CNCC programme during its first year and a half of activity. The audience gathered at a large-scale event like Tucson 2008 – including many of the leading scholars in consciousness studies – has proven to be ideal for that purpose, both for the sake of dissemination and cross-fertilisation.

*Organisers:*

Dr. Fabio Paglieri, Istituto Scienze e Tecnologie della Cognizione, Roma, Italy  
Dr. Finn Spicer, University of Bristol, UK

- **CNCC session: *Metacognition of Ignorance***  
8-10 May 2008, Ioannina, Greece

This meeting, organised at the 3<sup>rd</sup> Biennial Meeting of the Special Interest Group on Metacognition, follows the discussion at the conference *Fallibilities, illusions and metacognition* (12-13 July 2007) about minimal criteria for being “meta”. The aim was to explicate such criteria and investigate whether they are met by extant empirical evidence for metacognition in primates and young children.

*Organiser:*

Professor Josef Perner, Universität Salzburg, Austria

- **Workshop: *Religion and Cognition in Context***  
31 May – 1 June 2008, Aarhus, Denmark

The objective of the meeting – with its focus on the interplay between cognition and religion – was to serve as a starting point for further collaborations. The aim was to bring together innovative, high-level scholars – both from projects within and outside the European Science

## 5. CNCC Networking, Training and Dissemination Activities

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Foundation – from various backgrounds whose different perspectives complemented each other, leading to an interesting exchange of ideas and opening up to what may be called a cognitive science of religion.

*Organisers:*

Professor Armin Geertz, University of Aarhus, Denmark  
ESF office

- **Summer School: *The Sense of Body***  
16-21 June 2008, Bologna, Italy

Despite the pervasive application of the body representation concept, the mental representation of the body rarely figures as a specific topic in research. Under the general title of *The Sense of Body*, this topic was the focus of attention at this Summer School. The activities, in the form of tutorials, student presentations and public discussion, focused on the behavioural, cognitive and neural correlates of body-specific processing from the perspectives of cognitive sciences, neuropsychology, cognitive neurosciences and philosophy.

*Organiser:*

Dr. Manos Tsakiris, University College London, UK

- **Final CNCC Essay Award**  
27 June 2008, Edinburgh, UK

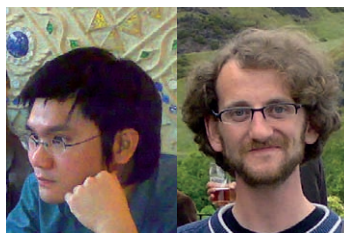
The CNCC Essay Award for Junior Scholars invited young researchers to submit a scholarly essay on a relevant topic in the field of consciousness studies, framed within the scope and aims of the CNCC original call for proposals. Forty-four eligible submissions were received. After an international reviewing stage, six finalist papers were short-listed and sent to the jurors, who selected the winners of the two awards. The awards were presented in Edinburgh at the end of a special event devoted to discussion of the six finalist papers.

*Organisers:*

Dr. Fabio Paglieri, Istituto Scienze e Tecnologie della Cognizione, Roma, Italy

Dr. Manos Tsakiris, University College London, UK

Dr. Till Vierkant, University of Edinburgh, UK



The winners of the CNCC Essay Award for Junior Scholars.  
Right: Dave Ward, University of Edinburgh.  
Left: Hong Yu Wong, University College London.

- **Workshop: *Sense of Agency: from sensorimotor processing to meta-representation***  
30 June 2008, Edinburgh, UK

One important difference between actions and passive bodily movements is that the former but not the latter seem to be accompanied by a distinct sense of agency, i.e., a feeling that one is initiating and controlling the movement. However, a considerable amount of empirical work calls into question the assumption that this sense of agency might be simply an expression of this control. This workshop explored different ways of understanding the notion of the sense of agency.

*Organiser:*

Dr. Till Vierkant, University of Edinburgh, UK

- **Summer School: *Social Cognition and Social Narrative***  
7-13 July 2008, San Marino

*Social Cognition and Social Narrative* was a one-week interdisciplinary collegium/summer school on contemporary research in the area of social cognition, theory of mind and narrative theory. It brought CNCC researchers and other major figures in the area of social cognition together with younger scholars, graduate students and post-docs to discuss the role of narrative and embodied inter-subjectivity. Tutorial sessions, research presentations and discussions created an opportunity both for the researchers to continue the discussion and for future researchers to learn about the intricacies of the debate and to contribute to it.

*Organisers:*

Professor Shaun Gallagher, University of Central Florida, Orlando, USA

Professor Dan Hutto, University of Hertfordshire, UK

Professor Dan Zahavi, Center for Subjectivity Research, Copenhagen, Denmark

- **Session *Consciousness in Context* at the European Science Open Forum, ESOF 2008**  
20 July 2008, Barcelona, Spain

This Scientific Session at the European Science Open Forum 2008 consisted of two joint presentations in which CNCC project members from different disciplines provided different perspectives on their research questions and methodology. Afterwards, the audience was invited to participate in a plenary discussion about the promise and success of the “Consciousness in Context” approach.

*Organiser:*

ESF office

Invitation - The European Science Foundation at ESOF	
Come and join the European Science Foundation's activities at ESOF 2008. We are presenting a selection of our activities in six scientific sessions where leading scientists talk about their topics. We are also hosting corresponding "Meet the Scientist" sessions at the ESF booth (no 1114/124) in the Function hall where you will have the chance to talk to our scientists in an informal setting, asking questions and meeting whilst enjoying some light refreshment. Our scientists will give a short five minute presentation on their topic and then the floor will be open for questions.	
An overview of our sessions:	
<b>Saturday 19 July</b>	<b>Revealing Europe's Hidden Map</b>
<b>Stem Cells - From bench to bedside</b>	12.30 - 13.30 Meet the Scientist at the ESF booth
8.30 - 10.00 Scientific session	14.30 - 18.00 Scientific session
11.00 - 12.00 Meet the Scientist at the ESF booth	Albert Gelsele (organiser), Yvonne Hobberstad, John Joyce, Kim Marshall-Brown, Sławomir Sagan
Fiona Kieran, Carlos de Saiz, Alastair Kent, Keith Campbell	
<b>Sunday 20 July</b>	<b>Tuesday 22 July</b>
<b>Consciousness in context</b>	<b>Reaching for the future of European Science</b>
8.30 - 12.00 Scientific session	10.30 - 12.00 Scientific session
17.00 - 18.00 Meet the Scientist at the ESF booth	12.30 - 13.00 Meet the Scientist at the ESF booth
Joëlle Proust, David J. Smith, Josep Call	Nora Konevicius-Hellman (organiser), John Mene, Luis Georgiou, Elia Fornari, Rudy Rabbinge
<b>Monday 21 July</b>	
9.30 - 10.00 Science at the centre of the earth: matter at extreme pressure and temperature	
Berni Winkler (organiser), Leonid Dubrovinsky, Wilson Gregorio	
11.00 - 12.00 Meet the Scientist at the ESF booth	
16.30 - 19.00 Scientific session	
Juergen Engelke (organiser), Eduard Pylaeut, Christopher Fahl, Christophe Salomon, Maciej Laskowski	

Invitation to the CNCC session "Consciousness in Context" at the European Science Open Forum (ESOF 2008) in Barcelona. Speakers were Professor Josep Call, Dr. Nivedita Gangopadhyay, Dr. Julian Kiverstein, Profesor Joëlle Proust and Professor David J. Smith.

- **Workshop: Representations: Perspectives from Philosophy, Psychology and Neuroscience**  
11 August 2008, Kirchberg am Wechsel, Austria

In multidisciplinary schemes like the CNCC programme, people working in different disciplines sometimes use the same terms to talk about very different concepts. The notion of "representation" is one such concept: our previous networking meetings have shown that neuroscientists, philosophers and psychologists have trouble understanding each other when talking about representations. This workshop, as part of the conference on *Reduction and Elimination in Philosophy and the Sciences*, provided an opportunity for the CNCC participants, with helpful input from the other attendees, to share ideas which will pave the way to clearer research in future.

**Organisers:**

Ms. Zoe Drayon, Mr. Simone Duca, Dr. Finn Spicer, University of Bristol, UK

- **Expert meeting: Self & Other 2**  
26-28 October 2008, Alghero, Italy

This meeting was a follow-up to the successful CNCC networking meeting and conference *Self and Other* hosted at the Institute of Philosophy in London in November 2007. It brought together many of the speakers from this first meeting but also attracted a number of other distinguished speakers both from within, and external to, the CNCC programme. The overall aim of the meeting was to investigate to what extent motor cognition might illuminate the social nature of self and our relation to others.

The workshop was a good deal smaller than the London meeting thus allowing for close interaction



Participants at the CNCC Expert meeting "Self & Other 2", 26-28 October 2008, Alghero, Italy. Organisers: Dr. Julian Kiverstein, Dr. Corrado Sinigaglia, Dr. Fabio Bacchini.

© Dr. Fabio Bacchini, University of Sassari  
© Professor Shaun Gallagher, University of Central Florida

and focused discussion between speakers. BASIC, CONTACT and METACOGNITION have different but overlapping perspectives on the nature of the social self. Over the course of the three days significant progress was made in mapping out points of agreement and disagreement.

**Organisers:**

Dr. Julian Kiverstein, University of Edinburgh, UK  
Dr. Corrado Sinigaglia, University of Milan, Italy

- **Workshop: Motor Representation and Language of Space**  
28-31 January 2009, Lille, France

One of the classical views in cognitive science is that processing of visual stimuli for language comprehension and for goal-directed behaviour is based on different cognitive resources involving independent neuronal substrates in different parts of the brain (Milner and Goodale, 1995). However, in everyday actions we often need to combine action-relevant information with semantic information. And also, words used to describe space or action very often involve motor representations. The aim of this workshop was to deepen our understanding of the relation between the representations used for language comprehension and the representations used for goal-directed behaviour.

**Organisers:**

Professor Yann Coello, Dr. Angela Bartolo, Université de Lille, France

## 5. CNCC Networking, Training and Dissemination Activities



Programme of the CNCC Workshop "Motor Representation and Language of Space" which also attracted participants from the EUROCORES programme OMLL. Organisers: Professor Yann Coello and Dr. Angela Bartolo

- **Session at *Minds, Brains and Beyond*, a conference in memory of Susan Hurley**  
21 March 2009, Bristol, UK

This session was part of the conference *Minds, Brains and Beyond*: an international conference in memory of Susan Hurley, 20-22 March 2009, organised by the CONTACT group in Bristol. This conference had an international profile and honoured Susan Hurley not by being a reverential discussion of her work, but by being a vigorous discussion of the topics she was working on at the time of her death. The conference was the first opportunity for all of Susan's closest collaborators, colleagues and intellectual opponents to get together and discuss the state of the art in her fields of research.

At the CNCC session, speakers from CNCC projects presented their work, and an introduction to Susan's contribution to the programme, and the CONTACT project in particular, was provided.

*Organisers:*

Dr. Nivedita Gangopadhyay, Dr. Finn Spicer,  
University of Bristol, UK

- **Meeting of contributors and editors of a book-publication in preparation "*Metacognition and Mindreading*"**  
9-11 July 2009, Salzburg, Austria

Shortly before the start of the METACOGNITION project, the project leader had submitted a book proposal entitled *Metacognition and Self-Awareness* to Oxford University Press. This book project came to a halt after the referees expressed several reservations about the proposal. With the support of the METACOGNITION group and from the interaction with other members of the CNCC programme, the project members wanted to

restructure the original proposal, update it with current research findings, and focus it on the critical relationship between Metacognition and Mindreading. This updated proposal will be submitted again for publication to Oxford University Press. At the Salzburg meeting, contributors and editors convened to discuss the publication.

*Organiser:*

Dr. Johannes Brandl, Universität Salzburg, Austria

- **CNCC Final Conference**  
2-4 October 2009, Edinburgh, UK

The CNCC Final Conference brings all CNCC project members together for the last time, presenting the outcomes of the programme to the CNCC community.

An important outcome of the CNCC programme is that the programme as a whole has proven to be more than the sum of its parts. To present this added value, the CNCC Final Conference is structured around 5 sessions that each address a research question that lies on the interface of various CNCC projects. In each session, speakers from two or more Collaborative Research Projects will present their views.

*Organiser:*

ESF office



St. Leonard's Hall at Pollock Halls, Edinburgh.  
Location of the CNCC Final Conference.

## 6. CNCC Governing Bodies

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### Review Panel

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The independent international Review Panel, formed of leading experts in the field, oversees the scientific aspects of the programme. The Review Panel plays a key role in the Selection and Review Process.

**Professor Arne Jarrick** (Chair)  
Department of History, Stockholm University, Sweden

**Professor Maurice Bloch**  
(until 2005)  
Department of Anthropology,  
London School of Economics and  
Political Science, London, United  
Kingdom

**Professor Marc De Mey**  
Department of Philosophy and  
Moral Sciences, Ghent University,  
Belgium

**Professor Dagfinn Føllesdal**  
(as from 2006)  
Institute of Philosophy, University  
of Oslo, Norway

**Professor Jean Gayon** (as from  
2006)  
Institut d'Histoire et de  
Philosophie des Sciences et des  
Techniques, Université Paris,  
1-Panthéon Sorbonne, France

**Professor Balázs Gulyás**  
Laboratory for Brain Research  
and PET, Nobel Institute of  
Neurophysiology, Karolinska  
Institute, Stockholm, Sweden

**Professor Gerhard Heinzmann**  
(until 2005)  
Archives H. Poincaré, Université  
Nancy 2, France

**Professor Daniel D. Hutto**  
Faculty of Humanities and  
Education, University of  
Hertfordshire, Hatfield, United  
Kingdom

**Dr. Thomas W. Polger**  
(as from 2006)  
Philosophy Department,  
University of Cincinnati, United  
States

**Professor Nini Praetorius**  
Department of Psychology,  
University of Copenhagen,  
Denmark

**Professor Petra Stoerig**  
Institute of Experimental  
Psychology, Heinrich-Heine-  
University, Düsseldorf, Germany

**Professor Martin Stokhof**  
Vakgroep Logica en Taalfilosofie,  
Universiteit van Amsterdam,  
The Netherlands

**Dr. Guy van Orden**  
Department of Psychology,  
Arizona State University, Tempe,  
United States

**Professor Max Velmans** (as from  
2006)  
Psychology Department,  
University of London, United  
Kingdom

**Professor Emil Visnovsky**  
Slovak Academy of Sciences,  
Department of Social and  
Biological Communication,  
Bratislava, Slovak Republic

### Scientific Committee

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The Scientific Committee is  
composed of the CNCC Project  
Leaders and the EUROCORES  
Programme Coordinator.

**Professor Cristiano  
Castelfranchi**  
Istituto Scienze e Tecnologie  
della Cognizione, Roma, Italy  
Representing CONTACT (until  
2007)

**Professor Yann Coello**  
Université de Lille, France  
Representing CEWR

**Dr. Tjeerd Jellema**  
University of Hull, United Kingdom  
Representing Boundaries

**Professor Joëlle Proust**  
CNRS, ENS-EHESS, Paris, France  
Representing METACOGNITION

**Dr. Andreas Roepstorff**  
University of Aarhus, Denmark  
Representing BASIC

**Dr. Fabio Paglieri**  
Istituto Scienze e Tecnologie  
della Cognizione, Roma, Italy  
Representing CONTACT (as from  
2007)

**Dr. Eva Hoogland**  
European Science Foundation

## 6. CNCC Governing Bodies

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### Participating Funding Organisations

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The CNCC programme has been funded by the following participating funding organisations:

#### Austria

Fonds zur Förderung der wissenschaftlichen Forschung/  
Austrian Science Research Fund (FWF)



Der Wissenschaftsfonds.

#### Belgium

Fonds voor Wetenschappelijk Onderzoek – Vlaanderen/  
Research Foundation – Flanders (FWO)



#### Denmark

Forsknings- og Innovationsstyrelsen/Danish Agency for Science, Technology and Innovation (FIST)



Danish Agency for Science  
Technology and Innovation  
Ministry of Science  
Technology and Innovation

#### France

Centre National de la Recherche Scientifique/National Centre for Scientific Research (CNRS)



Région Nord-Pas-de-Calais



#### Italy

Consiglio Nazionale delle Ricerche/National Research Council (CNR)



#### The Netherlands

Nederlandse Organisatie voor Wetenschappelijk Onderzoek/  
Netherlands Organisation for Scientific Research (NWO)



#### Spain

Comisión Interministerial de Ciencia y Tecnología/  
Interministerial Committee on Science and Technology (CICYT)



#### United Kingdom

Arts and Humanities Research Council (AHRC)



#### United States

National Science Foundation (NSF)



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