

**Consciousness in a Natural and Cultural
Context (CNCC)**

**Consensus Statement CNCC Review Panel
(Final Evaluation)**

Evaluation of the programme on the basis of its research highlights

The CNCC Review Panel rates the CNCC programme as “Excellent” in this respect, based on the following three main arguments:

- Cooperation, Integration & European added value
- Research Output
- Scientific Results

Cooperation, Integration & European added value

One of the main strengths of the CNCC programme lies in the cross-disciplinary cooperation and wide international integration it has fostered.

The programme has successfully mobilized a variety of different communities across a wide range of disciplines and yet it was unified in its core target of consciousness. Compared to other large scale research programmes that the panel is familiar with, this is an accomplishment that stands out.

The cooperation involves both cross-disciplinary research as well as the combination of different methodologies. As the most important synergistic effect, the strong interaction between natural and social sciences and the integration between philosophical and empirical investigations may be taken. But also within empirical research the benefits of combining different methodologies (e.g., computational modelling with neurophysiological research, or comparative studies with developmental research) has proven to be very fruitful. In the respect, the panel would like to encourage an even closer collaboration in future programmes between theoretical approaches (like model building, hypothesis generation, etc.) on the one side and biological measurements (e.g., neuroimaging or genetic fingerprinting) on the other.

In this integrative approach lies the added value of the CNCC programme, without which the scientific results would not have been achieved. The global aspect of CNCC, with the participation of NSF, amplifies this added value. For example, many U.S. scholars were previously focused on neural correlates of consciousness, while social and contextual considerations were emphasized more in European scholarship. CNCC has succeeded in making this European contribution to the scientific study of consciousness visible on a global level.

Research output

The CNCC programme is associated with, and assisted with, the production of a great deal of high-quality, original research. Researchers connected with the various CRPs have produced a remarkable number of high profile publications, some of which are of a seminal and truly groundbreaking nature.

The research output of the various CRPs ranges from good to excellent, both quantitatively as well as qualitatively. Although there is some unevenness across the CRPs, the advantage of the CNCC participation is nonetheless represented in all projects' published work. Many papers have appeared in top journals, or in collections with leading scientific publishers. The outreach in terms of the number of presentations and (invited) lectures is quite impressive as well.

Scientific results

The panel was struck by the extent to which the separate CRPs have converged on related ideas that dramatically change the emphasis in consciousness studies. Consciousness is extended through feedback loops into culture and the environment, generally, and inter-subjectively among cohorts. Even more narrow discussions about brain correlates emphasize feedback between perception and action, and thus sensorimotor areas in general. Most remarkably, the control function of consciousness as will or purpose has been extended outside the agent in this discussion, as well as perceptual functions such as ambiguity resolution.

All this is made more exciting by the fact that this coherent vision did not exist in the proposals originally reviewed. It marks the extent to which scientific cooperation across disciplines, and openness to resolving conflicting ideas, has emerged among these scholars. Summarizing, major achievements worthy of special attention are highlighted in bold. Especially the work of the three larger CRPs (METACOGNITION, BASIC and CONTACT) stands out.

Work by the BASIC team has significantly advanced our understanding of subjectivity (along several distinct fronts) in important respects. It has yielded an increased understanding of the interplay between **extended cognition and intersubjectivity** and greater understanding of **the role of narrative in social cognition**. Methodologically, it has led to novel attempts at integrating cultural and social processes and dynamics into research on consciousness and social cognition. The CONTACT team has shown that consciousness cannot (and should not) be studied from a wholly internalist perspective, but rather requires **understanding the relation between consciousness and skillful interactions with the natural and social environment**. In line with this, the main finding of the BOUNDARIES team, demonstrated through robust experimentation, was that individual differences need to be taken into account in investigations into the character of conscious experience. Relatedly, the CEWR team demonstrated that the specification of spatial boundaries in the external world requires an action-related visual processing system; in particular they showed **how the way individuals perceive the boundary of their peripersonal space matters to their consciousness**. The METACOGNITION team provided new and original arguments in favor of the dissociation of metacognition and mindreading, based on comparisons between humans and other primates. Their work suggests that **humans develop implicit forms of metacognition that are independent from mindreading**. This is consistent with the fact that **metacognition may require mindreading abilities, depending on the type of self-evaluation involved**. It is also consistent with fact that **metacognition may be a precursor of self-consciousness**. The

results from each of the CRPs have the potential to coherently illuminate and augment the findings from other CRPs in important ways.

Considering the challenges facing a multi-disciplinary team that incorporates researchers from e.g., neuroscience, experimental psychology, philosophy and anthropology, these are all the more impressive achievements.

Evaluation of the programme on the basis of networking, training and dissemination

The CNCC Review Panel rates the CNCC programme as "Excellent" in this respect, distinguishing four key issues with regard to this question.

Networking

The networking activities within the programme have been one of the main strengths of CNCC, making the CNCC programme exemplary for cross-disciplinary studies.

Ranging from small, dedicated workshops, to large, programme-scale conferences, the participants have taken the opportunity to turn what in many cases is a more or less 'routine exercise' into a real instrument for expanding the boundaries of their own research environment.

The CNCC programme has provided a well-managed and powerful platform for networking. That this is so is clearly underlined in the final reports of the CRPs. All demonstrably benefited from the multidisciplinary collaborations and exchanges between one another which took a variety of different forms of fruitful engagement.

Many of the large-scale, high profile events and activities have established strong relations between researchers working on consciousness both across Europe and in North America. These relations were cemented by a regular series of influential and well-attended and prominently visible workshops and conferences organized by the various CRPs. Apart from their importance for sharing results, these events had direct and important impact on active and primary research conducted in the CRPs. A point in case is the BOUNDARIES team who cites being inspired and 'substantially influenced' at meetings at Hertfordshire, Delphi and San Marino in 2007-2008 by 'new perspectives on mind reading that were largely unknown to [their] psychologically-oriented CRP before the start of the CNCC programme'.

Training

The final reports describe the benefits to early career researchers of 'growing up' inside the CNCC network and the interdisciplinary cohorts of new investigators that they have become.

Apart from a number of successful exchanges, junior researchers benefited from the CNCC programme in many ways. Some have secured research positions through the contacts they made and the opportunities to profile their work. Other received specialized, state-of-the-art training at summer schools. The CNCC PhD Essay Award for Junior Scholars stands out as valuable innovation. Through these means CNCC has created a powerful network – indeed a family - of young researchers who have supported and learned from one another and have helped to bring the work of more senior researchers into close contact in valuable ways. This is one of the remarkable successes of the CNCC activities.

As a lesson to be learned, the Review Panel notes that notwithstanding the above, these activities appear less well-thought out than the 'regular' networking activities. In future programmes, it may be beneficial to have a well-planned and focussed training programme drawn up at the start.

Dissemination

The dissemination of the CNCC results to the wider scientific community has been excellent. The outreach in terms of the number of presentations and (invited) lectures is impressive, and this has succeeded in bringing the CNCC research to the attention of the wider community of European and North American researchers. More than this, high profile publications – e.g. in *New Scientist*, *Neuron*, *Science* and *Nature* – have ensured that the work of the CNCC programme was disseminated well beyond readers of the standard academic journals.

One of the strength of this funding model is that it raised the visibility of the activities while they were occurring, thus getting a huge jump start on the normal lag time between when research is reported and when it begins to have an impact.

However, dissemination activities to ‘the public at large’ would have benefitted from more concerted and planned efforts. The panel acknowledges the difficulty of successful outreach activities, but stresses its increasing importance. For future programmes, stronger support from central sources, e.g., at the ESF, could be helpful.

Impact

The Review Panel foresees that the full impact of the CNCC programme can only be measured in a couple of years. However, already at this point, CNCC has opened up a number of important lines of multi-disciplinary investigation and the work of its various teams is positively influencing the contemporary research agenda on the topics of its central concern. This has raised Europe’s profile in the study of consciousness by sporting a range of distinctive and novel research initiatives that will have a long life beyond the official end of the programme.

An important aspect of the CNCC programme have been the connections made on a personal level, thus paving the way for collaborations within and across groups that otherwise might not have occurred, or only later. This has manifested itself in hiring patterns and advising patterns for students, as well as future collaborations among the participants.

There are number of funded projects already secured and concrete plans to take research begun in CNCC to its next stages. Focusing on but a few examples, BASIC members are working on new research proposals, including applications for a Marie Curie research training network on embodied intersubjectivity and a trans-Atlantic research project on culture, cognition and brain activity. METACOGNITON has generated a successful grant application for a project on knowledge, metacognition and modes of justification; further applications are being prepared, e.g. for an ERC senior grant. The CEWR team is applying for a grant on motor representations and visual boundaries as well as developing a PhD programme on perceptual consciousness of multidimensional properties of objects.

Even more impressive are the new plans and proposed projects that have emerged due to cross-fertilization between CPRs and CNCC networking events. These go beyond what might be expected from the normal course of continuation of the work of specific CRPs. Moreover, it is clear that many of these proposed collaborations have been made possible by, or at least inspired and strengthened by, CNCC activities. Indicative examples include two proposals in which CONTACT

members play a vital role: the ESF Research Networking Programme “Making sense of Others: a Trans-disciplinary Approach to Social Cognition” and the grant proposal to the American Council of Learned Societies for a project investigating social cognition; as well as the proposal for a new EUROCORES programme “Understanding and Misunderstanding: Cognition, Communication and Culture” prepared by members from the BASIC team.

In all, there is a wealth of evidence (provided in the final reports) that CNCC has not only already produced substantial research results but has spawned a remarkable array of high-level international collaborations and activities with established scholars of the highest calibre.

Evaluation of the realization of the programme’s potential

The panel concludes from the above that the investigators have made excellent use of the opportunities provided by the CNCC programme: networking, training, cross-disciplinary collaboration, pooling of various types of expertise and integration of different methodologies make this an excellent example of what a EUROCORES programme can achieve.

Summary of main conclusions and Recommendations

The panel concludes that the CNCC programme has been a remarkable success. The programme serves as a valuable model for any networking scheme that seeks to foster links between disciplines where the advancement of knowledge depends upon such engagement. The CNCC primary ambitions have been exceeded, on all fronts.

The main strengths of the CNCC programme have been two-fold:

- the cross-disciplinary cooperation & European integration it has fostered.
- the contribution it has made to the creation of a new generation of young researchers that has a much more multi-disciplinary profile.

Two recommendations for future initiatives stand out.

- **Training** The panel acknowledges the many ways in which junior researchers have benefitted from the programme. In future initiatives, a more systematic and structural training-programme – similar to the planning of the networking activities - would help to realise even more of the potential in this area.
- **Outreach to the 'public at large'** The dissemination of the CNCC results to the wider scientific community - well beyond readers of the standard academic journals - has been excellent. However, dissemination activities to 'the public at large' would have benefitted from more concerted and planned efforts. The panel acknowledges the difficulty of successful outreach activities, but stresses its increasing importance.

CNCC has been a pioneering initiative that has filled a gap in the (European) research landscape and served as an "eye opener" for future programmes in this field. From now on, this field can no longer be regarded as "too esoteric", as the results of the present programme have clearly demonstrated the scientific level of the research. In addition, the European contribution to this field of study has been profiled.

In this light, the panel stresses the importance of a continuation of the dialogue started in the CNCC programme. At present, the conclusions from the CNCC programme frame the cutting edge of discussion, but to cohere in the longer term requires the corrective influence of one discipline talking to another as these ideas continue to be refined. Given the importance and promise of the projects' outcomes, such an integrative approach should be continued.