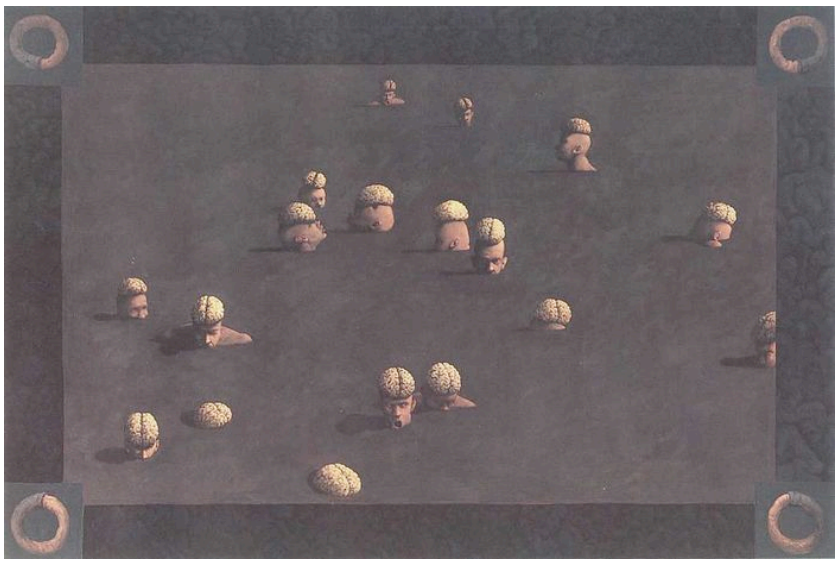
A KLI-IIASA Workshop on

The Human Brain and the Social Bond: Exploring the Notion of Constrained



Relativism

organized by

Michael Thompson, Robert Turner and Marco Verweij

September 3–4, 2010

Konrad Lorenz Institute
for Evolution & Cognition Research

KLI

IIASA

Welcome

to the first workshop jointly held by the Konrad Lorenz Institute for Evolution and Cognition Research (KLI) and the International Institute for Applied Systems Analysis (IIASA). We are delighted that you have decided to come to Vienna and participate in this workshop.

We would like to express our gratitude to our two hosts and sponsors, and in particular to Prof. Werner Callebaut and Dr. Joanne Bayer, for having generously offered us the opportunity to organize this workshop.

The first day of the workshop will be held at the KLI in Altenberg, in the family mansion of ethologist Konrad Lorenz. The second day will take place at IIASA in Schloss Laxenburg, one of the main residences of the imperial Habsburg family. In these beautiful surroundings, we hope to have a constructive and congenial workshop.

All the best!

Michael Thompson, Robert Turner and Marco Verweij

Rationale

Contra the founding fathers of social thought (e.g., Maine, Tönnies, Durkheim), all of whom had dualistic schemes (e.g., status/contract, *Gemeinschaft*/ *Gesellschaft*, mechanical solidarity/organic solidarity), theorists of institutions now routinely invoke three (or four or five) different ways in which we bind ourselves to one another and, in so doing, determine our relationship with nature. In other words, at least one more way of interacting has been added to the classic markets-and-hierarchies distinction: *community*, for example, or *clans* or *collegiums* or *bonding social capital* or *cliques* or (going back to Max Weber) *charisma*.

In this sort of institutional approach, it is the *way of organizing, perceiving and justifying social relations* that is the unit of analysis, not the individual. Indeed, it makes more sense to speak of "the dividual", since a psycho-physiological entity may be expected to move in and out of different ways of organizing and perceiving in different areas of his or her life: workplace and home, for instance. Also, in going from two to three (or four or five) institutional forms, these theorists have taken social systems from simplicity to complexity (as in "two's company, three's complexity").

What is very important for this "plural rationality" approach is that the sorts of neurological processes it requires of the psycho-physiological entity (for instance, that he or she be able to internalize each of these rationalities, and then be able to switch from one to another in response to appropriate cues) not be physiologically impossible.

Neuroscientists, we have found, are quite comfortable with this plural rationality framing. There is, they assure us, nothing impossible about it. It is the uni-rationality required by rational choice theory, and the other extreme (in which rationalities proliferate towards infinity) required by postmodernism, that they have difficulty with. So, taking a leaf out of the modern physicist's book,

we can hypothesise that, if this sort of plurality is possible, perhaps it is compulsory!

The way would then be open for a new sort of social science that would bring together students of the social bond and students of the human brain, but in a way that (unlike sociobiology) is not at all reductionist. Indeed, the way is already open, in the sense that researchers from both sides of the natural science/social science divide have been finding their independent ways to this sort of "constrained relativism" framing – more than one but way short of infinity:

- Social anthropologists have long argued, first, that the ways in which people organise their social relations match the ways in which they perceive the world and, second, that there is just a small number of viable ways in which relationships can be organised.
- Some game theorists suggest that collaborative action can only be sustained if different players cleave to a small number of different ways of behaving and reasoning, and have demonstrated (theoretically and empirically) that this "requisite variety" often emerges spontaneously from an initially unstructured "soup".
- Some policy analysts now argue, contra the long-established precepts of their craft, that pressing social ills can only be resolved if public policies are designed, in a seemingly clumsy way, around a small number of mutually contradictory ways of perceiving and solving the problems at hand.
- In artificial life modelling it has proven necessary to assume a small number of institutional sets of rules in order to stimulate the emergence of the sorts of complex dynamics that give rise to rich and "life-like" whole system behaviour.
- In the study of animal social complexity it has been argued that all animal species cooperate in a strictly limited number of ways.
- In social neuroscience it has been claimed that people's relational models (the various ways in which they strive to structure their relationships) underpin cognition.

Bringing all this work together raises a number of large questions, among which are:

- What are the precise neurological processes that underlie the notion of constrained relativism (*i.e.*, the idea that a limited number of "elementary" ways of organizing, perceiving and justifying social relations –or institutions– exist)?
- What are the institutional patterns that we find, spread out across both time and space, in both animal and human life? And are these the same patterns?
- Do these institutional patterns emerge in opposition to one another (i.e., is each one's viability dependent on the presence of the others)?
- At what stage in their lives, and by what sort of developmental processes, do human beings internalize alternative ways of perceiving and behaving?
- Does the notion of constrained relativism solve any outstanding ethical problems?
- What are the implications for decision-making generally, and for governance in particular?

The aim of the proposed workshop is to start answering these questions.

Schedule

Fri 3 Sept.		KLI, ALTENBERG
9.00 – 9.10 am	Werner Callebaut	Welcome to the KLI
Part I	Chair: Werner Callebaut	Constrained Relativism
9.10 – 9.30 am	Robert Turner Marco Verweij	The Need for Constrained Relativism: Introduction to the Workshop
9.30 – 10.30 am	Alan Fiske	Relational Models: Elementary? Fundamental? Universal? Innate? Just Four?
10.30 – 10.45 am	COFFEE	
10.45 – 11.45 am	Dave Ingram Michael Thompson	Surprise, Surprise: From Neo-Classical Economics to E-Life
Noon – 1.30 pm	LUNCH	
Part II	Chair: Robert Tuner	The Human Brain
1.30 – 2.30 pm	Wolfgang Prinz	Mirrors and Mirror Games: A Framework for the Social Making of Human Minds
2.30 – 3.30 pm	Mary Helen Immordino Yang	Feeling Admiration and Compassion: Implications for the Neurobiology of Self
3.30 – 4.00 pm	COFFEE	
4.00 – 5.00 pm	Juan Dominguez	The Bonds that Bound: Relational Thinking, Bounded Rationality and the Prefrontal Cortex
5.00 – 6.00 pm	Joan Chiao	From Social Bonds to Sustainable Environments: A Perspective from Cultural Neuroscience
8 pm	DINNER	

Sat 4 Sept.		IIASA, LAXENBURG
9.00 – 9.15 am	Nebosja Nakicenovic	Welcome to IIASA
Part III	Chair: Joanne Bayer	The Social Bond
9.15 – 10.15 am	Josep Call	Social Roles, Group Living, and Cooperation among Primates
10.15– 11.15 am	Karl Sigmund	Social Control and the Social Contract: The Emergence of Sanctioning Systems for Collective Action
11.15 – 11.45 am	COFFEE	
11.45 – 12.45 am	Thomas Schubert Beate Seibt Sven Waldzus	The Embodiment of Social Relations and Relational Models: Touch and Verticality
12.45 – 2 pm	LUNCH	
	Chair: Steven Ney	
2.00 – 3.00 pm	Mark Nowacki	I Disagree, Therefore I Am: Moral Discord among Children
3.00 – 4.00 pm	Lotte Thomsen	Seeing Social Relations: Image-Schematically Represented Relational Core Concepts, Combinatorial Properties, and Social Psychological Effects of Relational Preferences
4.00 – 4.30 pm	COFFEE	
Part IV	Chair: Bruce Beck	The End
4.30 – 5.00 pm	Terrence Deacon	Conclusion
5.00 – 6.00 pm	All	Final Discussion

Abstracts

ALAN PAGE FISKE
Professor of Anthropology, UCLA, USA

Relational models: Elementary? Fundamental? Universal? Innate? Just four?

Relational models theory (RMT) posits that there are just four elementary, fundamental, universal, partially innate relational models. Their non-decomposability and their invariance in meaning under composition indicate that they are elementary. Their implementation to coordinate virtually all aspects of all domains of social relations shows that they are fundamental. Research in over a dozen diverse cultures and ethnological induction from scores of other cultures, as well as the depth of their linguistic, historical, and archeological manifestations, suggests that they are universal. Infants' and young children's understanding of the relational models, together with the relational models' phylogenetically consistent, tight, and universal linkage to specific modes of constitution and communication, implies that they may be innate. Mathematical proofs from measurement theory regarding the limited number of relational structures that are homogeneous and unique provide further grounds for believing that there are only four. So does the linkage of the four models in a descending chain of symmetry breaking.

DAVID INGRAM
Senior Vice President, Willis Re, USA

PAUL TAYLER
Strategic Programme Leader, National Health Service, UK

MICHAEL THOMPSON
Institute Scholar, IIASA, Austria

Surprise, surprise: From neo-classical economics to e-life

We build and describe an agent-based model: the Surprise Game. The game comprises a "world" of 30 firms, each of which has to survive (and, if possible, prosper) in its environment, which is nothing more than the other 29 firms. Each firm ("automaton") has to latch onto one or other of the four strategies that are predicted by cultural theory/theory of plural rationality (thereby becoming "agents"; hence agent-based modelling) but has to relinquish that strategy and latch onto one of the others if it finds itself surprised in three (though that number can be varied) consecutive rounds of the game.

For all its simplicity and abstraction, the game gives rise to some remarkably life-like behaviour: booms, downturns, waves of bankruptcies, periods of "merger mania" and so on. More life-like, in fact, than any of the behaviours that are generated by models based on economic theory (be it neo-classical or neo-institutional). And if it does this then we need to consider the theory that underlies the game as an economic theory.

First, there are no equilibria in it, anywhere. Second, in going from rational choice (just one way of organising) and the markets-and-hierarchies framing (two ways of organising) to the full complement that includes the other two ways (egalitarianism and fatalism), we move from simplicity to complexity: from a situation where you can write equations and solve them for equilibrium conditions to one in which all you can do is "e-life": building bottom-up models, such as the Surprise Game, and then playing around with them to see what happens. No need to feel disappointed, however, since e-life exploration, as we show, can explain, among other things, how the recent credit crunch/recession came about. Moreover, it can also help us to design ways of avoiding these sorts of large-scale collapses in the future.

Rather than insisting that we are all rational utility-maximisers (neo-classical economics) or all incapable (in the same irrational way) of behaving according to the tenets of neo-classical economics and therefore desperately in need of the wise guidance of hierarchy (neuro-economics), the Surprise Game suggests we should think in terms of individuals moving in and out of the different ways of organising in different parts of their lives (workplace and home, for instance). This, of course, requires that their brains are capable (a)

of “internalising” what is required by each of these ways of organising and (b) of switching to the appropriate one in response to cues that indicate that such a switch is needed.

WOLFGANG PRINZ
Director, Max Planck Institute for Human Cognitive and Brain Sciences, Germany

Mirrors and mirror games: A framework for the social making of human minds

It is often claimed that individual come to shape their own minds through looking into the mirror of others (social mirroring). Social mirroring has two sides to it: mirroring (individual 1 mirrors individual 2) and understanding being mirrored (individual 2 understands that his/her doings are being mirrored by individual 1). Social mirroring comes in various guises arising from different modes of mirroring and communication. In this talk I argue that two basic requirements must be fulfilled for social mirroring to work, functional and social. The functional requirement refers to operation of representational devices with mirror-like properties (mirrors inside). The social requirement refers to discourses and practices for exploiting the potential inherent in mirrors devices (mirror games and mirror policies). I argue that discourses and practices subserving social mirroring provide key tools for the social making of human mentality.

MARY HELEN IMMORDINO-YANG
Assistant Professor, Brain and Creativity Institute & Rossier School of Education, University of Southern California, USA

Feeling admiration and compassion: Implications for the neurobiology of self

One major force in social relationships at both the societal and individual levels is social emotion – the emotion a person feels for another person's situation or mental qualities. Such emotions steer our behavior in the social arena, telling us, for example, when to help or punish another person, or when to emulate them. In this session, I will discuss recent work on the neurobiology of two such emotions, compassion and admiration, including their deep visceral roots, their differential recruitment of neural systems that feel and regulate the body, and their modulation of brain systems that monitor and maintain basic and episodic consciousness. Based on these and other behavioral data (e.g. videotapes of experiment participants in these emotion states), I will argue that even the most complex of human social emotions, such as admiration for another person in light of his virtuous accomplishments, is intimately tied to neural systems originally evolved for homeostatic maintenance and survival, and that the feeling of these emotions is fundamentally played out on the platform of one's own "self". Taken together, these results suggest that the emotions that serve to organize human social values and relationships, although a relatively recent evolutionary achievement, do not function merely as neuropsychologically high-level, rational processes. Instead, they represent a co-opting and specialization of biological systems originally evolved to maintain life.

JUAN F. DOMINGUEZ D.
Research Officer
The Howard Florey Institute, Australia

The bonds that bound: Relational thinking, bounded rationality and the prefrontal cortex

The classical view of reasoning, as a unitary and unbounded thinking process that takes into account all relevant information and weighs all possible alternatives to reach optimal conclusions, is being questioned by a model of rationality as an activity bounded by the biases and limitations of human thinking but also by the structure of the context in which it takes place.

According to the bounded rationality approach, reasoning reaches conclusions that satisfy and suffice (*satisfice*) rather than optimise, given the constraints of human thinking, the problem at hand and the environmental conditions. This view of reasoning leads naturally to postulate the existence of a plurality of rationalities and shares some features with constrained relativism. This paper offers some reflections on the bounded account of rationality from a neuroanthropological perspective. Attention will be paid to dual-systems accounts of rationality in the brain in the context of decision-making research. In addition, since to reason is at its base to think relationally–to understand the ways things are related to each other–emphasis will be placed on theories accounting for the involvement of the prefrontal cortex (PFC) in relational thinking. Together with this, relational models theory (RMT) will be considered in the light of the role of the PFC in relational processing. Particularly, RMT's claim that the four elementary RMs are related in a sort of Guttman scale–whereby they are increasingly complex and hierarchically organized–will be evaluated vis-à-vis current models of PFC function that postulate a control hierarchy along the rostral-caudal aspect of the PFC. Following from the above, this paper will conclude with two suggestions: first, that the four elementary RMs (and therefore PFC function) can be regarded as tools for bounded rationality, or relational thinking, that succeed or fail based on their degree of fit to the structure of environments, both physical and socio cultural; and second, that relational thinking (and the PFC activity that underlies it) is itself the *sine qua non* of human culture.

JOAN Y. CHIAO
Assistant Professor of Psychology, Northwestern University, USA

VANI MATHUR
Graduate Student, Brain, Behavior & Cognition Program, Northwestern University, USA

From social bonds to sustainable environments: A perspective from cultural neuroscience

Environmental sustainability, or the human ability to maintain and endure within larger complex ecosystems, depends at least in part on the vitality of the physical environment and our responsible use of natural resources. Here I will discuss recent cultural neuroscience evidence which indicates cultural variation in neural bases of preference for social hierarchy as a function of empathic neural response. Then I will discuss how such macro- and micro-scale diversity in the kinds and prevalence of human social bonds (e.g., communality and hierarchy) globally may serve as an important means by which large complex ecosystems endure over time.

JOSEP CALL
Director, Wolfgang Köhler Primate Research Center
Max Planck Institute for Evolutionary Anthropology, Germany

Social roles, group living, and cooperation among primates

Sociality is ubiquitous in the animal kingdom but its complexity varies widely between and within species. One interesting feature of primate sociality is that individuals form stable groups based on long-term relationships between individuals. In such groups, relations of kinship, dominance and friendship play a pivotal role in maintaining group cohesion and regulating social interactions. Moreover, certain individuals or groups of individuals seem to play specific roles within the group. In this talk I will tackle the issue of how individuals acquire and maintain their social roles. Additionally, I will explore the impact that the personality of certain individuals may have on group dynamics and cooperative activities within the group.

KARL SIGMUND
Professor of Mathematics, University of Vienna, Austria

HANNELORE DE SILVA
Assistant Professor, Vienna University of Economics and Business, Austria

CHRISTOPH HAUERT
Professor of Mathematics, University of British Columbia, Canada

ARNE TRAULSEN
Group Leader at the Max Planck Institute for Evolutionary Biology, Germany

Social control and the social contract: The emergence of sanctioning systems for collective action

Punishment of free-riders is generally viewed as an important factor in promoting cooperation. But since it is often costly to sanction exploiters, the emergence of such a behavior and its stability raise interesting problems. Players who do not contribute to the sanctions, but profit from the increased level of cooperation caused by them, act as 'second-order exploiters' and threaten the joint enterprise. In this paper, we review the role of voluntary participation in establishing and upholding cooperation with or without punishment. In particular, we deal with two distinct forms of punishment, namely peer punishment and pool punishment, and compare their stability and their efficiency. The emergence and upkeep of collaborative undertakings can strongly depend on whether participation is voluntary or mandatory. The possibility to opt out of a joint enterprise often helps in curbing exploiters and boosting pro-social behavior.

THOMAS SCHUBERT
Researcher, Instituto Superior de Ciências do Trabalho e da Empresa, Lisbon University Institute, Portugal

BEATE SEIBT
Researcher, Centro de Investigação e Intervenção Social, Lisbon University Institute, Portugal

SVEN WALDZUS
Assistant Professor of Psychology, Lisbon University Institute, Portugal

The embodiment of social relations and relational models: Touch and verticality

Bodily experiences play a pivotal role in human interaction and social relations. Being touched by or sharing substances such as food with another human can evoke very pleasant feelings, but also disgust. For neonates, touch is essential for survival and healthy development. Vertical difference is a ubiquitous feature of the nonverbal and metaphorical communication of authority, power, and status. We will review findings of our own research and other results demonstrating that, even without being consciously interpreted, bodily experiences can invoke relationally relevant changes of perception, affect, judgment and behaviour. Touch can increase helping behaviour; food sharing and touch increase cohesion within groups; abstracted, schematized, and de-contextualized cues to vertical positions or vertical and size difference can influence judgments of power and status.

In our theoretical discussion we will go beyond available evidence to inspire more advanced research by addressing the assumed underlying processes. Several theories can be drawn upon to explain the mentioned findings. Semantic network models assume spreading activation between amodal labels and physical cues. The perceptual symbol approach proposes schematization of experiences into modal representations as the basis for mental representation: Power, for instance, is represented as up and high. Conceptual metaphor theory discusses the mapping of structures from experienced (space, physical closeness) onto non-experienced (power, relational closeness) dimensions. The relational models and the core cognition approach assume evolutionary prepared mechanisms facilitating the learning of essential concepts like attachment and authority. We will discuss how the various theories fare in explaining the current findings parsimoniously.

MARK NOWACKI
Assistant Professor of Philosophy, Singapore Management University, Singapore

SHENHGUA LUAN
Assistant Professor of Psychology, Singapore Management University, Singapore

MARCO VERWEIJ
Professor of Political Science, Jacobs University, Germany

I disagree, therefore I am: Moral discord among children

According to cultural theory/theory of plural rationality, whenever people engage in collective action or debate, differences of opinion emerge. These differences of opinion are not random. Rather, they represent and bolster four alternative ways of organizing social relations: hierarchy, individualism, egalitarianism and fatalism. In other words, cultural theory postulates that people perceive and reason by disagreeing. We present the preliminary findings of experiments undertaken with hundreds of schoolchildren in Singapore and Malaysia that put this hypothesis to the test. By running these experiments with children of diverse age cohorts (from 6 to 12 years old), we can also track the changes of these moral disagreements across the cohorts. We discuss whether persistent moral discord may or may not be a feature that is unique to humans, and spell out some of the implications of our results for social and psychological theory.

LOTTE THOMSEN
Assistant Professor of Psychology, University of Copenhagen, Denmark
Postdoctoral Research Fellow, Lab for Developmental Studies, Harvard University

Seeing social relations: Image-schematically represented relational core concepts, combinatorial properties, and social psychological effects of relational preferences

The meaning of social interaction is constrained by the social grammar that makes it possible. Hence, relativism can be constrained by identifying the representational properties and combinatorial rules of a limited set of primitives that undergird infinite possible instances of meaningful social interaction. Here, I review evidence that specific spatial relations are metaphorically mapped to specific elementary social relations: Across culture and among adults and children alike, spatial overlap is seen as communal sharing, a level line is seen as equality, and a pyramidal formation (but not a simple vertical line) is seen as social hierarchy (suggesting that the human concept of dominance specifies that few are on top and many are at the bottom). In the more simple dyadic case, dominance is associated with relative size even among pre-verbal infants, suggesting that relational mappings may be innate representational capacities that help and constrain infants' learning about the social world. I also review evidence that these image-schematic mappings are maintained under composition, such that the social interpretation of a combination of spatial relations depends on the spatio-relational parts and their manner of combination, respecting a simple *head-modifier* structure. This suggests that the social interpretation of these spatio-relational image-schemas possess rudimentary, proto-grammatical properties. Finally, I review evidence that *preferences* for image-schematic depictions of communal and hierarchical relations relate to a host of social psychological and intergroup phenomena, from psycho-physiological fear responses to attachment style, political ideology, and economic behavior. Again, these effects occur among adults and children alike. Together, this suggests that image-schematically represented, elementary relational models construct and constrain the meaning of social interaction at large and the social psychological phenomena that facilitate it.