財団法人国際高等研究所
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「人類の未来と幸福のために何を研究すべきか」を研究します。

国際高等研究所は、「世界の英知を集め、人類の未来の指針として揺るぎないものを構想、示そうとする」ことを基本理念として、産･官･学の協力のもとに、けいはんな学研都市の中核的機関として1984年に創設されました。

人類が直面している時代的、社会的背景に由来する諸課題にどのように対処していくのか。そして、21世紀にあるべき文化･科学･技術はどのような姿なのか。これら諸課題に基礎研究によって迫り、研究を展開していく中から、学術研究における新しい方向性を生み出し、あるいは新しい概念の創出を指向し、世界の英知を結集して、広く世界文化の発展に寄与しています。

未来をひらく 新文化首都 けいはんな
関西文化学術研究都市
http://www.kri-p.jp/

けいはんな学研都市（関西文化学術研究都市）は、1978年の「関西学術研究都市調査懇談会（座長:奥田東　元京都大学総長）」により提唱され、1987年の関西文化学術研究都市建設促進法の施行を経て、京都･大阪･奈良の3府県にまたがる京阪奈丘陵において、国家プロジェクトとして建設が進められているサイエンスシティです。

けいはんな学研都市では、現在、立地施設数が110を超え、大学や研究機関の集積を活かし、産学官連携による多くの成果も生まれ、我が国の文化学術研究の進展に大きく貢献しています。

主な立地施設

国立国会図書館関西館、
奈良先端科学技術大学院大学、同志社大学、
日本原子力研究開発機構関西光科学研究所、
情報通信研究機構（NICT）、
国際電気通信基礎技術研究所（ATR）、
地球環境産業技術研究機構（RITE）など

主　催: **財団法人国際高等研究所**
Organizer : **International Institute for Advanced Studies**

後　援: **文部科学省／日本学術振興会**
公益社団法人関西経済連合会／京都府／公益財団法人関西文化学術研究都市推進機構
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日本心理学会／日本動物心理学会／日本発達心理学会／日本霊長類学会／日本ロボット学会

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Japan Neuroscience society / Japan Society of Baby Science / Japan Society of Developmental Psychology
Primate Society of Japan / The Japanese Psychological Association / The Japanese Psychonomic Society
The Japanese Society for Animal Psychology / The Japanese Society of Social Psychology / The Robotics Society of Japan

高等研レクチャー 2012

心の進化的起源

IIAS Lecture 2012

Evolutionary Origins of Human Mind

2012年12月8日土 13:30–17:00

Date: December 8 (Sat), 2012 13:30–17:00

東京大学伊藤謝恩ホール

Venue: Ito International Research Center, The University of Tokyo

Program

開催挨拶　Opening Remarks

尾池　和夫（国際高等研究所長）
Kazuo Oike (Director, IIAS)

歓迎の辞　Welcome Address

長谷川　寿一（東京大学大学院総合文化研究科）
Toshikazu Hasegawa
(Graduate School of Arts and Sciences, The University of Tokyo)

座長　Chair

松沢　哲郎（京都大学霊長類研究所）
Tetsuro Matsuzawa (Primate Research Institute, Kyoto University)

Mirror neurons: past and present

Giacomo Rizzolatti
(パルマ大学 / University of Parma, Italy)

Cognitive niche construction

入來　篤史（理化学研究所脳科学総合研究センター）
Atsushi Iriki (Brain Science Institute, RIKEN)

Morality Without Religion: Empathy, Fairness and Prosocial Primates

Frans de Waal
(エモリー大学 / Emory University, USA)

閉会挨拶　Closing Remarks

志村　令郎（国際高等研究所副所長）
Yoshiro Shimura (Vice Director, IIAS)

財団法人 国際高等研究所
International Institute for Advanced Studies

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高等研レクチャー 2012

心の進化的起源

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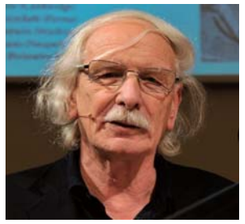
Evolutionary Origins of Human Mind



Giacomo Rizzolatti

パルマ大学教授
Professor of Human Physiology,
Department of Neuroscience,
Section of Physiology, University of Parma

URL

http://www.unipr.it/arpa/mirror/english/staff/rizzolat.htm

Giacomo Rizzolatti is an Italian Neurophysiologist who works at the University of Parma. He is the Senior Scientist of the research team that discovered mirror neurons in the frontal and parietal cortex of the macaque monkey, and has written many scientific articles on the topic. He is a past president of the European Brain and Behaviour Society. Rizzolatti is member of "Academia Europaea", of "Accademia dei Lincei", "Honorary Foreign Member" of the American Academy of Arts and Sciences and “Associe etranger” of the Academie des sciences, Institut de France. Among his major awards are "Golgi Prize for Physiology", "George Miller Award" of the Cognitive Neuroscience Society, the "Feltrinelli Prize for Medicine" of Accademia dei Lincei, and the Herlitzka Prize for Physiology, Accademia delle Scienze di Torino. Rizzolatti was the 2007 co-recipient, with Leonardo Fogassi and Vittorio Gallese, for the University of Louisville Grawemeyer Award for Psychology.

Mirror neurons: past and present

This year is the 20th anniversary of the finding of mirror neuron in macaques. In the present talk I discuss the relevance of the mirror mechanism for our sense of self and our sense of others. By providing us with an understanding from the inside of actions, the mirror mechanism radically challenges the traditional view of the self and of the others. Indeed, this mechanism not only reveals the common ground on the basis of which we become aware of ourselves as selves distinct from other selves, but also sheds new light on the content of our self and other experience, showing that we primarily experience ourselves and the others in terms of our own and of their motor possibilities respectively.

入來　篤史 (Atsushi Iriki)

理化学研究所脳科学総合研究センター
象徴概念発達研究チーム シニア・チームリーダー
Senior Team Leader,
Laboratory for Symbolic Cognitive Development,
Brain Science Institute, RIKEN

URL

http://www.brain.riken.jp/jp/faculty/details/18

Atsushi Iriki received his Ph.D. in Neuroscience from Tokyo Medical and Dental University in 1986. He held research associate positions at the Tokyo Medical and Dental University and then at The Rockefeller University (USA). He joined the faculty of Toho University Medical School as an assistant professor and then as an associate professor in Physiology (1991-1999). In 1999, he returned to Tokyo Medical and Dental University as a full professor and chairman in Cognitive Neurobiology. He is now a Head of Laboratory for Symbolic Cognitive Development at RIKEN Brain Science Institute since 2004. He is Lee Wee Nam visiting professor of Nanyang Technological University (Singapore), a visiting professor of University College London (UK), an adjunct professor of Keio University, and a research professor of Kyoto University. In 2004 he was awarded The Golden Brain Award by The Minerva Foundation (Berkeley CA, USA), in 2008 The Creative Research Award by Neurocreative NPO (Tokyo, Japan), and in 2009 gave The Otto-Creutzfeldt-Lecture at the German Neuroscience Society (Berlin).

Cognitive niche construction

Hominin evolution has involved a continuous process of addition of new kinds of cognitive capacity, including those relating to manufacture and use of tools and to the establishment of linguistic faculties. The dramatic expansion of the brain that accompanied additions of new functional areas would have supported such continuous evolution. Extended brain functions would have driven rapid and drastic changes in the hominin ecological niche, which in turn demanded further brain resources to adapt to it. In this way, humans have constructed a novel niche in each of the ecological, cognitive and neural domains, whose interactions accelerated their individual evolution through a process of triadic niche construction. Human higher cognitive activity can therefore be viewed holistically as one component in a terrestrial ecosystem. The brain’s functional characteristics seem to play a key role in this triadic interaction. We advance a speculative argument about the origins of its neurobiological mechanisms, as an extension of the evolutionary principles of adaptive function in the animal nervous system. The brain mechanisms that subserve tool use may bridge the gap, with the site of such integration being the parietal and adjacent cortices.

Frans de Waal

エモリー大学教授
C. H. Candler Professor and Director of
the Living Links Center at the Yerkes Primate Center,
Emory University

URL

http://emory.edu/LIVING_LINKS/

Prof. Frans B. M. de Waal is a Dutch/American behavioral biologist known for his work on the social intelligence of primates. His first book, Chimpanzee Politics (1982) compared the schmoozing and scheming of chimpanzees involved in power struggles with that of human politicians. Ever since, de Waal has drawn parallels between primate and human behavior, from peacemaking and morality to culture. His latest book is The Age of Empathy (2009, Harmony Books). De Waal is C. H. Candler Professor in the Psychology Department of Emory University and Director of the Living Links Center at the Yerkes National Primate Research Center, in Atlanta, Georgia. He is a member of the (US) National Academy of Sciences, the American Academy of Arts and Sciences, and the Royal Dutch Academy of Sciences. In 2007, he was selected by Time as one of The Worlds’ 100 Most Influential People Today, and in 2011 by Discover as 47 [all time] Great Minds of Science.

Morality Without Religion: Empathy, Fairness and Prosocial Primates

Homo homini lupus – “man is wolf to man” – is an old Roman proverb popularized by Thomas Hobbes. Even though it permeates large parts of law, economics, and political science, the proverb fails to do justice to our species’ thoroughly social nature as well as to canids, which are among the most gregarious and cooperative animals. For the past quarter century, this cynical view has also been promoted by an influential school of biology, but Charles Darwin himself saw things differently. He believed in continuity between animal social instincts and human morality. Modern psychology and neuroscience support Darwin’s view about the moral emotions.
In this lecture, the acclaimed author of The Age of Empathy (2009) shows how empathy comes naturally to a great variety of animals, including humans. In his work with monkeys and apes, de Waal has found many cases of one individual coming to another's rescue in a fight, putting an arm around a previous victim of attack, or other emotional responses to the distress of others. By studying social behaviors in animals, such as bonding, the herd instinct, the forming of trusting alliances, expressions of consolation, and conflict resolution, de Waal demonstrates that animals and humans are preprogrammed to reach out, questioning the assumption that humans are inherently selfish. He argues that understanding empathy's survival value in evolution can help to build a more just society based on a more accurate view of human nature.

松沢　哲郎　(Tetsuro Matsuzawa)

京都大学霊長類研究所教授

Professor,

Primate Research Institute, Kyoto University

URL

http://www.pri.kyoto-u.ac.jp/ai/

Matsuzawa has been studying chimpanzee intelligence both in the laboratory and in the wild. The laboratory work, known as "Ai-project", focusing on the language-like skills and the concept of numbers established in a female chimpanzee named Ai. Chimpanzee Ai, 36 year old at present, has a 12 year-old boy named "Ayumu". They live in the PRI community of 14 chimpanzees as a group including 3 generations of 12 to 46 year old. Ai project started in 1978, and one of the longest laboratory research on chimpanzee intelligence.

Matsuzawa has also been studying the tool use in the wild chimpanzees at Bossou, Guinea, West Africa, since 1986. There is a community of about 13 individuals that has been studied for 36 years by Japanese researchers. The Bossou chimpanzees are well known to use a pair of stones as hammer and anvil to crack open oil-palm nuts. His long-term research on wild chimpanzee tool use revealed interesting topics like handedness of use of hammer, critical period of learning nut-cracking at around 3 to 5 year old, "education by master-apprenticeship" and observational learning, possession of stones, deception, new tool use like algae-scooping, use of leaves for cushions, cultural variation in adjacent communities, etc.

Matsuzawa tries to synthesize the field work and the laboratory work to understand the nature of chimpanzees, our evolutionary neighbors. He got several prizes including Prince Chichibu Memorial Science Award in 1991, Jane Goodall Award in 2001, and The Medal with Purple Ribbon in 2004. He published many books and articles.

Imitation and Imagination:
An evolutionary scenario for the uniqueness of human cognition

What is uniquely human?　Where did we come from?　How did we get here?　These questions all address the evolutionary origins of human nature.　However, brain and mind are not preserved in the fossil record. Chimpanzees, our closest evolutionary relatives, can provide clues to understanding the evolution of the human mind.　I have been studying chimpanzees both in the wild and in the laboratory. This talk will use evidence from these parallel lines of work to provide an evolutionary scenario for the uniqueness of the human mind, focusing on socio-cognitive development in humans and chimpanzees. The model I propose has four stages. The initial stage is characterized by the innate mother-infant interaction.　The second stage involves co-action such as co-feeding or action synchronization.　The third stage is marked by imitation, in which the individual tries to copy a model. Imitation is ubiquitous in humans, but scarce in nonhuman animals.　The imitative process results in an experience that is identical to the model's. This provides the basis for the fourth stage, in which we begin to exhibit a unique mental capability: understanding others' minds. This final stage also implies enhanced imagination and inference. Based on current events, we can imagine events separated from us in space and time. This may lead to the establishment of a theory of mind, as well as symbolic, representational, and linguistic capabilities.

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