

Università di Pisa

Summer School Consciousness and Cognition



The Embodied Mind
Cognitive Science and Human Experience

Quantum Consciousness?

Istituto Lama Tzong Khapa
Centro per lo studio e la pratica del buddhismo tibetano

FOM Academy

Unione Buddhista Italiana

**Summer School
Consciousness and Cognition
Pisa 28/08 – 5/09 2021**

dii DIPARTIMENTO DI INGEGNERIA DELL'INFORMAZIONE
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Description

The enigma of Consciousness is perhaps the most fascinating mystery in the Universe. There are many hypotheses, on the basis of which we try to give an answer to the most difficult problems but, wanting to schematize, all can be traced back to two broad categories: those who consider Consciousness entirely reducible to the electro-chemical-physical processes that take place in the brain, and those who acknowledge that Consciousness has an intrinsic existence, independent, at least in part, from its physical substratum.

Whereas the former fit well into the monistic vision of the so-called Scientific Materialism, the latter can lead either to a dualistic vision of Reality, in which the external world obeys the laws of Physics and the internal one requires a different level of analysis, or to a reconfiguration of the subject-object relation in a unitary picture of Reality. This unitary vision is compatible, for example, in Western culture with phenomenological approaches in philosophy and with Quantum Mechanics in physics, and in Eastern culture with Buddhist and Hindu traditions based on contemplative practices such as meditation and yoga.

The path in search of the solution winds between these alternatives and passes through the answer to two fundamental questions:

- 1) "Is Scientific Materialism capable of embracing the totality of Reality?"
- 2) "Is a unitary vision of Reality possible, in which Consciousness is not completely reducible to its neuronal correlates?"

In the absence of definitive and widely shared answers to these two questions, the study of consciousness and of the process through which we have cognition of Reality must be fronted with a multidisciplinary approach that includes not only neurosciences, but also biology, artificial intelligence, philosophy of science and epistemology.

A space has to be reserved to two domains that are apparently very different, but that on the contrary show, very surprisingly, some convergences: the one of Quantum Physics, and the one of Contemplative Practices. While the first constitutes the most advanced approach to the study of the physical world, which also extends to phenomena that take place at the nanoscopic level in biological tissues, the latter allows to explore in a profound and accurate way aspects of the problem that are not accessible with objective methods and that concern the first-person experience.

For these reasons, the School will be organized in order to explore the enigma of Consciousness from different points of view, with the participation of teachers who are experts in all these disciplines.

The School will take place in a residential form, thanks to a Convention between the University of Pisa and the Lama Tzong Khapa Institute, 35 Km from Pisa, renowned for the excellent quality of its study programs of Buddhist philosophy and psychology.

The 2021 edition of the Summer School Consciousness and Cognition is organized by University of Pisa in collaboration with the Lama Tzong Khapa Institute and “Frontiers of Mind”, with the patronage of the Italian Buddhist Union.

Aim

The aim of the School is not to provide students with definitive answers, but to provide the necessary foundations and basic tools, in each of the covered disciplines, to follow the debate still open today in the various sectors that can be grouped under the name of Mind Science. In particular, the students should:

- (Philosophy): acquire a sensitiveness to the existence of a dimension of consciousness that overcomes the distinction between subject and object and understand its role in the current quest to explain consciousness, through a progression into insights drawn from Western philosophical approaches (especially phenomenology) and Eastern traditions and practices;
- (Quantum Mechanics) understand the basic principles of quantum mechanics to comprehend the subtler issues connected with the interpretation of the theory and their possible relevance for a discussion of consciousness, of the mind-body problem and of the nature of reality itself;
- (Artificial Intelligence): learn the basic concepts and models of nature-inspired computational techniques, and to know how to apply them to a wide range of application areas. Students will be exposed to the advantages and challenges of using computationally intelligent systems with human-like capabilities in terms of reasoning, learning and adaptation;
- (Biosemiotics): learn the basic of Biosemiotics and become acquainted with the semiotic nature of sign relationships both in biological and human-made systems, understand how cells act as semiotic units capable of interpreting their own environment through signs exchange, and eventually comprehend how sign perception and epigenetic regulation are causally linked through differential gene expression;
- (Contemplative Practices): comprehend the vision of Eastern tradition (Induism and Buddhism) concerning Consciousness and its different levels and manifestations; learn the foundations, the characteristics and the aspects of the different types of meditation;
- (Neurosciences and not Ordinary state of Consciousness): after a description of the neural networks, acting in the brain, and a survey on the main investigation techniques of the brain activity (Electroencephalography, FMRI), understand how self induced not ordinary states of consciousness by natural drugs, hypnosis, dream, deep meditation, affect this activity.

The program will be activated both on campus and online. More information at <https://www.unipi.it/index.php/humanities/item/16643-consciousness-cognition>

Summer School Consciousness and Cognition2021

Program

Introduction	(1)	Neri, Moiraghi, Penazzi, Serena
Consciousness in Western and Eastern Traditions		
Phenomenology and Yoga	(8)	Giulia Moiraghi
Consciousness in Psychoanalysis	(2)	Riccardo Zerbetto (Remote)
Consciousness in Buddhism	(2)	Geshe Temphel
Quantum Mechanics and Consciousness	(5)	Shantena Augusto Sabadini
Biosemyotics	(4)	Franco Giorgi
Artificial Intelligence	(5)	Beatrice Lazzerini (Remote)
Measurement techniques	(2)	Nicola Vanello
Brain Networks and States of Consciousness	(5)	A.Gemignani + A.Piarulli
Ordinary and not Ordinary states of Consciousness		
Resting state and brain connectivity	(2)	Gabriele Penazzi
Meditation	(6)	G.Piana, A. Zaccaro, B. Neri
Hypnosis	(2)	Enrico Facco
Sciamanic Trance	(2)	Tania Re
Panel discussion (Mind and Machines)	(2)	F. Faggin, D. De Rossi (A.Gemignani)

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Agenda

Saturday 28/08

21.00 Welcome, logistics and rules at ILTK B.Neri e G.Moiraghi

Sunday 29/08

09.30 – 10.30 Welcome and Introduction to the Summer School B.Neri

10.30 – 12.30 Phenomenology and Yoga G.Moiraghi

Lunch

14.00 – 16.00 Biosemiotics F.Giorgi *

16.00 – 18.00 Consciousness in Buddhism Geshe Temphe

Monday 30/08

08.30 -10.30 Biosemiotics F. Giorgi

10.30 - 12.30 Phenomenology and Yoga G.Moiraghi

Lunch

14.00 – 16.00 Consciousness and Psycanalysis R.Zerbetto (Remote)

Tuesday 31/08

08.30 -10.30 Phenomenology and Yoga G.Moiraghi

10.30 - 12.30 Consciousness and Quantum Physics A.Shantena Sabbadini *

Lunch

14.00 – 17.00 Artificial Intelligence B. Lazzerini (Remote)

Wednesday 01/09

08.30 -10.30 Artificial Intelligence B. Lazzerini (Remote)

10.30 - 12.30 Consciousness and Quantum Physics A.Shantena Sabbadini

Lunch

14.00 - 16.00 Brain Networks and States of Consciousness A. Piarulli *

Break

17.00 – 19.30 Panel Discussion: Mind, Men and Machines

F.Faggin, D.De Rossi *, B. Lazzerini Moderator: A,Gemignani *

Thursday 02/09

08.30 -10.30	Phenomenology and Yoga	G.Moiraghi
10.30 - 13.30	Neurophenomenology of NOSC	A. Gemignani
Lunch		
15.00 - 17.00	Meditation in Buddhism	G.Piana

Friday 03/09

08.30 -10.30	Resting State and Consciousness States	G.Penazzi
10.30 - 12.30	Measurement techniques and data elaboration	N.Vanello
Lunch		
14.00 - 16.00	Meditation and brain activities	A.Zaccaro *

Saturday 04/09

08.30 -10.30	Sciamanic Trance	T.Re *
10.30 - 12.30	Hypnosis	E.Facco *
Lunch		
14.00 - 16.00	Report from a Tibetan Monastery and Conclusion	B.Neri

Sunday 05/09

08.30 – 10.30	Final Test in presence (otherwise test at distance on Sunday 09/12)	
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Teachers

Bruno Neri (Director) received his "Laurea" degree "cum laude" from the University of Pisa in 1980, in 1983 he joined the "Dipartimento di Ingegneria dell'Informazione" of the same University, since 2000 he is Full Professor of Electronics. Prof. Neri has taught and teaches several courses in the fields of Instrumentation and Measurements, Electronics for Telecommunications, Wireless electronic systems, Design of microwave integrated circuit, moreover currently he holds a short course entitled "Science and contemplative practices" at the Master of the University of Pisa entitled "Neurosciences, Mindfulness and Contemplative Practices". His current research interest is in the field of Mind Sciences regarding the effect of meditation on brain activity: in this framework he spend several weeks each year inside Tibetan Monasteries in India to carry out his research. In September

2017 he was co-chair of the Symposium "The Mindscience of Reality" in which His Holiness the Dalai Lama participated as a guest of honor. In 2020 he was Director of the first edition of the Summer School "Consciousness and Cognition".

Danilo De Rossi received the "Laurea" degree in Chemical Engineering from the University of Genoa in 1976. From 1976 to 1981 he was researcher of the Institute of Clinical Physiology of C.N.R. He had appointments for teaching and research in Australia, Brasil, France, Japan and USA. He joined the Faculty of Engineering in the University of Pisa in 1982 where he is currently Full Professor and Director of the Bioengineering and Robotics Research Center "E. Piaggio". His scientific activities are related to the physics of organic and polymeric materials, and to the design of sensors and actuators for bioengineering and robotics. He received the "Bioengineering Forum Award" of the Biological Engineering Society (UK) in 1980, and the "Young Investigator Award" of the American Society for Artificial Organs (USA) in 1985. He is author of over 270 peer reviewed papers on international science journals and peer reviewed proceedings, co-inventor of 14 patents and co-author of 8 books.

Enrico Facco was professor (now retired) of Anesthesiology and Intensive Care at the University of Padua. For ten years he was in charge of the Anesthesia and Post-operative Neurosurgical Intensive Care service at the Padua Hospital. Among other things, also in Padua, he is also a member of the Organizing Committee of the Master on Death Studies of the Faculty of Psychology. Facco is president of the Italian Association of Narco Odontostomatologia and of the European Federation for the Advancement of Anesthesia in Dentistry and member of the board of directors of the Italian Center for Clinical-Experimental Hypnosis. He is the author of more than 200 articles in international Journal and conferences. He has published three books: "Molecular Biology of Shock", "Treatment of the neurocritical patient in a coma", "Near death experiences", "The enigma of Consciousness"

Angelo Gemignani is a medical doctor, psychiatrist and doctor in psychology, full professor of neuroscience at University of Pisa, Director of the Department of Surgical, Medical and Molecular Pathology & Critical Care Medicine; Director of the Master in Neuroscience, Mindfulness and Contemplative Practices; Director of Clinical Psychology branch of the Pisa University Hospital. His didactic activity includes many different topics, i.e. the psychobiological bases of human behavior, the neural correlates of mental disorders, integrative cerebral functions and clinical psychology. His research activity is mainly devoted to the study of psychobiological mechanisms of a) sleep functions, b) consciousness and its related non-ordinary states (i.e. induced by meditation), c) distress and negative emotions. (i.e. sleep and consciousness changes in healthy volunteers simulating the human flight to Mars).

Franco Giorgi graduated in Biological Sciences at the University of Pisa in 1969. He then obtained a PhD in Epigenetics at the University of Edinburgh (Scotland) in 1975. From 1980 to 1990 he has worked as Associate Professor of Developmental Biology in the Faculty of Science, University of Pisa (Italy). On 1990, he became Full Professor of Biology at the Faculty of Medicine, University of Pisa. Over the years, Franco Giorgi has studied several morphological and functional features of the ovarian and embryonic development with particular reference to the processes of receptor mediated endocytosis and post-endocytic ligand modification. He has also worked on several research projects dealing with wound healing, collagen degradation and TSH receptors. After retirement he has become an active member of the International Society of Biosemiotic Studies.

Beatrice Lazzarini is a Full Professor of Computer Engineering at the Department of Information Engineering of the University of Pisa, Italy. She teaches "Intelligent Systems" for the Master of Science in Computer Engineering of the University of Pisa, and "Computational Intelligence" for the

Master of Science in Embedded Computing Systems, which is jointly offered by the University of Pisa and Sant'Anna School of Advanced Studies, Pisa. Her research interests include Computational Intelligence, with a particular emphasis on fuzzy systems, neural networks and evolutionary computation, and their applications to clustering, classification, profiling, image processing, data fusion, context awareness, risk analysis and management, diagnosis, forecasting, multi-objective optimization, multi-criteria decision making. She has co-authored seven books and has contributed to more than 230 peer-reviewed papers in international journals, books and conferences. She is a coeditor of two books. She was involved and had roles of responsibility in several national and international research projects and scientific events

Giulia Moiraghi is a post-doctoral scholar in Philosophy and has been a Yoga practitioner for 20 years. After a *summa cum laude* Master's Degree in Contemporary Aesthetics from the University of Milan in 2005, she completed a Ph.D. in Philosophy at the University of Verona in 2010. She is the author of several essays on philosophical, artistic and yoga subjects and of two books: *In cammino verso la cosa. Heidegger dall'estetica all'ontologia*, Mimesis, 2006, and, with Corriere della Sera, *Cura e Ardore. Il rigore e la passione della pratica yoga*, RCS, 2017. She is a certified yoga teacher, a Y.A.N.I. member (National Association of Yoga Teachers) and teaches yoga and meditation since 2013. She developed, through breathing techniques and postures, "Fenomeno Yoga": an embodied phenomenological method and project in which the practice of yoga creates a bridge of communication between Eastern contemplative practices and Western philosophical insights. She has just been included in the teaching panel of Mind and Life Europe.

Gabriele Penazzi is a Phd student at the Department of Psychology and Cognitive Science of the University of Trento. His current research topic is focused on the study on neurophysiological and phenomenological effects of non-ordinary states of consciousness induced by breathing techniques, meditation and hypnosis.

Gabriele Piana was a college philosophy professor before taking the position of Moral Philosophy researcher at the Faculty of Education, University of Palermo. He was member of the editorial board of international journals of philosophical studies, such as 'Aut Aut' and 'Millepiani', with a keen interest in the contemporary French thought. Between 2008 and 2013 he completed a Masters Program in Buddhist philosophy, and had undergone a very beneficial three-year monastic training. He now continues his path as a lay practitioner, teaching and writing about Buddhist theory and meditation, and participating in the interreligious dialogue events. He is also collaborating with the University of Pisa and the University of Udine in the framework of their neuroscience and meditation master programs. In 2020 Gabriele Piana conducted an uninterrupted one-year solitary retreat.

Tania Re is RE graduated in Clinical and Community Psychology, specialized in Gestalt Therapy at the CSTG in Milan and as a complementary therapist in Switzerland, deepening the study and practice of bio-natural disciplines. She was a student of Prof. Benson of the "Mind-Body Institute" in Boston where she learned the mind-body techniques, hypnosis and visualization techniques for the accompaniment of people with chronic and oncological diseases. Over the years she has specialized in Health Anthropology and Ethnomedicine. She is a founding member of the Unesco Chair "Health, Anthropology, Biosphere and care systems" at the University of Genoa and currently collaborates with the Tuscany Regional Center for Phytotherapy (CERFIT) and with the Gestalt Therapy Study Center (CSTG) of Milan. He teaches Ethnomedicine and Medical Anthropology at University Courses and Masters in health and works in Italy and Switzerland. His field research is carried out in indigenous communities in South America by studying traditional medicines, plants and healing rituals.

Shantena Augusto Sabbadini is a physicist, philosopher and a scholar of Chinese classics. As a physicist he worked at the University of Milan on the foundations of quantum physics and at the University of California on the first identification of a black hole. In the 1990's he was scientific consultant for the Eranos Foundation, an East-West research institute founded in 1933 under the supervision of C.G. Jung. In that context he produced innovative translations of the I Ching and of the Taoist classics. He directs the Pari Center for New Learning, an international institute located in the small medieval village of Pari, Tuscany. His latest books are *Pilgrimages to Emptiness* (Pari Publishing, 2017), *Buchi neri* (Lindau, Turin, 2018) and *Vacuum: The Ultimate Ground of Being*, with Maurizio Consoli (World Scientific, Singapore, expected to come out in 2020).

Geshe Tenzin Tenphel was born to a nomadic agricultural family in Domo, Tibet, near the province of Sikkim, India. In 1959 with the Chinese invasion of Tibet, Geshe Tenphel's family fled to Sikkim and later to south India. Geshe Tenphel became a monk when he was nine years old but continued studying at the local secular school while memorizing Buddhist scriptures in his holidays. He entered Sera Je monastery at the age of 17, where he completed 21 years of a monastic scholastic education, graduating with honors in 1994 with a Lharam Geshe degree, the highest Tibetan Buddhist doctorate conferred in the Gelug tradition. Geshe Tenphel studied tantra at Gyu To Tantric College for a year before being asked to take part in an international tour of Sera Jey monks. In 1997 he led the group of monks at Sera Je specialized in practices related to Hayagriva. Since January 1998 he has been resident teacher at Lama Tzong Khapa Institute, where he teaches numerous short courses as well as the Basic Program and Masters Program.

Nicola Vanello, PhD in Automatics, Robotics and Bioengineering, is Professor at the University of Pisa. His research activity is related to models and methods for biomedical signal and image processing. In particular, his skills concern the study of cerebral functions in complex cognitive tasks, and the development of exploratory and confirmatory models for data analysis, using electroencephalography and magnetic resonance imaging (MRI). His research interests include the analysis of speech signal with a special focus in the estimation of subjects' mood and emotional state. He is author of several papers, contributions to international conferences and chapters in international books.

Andrea Zaccaro PhD, psychologist, is currently a research fellow in psychobiology at the University of Pisa, Italy. His research is based on the investigation of the neurophysiological bases of altered states of consciousness induced by contemplative practices such as meditation and respiratory techniques (i.e. pranayama), mainly focusing on their effects at the phenomenological, cognitive, neurophysiological, and cardio-respiratory level”

Riccardo Zerbetto, trainer and supervisors in gestalt therapy accredited by the Federazione Italiana delle Scuole e Istituti di Gestalt-FIAP, Founder and Director of the Centro Studi di Terapia della Gestalt accredited by the Ministry of Education and Research for delivering training in Gestalt Therapy in Milan and Siena. Child and adult psychiatrist, Consultant of the Ministry of Health for psychiatry and drug abuse field (1980), past contract professors in Psychopathology at the School in Psychiatry of the University of Siena, past president of the Associazione Italiana di Psicologia Umanistica e Transpersonale (1995), of the European Association for Psychotherapy-EAP (1996-7), of the Federazione Italiana delle Scuole e Istituti di Gestalt-FIAP (1995-6) and co-founder and onorary member of the Federazione Italiana delle Associazioni di Psicoterapia-FIAP, Co-founder and onor. president of Alea- Association for the study of gambling and Scientific, Director of Orthos, for the Studi and treatment of Behavioural addiction, Edior of the scientific journal *Monographies in Gestalt*.

