

## Top-Down Causation and Volition

19, 20, and 21 April 2007  
Yosemite National Park, California

A symposium sponsored by the  
John Templeton Foundation

Contact: Mary Ann Meyers, Ph.D., Senior Fellow

### PURPOSE

#### *The Road Not Taken* by Robert Frost

*Two roads diverged in a yellow wood,  
And sorry I could not travel both  
And be one traveler, long I stood  
And looked down one as far as I could  
To where it bent in the undergrowth;*

*Then took the other, as just as fair,  
And having perhaps the better claim,  
Because it was grassy and wanted wear;  
Though as for that the passing there  
Had worn them really about the same,*

*And both that morning equally lay  
In leaves no step had trodden black.  
Oh, I kept the first for another day!  
Yet knowing how way leads on to way,  
I doubted if I should ever come back.*

*I shall be telling this with a sigh  
Somewhere ages and ages hence:  
Two roads diverged in a wood, and I—  
I took the one less traveled by,  
And that has made all the difference.*

**P**hilosophers have raised questions throughout history regarding the relationship between our intuitive sense of mental causation and agency and the physical world. Their inquiry has taken on new urgency since the discovery of brain signals that seem to precede an intended action. Is volition then an illusion? Is bottom-up causation all there is? Or does an understanding of the experience of freedom of choice require the invocation of downward causation—the theory that the mind can initiate action because it is more than merely the sum of its parts? Does the existence of intentional, goal-oriented behavior in nature and of certain kinds of organizing information in the universe lead to the hypothesis that the higher-level system selectively activates lower-level causal processes? In the quarter-century since Roger Sperry, the neuroscientist who assigned a causal role to consciousness, won a Nobel Prize for showing that a conscious mind exists in each hemisphere of the brain, much has been learned about the psychology and neurology of volition and intentionality. Researchers have measured electrical and hemodynamic signals associated with freely initiated actions, some of which (e.g. readiness potential) occur before the subject becomes aware of his or her intention to move. Can these laboratory findings be generalized to decisions and actions that occur in daily life? What new types of experimentation and instrumentation might advance this domain of inquiry?

The body of research undertaken to date is compatible with the position that the “feeling of authorship” is a conscious sensation that is, in principle, no different from the feeling of seeing the color red or smelling a rose. What are its neuronal correlates? What are the functional and neuroanatomical links between the brain centers that initiate action and those networks that generate the feeling of authorship? Would such a neuronal mechanism, if understood, resolve the apparent conflict between the hypothesis that the universe is causally closed and a psychological sense of freedom (“I am the author of my own actions”)? To what extent might bottom-up accounts of causation for such actions within the brain and nervous system be modified by top-down influences, for instance, expectations? How can higher levels of integration and personal volition—the subject’s beliefs, hopes, purposes, and desires—be said to initiate action? And, more generally, how might physicalist frameworks for top-down causation be conceptualized in the first place?

### PRESS

#### Determining free will

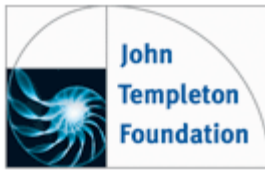
By Chris Frith, *New Scientist*, 11 Aug 2007

Furthermore: How can convictions about the possibility for self-actualization be squared with ideas of ‘causal closure’? Are such philosophical or scientific ideas based on compelling interpretations of the implications of physical science? Were there to be no such thing as actual libertarian free will, can there be actual, philosophically coherent, moral responsibility? Can non-reductive physicalism, affirming both the reality of the mind and the thesis that every physical event has a physical cause, break the logjam philosophically and possibly point towards fruitful new research agendas in neuroscience? How does contemporary philosophical theology engage with this area of inquiry in the neurosciences and in the philosophy of mind? What is the status and shape of active contemporary debates in philosophical theology that pertain to questions of volition and causation?

The fourteen scientists, philosophers, and theologians who have come together to examine these questions, under the auspices of the John Templeton Foundation, meet in Yosemite National Park, a world heritage site in the high Sierras marked by spectacular granite cliffs, waterfalls, lakes, streams, and groves of ancient giant sequoias. It is a natural wonder of immense biological diversity that President Abraham Lincoln set aside 143 years ago as a public trust.

TOP BANNER: Maurice Braun, *Yosemite Falls from the Valley* (detail), 1918, oil on canvas. Courtesy of The Irvine Museum, Irvine, California, adjoined by *Diverging Paths*, © John Goldstein Photography.

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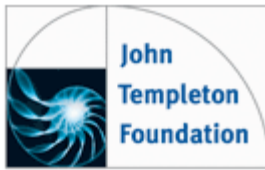
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### APPROACH

**T**he symposium is part of the Templeton Foundation's *Humble Approach Initiative*. The goal of the initiative is to bring about the discovery of new spiritual information by furthering high-quality scientific research. The "humble approach" is inherently interdisciplinary, sensitive to nuance, and biased in favor of building linkages and connections. It assumes an openness to new ideas and a willingness to experiment. Placing high value upon patience and perseverance, it retains a sense of wondering expectation because it recognizes, in Loren Eiseley's haunting phrase, "a constant emergent novelty in nature that does not lie totally behind us, or we would not be where we are." A fundamental principle of the Foundation, in the words of its founder, is that "humility is a gateway to greater understanding and open[s] the doors to progress" in all endeavors. Sir John Templeton believes that in their quest to comprehend foundational realities, scientists, philosophers, and theologians have much to learn about and from one another. The humble approach is intended as a corrective to parochialism. It encourages discovery and seeks to accelerate its pace.



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## CHAIR

*"And each in the cell of  
himself is almost  
convinced of his  
freedom..."*

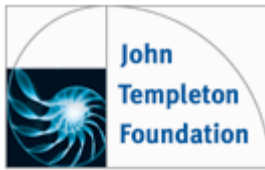
W. H. Auden  
from *In Memory of W. B. Yeats*

**Christof Koch** is a neuroscientist who holds the Lois and Victor Troendle Professorship of Cognitive and Behavioral Biology at the California Institute of Technology. With the late Nobel laureate Francis Crick, he helped make consciousness a legitimate topic of scientific inquiry nearly two decades ago, and he continues to investigate its neurobiological mechanisms. Born in Missouri, he grew up a citizen of the world as his German parents' diplomatic assignments took the family to The Netherlands, Germany, Canada, and Morocco. He earned a baccalaureate degree at the Lycée Descartes in Rabat, a master's degree in physics *magna cum laude* at the University of Tübingen, and a Ph.D. in physics *magna cum laude* at the Max Planck Institute for Biological Cybernetics in Tübingen in 1982. Awarded a postdoctoral fellowship by the Franz Thyssen Foundation, Dr. Koch worked in the Artificial Intelligence Laboratory and the psychology department at the Massachusetts Institute of Technology. He joined the Caltech faculty as an assistant professor of computation in 1986. Promoted to full professor eight years later, he was named to his present chair in 2000. For nine years, he served as executive officer of Caltech's Computation and Neural Systems Program. He is currently the director of its Broad Fellows Program in Brain Circuitry. An adjunct professor at the Salk Institute, he has been a visiting professor at the ETH in Zurich. Dr. Koch's research focuses on the biophysics of single neurons, visual attention, object recognition, and awareness as a means of studying the footprints of consciousness in the brain and on designing neuromorphic machine vision algorithms. He uses electrophysiological recordings in patients and brain imaging, as well as perception experiments in volunteers, to explore the neuronal operations underlying vision. He conceived and guided the development of a suite of vision algorithms for attentional selection via saliency, which are now used by several hundred laboratories throughout the world. Dr. Koch has held an Alfred Sloan Research Fellowship and been the recipient of an Office of Naval Research Young Investigator Award, a National Science Foundation Young Investigator Award, and the Alexander von Humboldt Research Prize. Named a Bernard Osher Fellow at the San Francisco Exploratorium, a museum of science, art, and human perception, in 2004, he delivered the J. Robert Oppenheimer Memorial Lecture at Los Alamos in 2005 and the Foerster Lecture at the University of California, Berkeley, last year. He holds five patents related to analog VLSI circuits for vision as well as for attentional selection processes. After

publishing his doctoral thesis on nonlinear information processing in *Nature*, he has gone on to publish more than 175 papers to date in leading scientific journals and some sixty-five chapters in volumes of collected works. He is the co-editor of six books and the author of two others: *Biophysics of Computation: Information Processing in Single Neurons* (1999), the first textbook on the computational potential of sub-cellular mechanisms, and *The Quest for Consciousness: A Neurobiological Approach*, an empirically-grounded introduction to the modern biology of consciousness and an argument for its neural basis, which was published by Roberts and Company in 2004.

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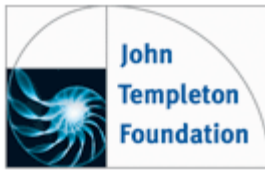
### George F. R. Ellis

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Christopher D. Frith  
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Mark Hallett  
J.A. Scott Kelso  
Hans Küng  
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William Thomas Newsome, III  
Timothy O'Connor  
Sean A. Spence  
Evan Thompson  
Daniel M. Wegner

**George F. R. Ellis**, professor of applied mathematics emeritus at the University of Cape Town (UCT), is as widely respected for his anti-apartheid Quaker activism as for his contributions to cosmology. Born in Johannesburg, South Africa, and educated in Natal and at UCT, where he received his baccalaureate degree with distinction, he earned his Ph.D. in applied mathematics and theoretical physics at Cambridge University in 1964. He became a research fellow at Peterhouse College, Cambridge, and then was a university lecturer in applied mathematics and theoretical physics before joining the UCT faculty as a full professor in 1974. Dr. Ellis also served as a professor of cosmic physics at the International School of Advanced Studies in Trieste, Italy, for five years and has been a visiting professor at the University of Chicago, the University of Hamburg, Boston University, the University of Texas at Austin, and the University of Alberta. He is currently G. C. McVittie Visiting Professor of Astronomy at Queen Mary College, London, and lectures throughout the world. His scientific work on the mathematical foundations of general relativity and cosmology is recognized for its depth, originality, and wit. He studies fundamental questions like the geometrical structure of the universe and has not been afraid to challenge conventional assumptions about how our universe began and is built. In his alternative model to the violent Big Bang, the Whimper model, all starts with Quaker gentleness. In the bleak South Africa of the 1970's and 1980's, he used knowledge both as a weapon and a shield against violence and injustice. During the past several decades, he has been deeply involved in race relations, housing policy, and the future of the scientific enterprise of his country. Dr. Ellis has served as president of the Royal Society of South Africa (RSA) and of the International Society of General Relativity and Gravitation. He is a fellow of the Royal Astronomical Society, the Institute of Mathematics and its Applications, the RSA, the UCT, and the Third World Academy of Sciences. Winner of the 2004 Templeton Prize for Research or Discoveries about Spiritual Realities, his many other awards include the Herschel Medal of the Royal Society of South Africa, the Claude Harris Leon Foundation Achievement Award, the Gold Medal of the South African Association for the Advancement of Science, the Star of South Africa Medal, which was presented to him in 1999 by President Nelson Mandela, the National Science and Technology Forum Award for lifetime contributions to cosmology, the Academy of Science of South Africa Science-for-Society Gold Medal, and the Order of Mapungubwe, which was conferred on him by

South African President Thabo Mbeki last year. Dr. Ellis holds honorary degrees from Haverford College, the University of Natal, and Queen Mary College, London. He serves as co-editor-in-chief of the international *Journal of General Relativity and Gravitation*. Co-author with Stephen W. Hawking of *The Large Scale Structure of Space Time* (1973), which quickly became a standard reference work, he has published more than three hundred scientific papers and eight other major books. His latest studies are (with John Wainwright) *The Dynamical Systems Approach to Cosmology* (1996), (with Nancey Murphy) *On the Moral Nature of the Universe: Theology, Cosmology, and Ethics* (1996), and (with Peter Coles) *Is the Universe Open or Closed? The Density of Matter in the Universe* (1997). He edited, most recently, *The Far-Future Universe: Eschatology from a Cosmic Perspective*, which was published by the Templeton Press in 2002.

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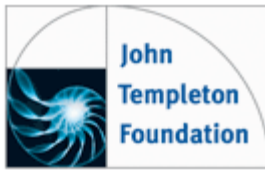


Furthermore: How can convictions about the possibility for self-actualization be squared with ideas of ‘causal closure’? Are such philosophical or scientific ideas based on compelling interpretations of the implications of physical science? Were there to be no such thing as actual libertarian free will, can there be actual, philosophically coherent, moral responsibility? Can non-reductive physicalism, affirming both the reality of the mind and the thesis that every physical event has a physical cause, break the logjam philosophically and possibly point towards fruitful new research agendas in neuroscience? How does contemporary philosophical theology engage with this area of inquiry in the neurosciences and in the philosophy of mind? What is the status and shape of active contemporary debates in philosophical theology that pertain to questions of volition and causation?

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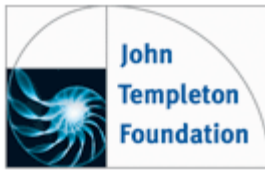
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Evan Thompson  
Daniel M. Wegner

Professor of neurosurgery at the David Geffen School of Medicine of the University of California at Los Angeles (UCLA) and professor of psychiatry and behavioral sciences at UCLA's Semel Institute for Neuroscience and Human Behavior, **Itzhak Fried** has pioneered methods for studying the cellular basis of human visual perception and memory. For the past fifteen years, he has served as director of epilepsy surgery and co-director of the Seizure Disorder Center at UCLA. He is internationally recognized for his expertise in the management of tumors and vascular malformations associated with seizures. The research program in cognitive neurophysiology he founded uses depth electrodes, which are implanted in the brains of patients for clinical diagnostic purposes, as a means to investigate the behavior of individual neurons. Born and raised in Israel, Dr. Fried was graduated from Tel Aviv University, earned a Ph.D. in cognitive psychology at UCLA in 1981, and received an M.D. from Stanford University School of Medicine in 1985. He completed his neurosurgery residency at Yale University School of Medicine. After serving on the faculty there and as an attending neurosurgeon at Yale-New Haven Hospital, he joined the UCLA faculty in 1992. Dr. Fried was named a full professor in 2003 and, since 2000, has also served on the faculty of the Sackler School of Medicine of Tel Aviv University. He was elected a fellow of the American Association for the Advancement of Science for his contributions to cognitive neurophysiology. A fellow also of the American College of Surgeons, he has been a Merritt-Putnam International Visiting Professor at the Beijing Neurological Institute and lectured extensively in Europe, Israel, India, Japan, Australia, and the United States. Dr. Fried is the author of some one hundred papers published in scientific journals and a dozen chapters in volumes of collected works.



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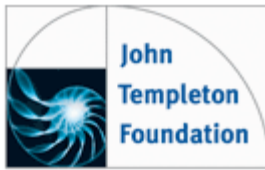
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**Christopher D. Frith**, professor in neuropsychology at University College, London (UCL), and deputy director of the Leopold Müller Functional Imaging Laboratory at UCL's Institute of Neurology, is one of the pioneers in applying brain imaging to the study of mental processes. He is known especially for his work on agency, social intelligence, and understanding the minds of people with autism and schizophrenia. Educated at Christ's College, Cambridge, he received his Ph.D. in psychology from the University of London in 1969. He began his research career at the Institute of Psychiatry, London, and, in 1975, became a scientist at Britain's Medical Research Council. Dr. Frith was appointed to his present position in 1994. He has been a visiting fellow at All Souls College, Oxford, and a visiting professor at the University of Aarhus in Denmark and at the University of Salzburg. He has served as president of the Psychology Section of the British Association for the Advancement of Science and of the Association for the Scientific Study of Consciousness. A Fellow of the Royal Society, he is also a fellow of the (British) Academy of Medical Sciences and the American Association for the Advancement of Science, a Guarantor of the Brain, and a member of the Academia Europaea. Dr. Frith is the recipient of the Kenneth Craik Award given by St. John's College, Cambridge, the Robert Sommer Award given by Justus Liebig-Universität in Giessen, Germany, and the Burghölzli Award of the University of Zürich. He has been awarded honorary degrees by Paris-Lodron University in Salzburg and the University of York. He currently serves on the editorial boards of *Science*, the *Journal of Cognitive Neuropsychiatry*, *Neuroimage*, and *Psychological Medicine*. The author of some 335 papers published in scientific journals, he is the co-editor of two books, including, most recently, (with D. W. Wolpert) *The Neuroscience of Social Interaction: Decoding, Imitating and Influencing the Actions of Others* (2004), and the co-author of four books, among them (with E. C. Johnstone) *Schizophrenia: A Very Short Introduction* (2003). His latest book, *Making up the Mind: How the Brain Creates our Mental World*, was published last month by Blackwell.





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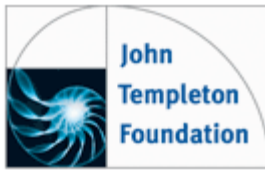
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Alexander Hehmeyer Associate Professor of Philosophy and associate professor of linguistics, neurobiology, and psychology and neurosciences at Duke University, **Güven Güzeldere** is a philosopher of mind who also does experimental work on the boundaries of unconscious processing in vision using functional magnetic resonance imaging. His theoretical studies are concerned with the nature of consciousness and qualia—the properties of sensory experience, as well as with questions relating to the neural correlates of consciousness, the phenomenon of deception in non-human animals, and the role of introspection in pain perception. Born in Turkey, he received an undergraduate degree from Bogaziçi University in Istanbul, master's degrees in both computer science and in philosophy from Indiana University, and a Ph.D. in philosophy and symbolic systems from Stanford University in 1997. Dr. Güzeldere then joined the Duke philosophy faculty as an assistant professor and held an Andrew W. Mellon Assistant Professorship before being named to his present position. He currently serves as director of an interdisciplinary program called Exploring the Mind as well as the Duke in Turkey Study Abroad Summer Program. Dr. Güzeldere has been the recipient of fellowships awarded by the National Humanities Center, the Social Sciences Research Council, and the American Psychological Association. He is a past winner of Duke's Richard K. Lublin Distinguished Teaching Award and of a James McDonnell Foundation Young Investigator Award. A past president of the North Carolina Philosophical Society, he is co-founder of the Association for the Scientific Study of Consciousness and formerly served on its board of directors. He has been editor-in-chief of the *Stanford Humanities Review* and associate editor of *Psyche: International Journal for Research on Consciousness*. He currently serves on the editorial board of *Brain and Mind*. In addition to publishing more than twenty articles in academic journals, he has co-edited three books, including (with Ned Block and Owen Flanagan) *The Nature of Consciousness: Philosophical Debates* (1997), and, most recently, two volumes published in 2005, (with Stefano Franchi) *Mechanical Bodies, Computational Minds: Artificial Intelligence from Automata to Cyborgs* (The MIT Press) and (with Gürol Irzik) *Turkish Studies in the History and Philosophy of Science* (Springer). Dr. Güzeldere is writing (with Murat Aydede) a new book entitled *Sensing, Perceiving, Introspecting: Cognitive Architecture and Phenomenal Consciousness* for Oxford University Press (OUP). He is working on another volume on consciousness for OUP's



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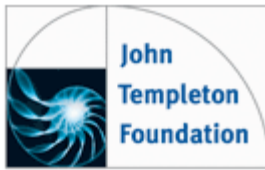
Evan Thompson

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**Mark Hallett** is chief of the Medical Neurology Branch and of its Human Motor Control Section at the National Institute of Neurological Disorders and Stroke (NINDS) in Bethesda, Maryland. His research focuses on the physiology of human movement and its pathophysiology in movement disorders such as Parkinson's disease and dystonia. A *cum laude* graduate of Harvard College, where he was elected to Phi Beta Kappa, Dr. Hallett received his M.D. *cum laude* from the Harvard Medical School in 1969. After interning at Peter Bent Brigham Hospital in Boston, he joined the staff of the National Institute of Mental Health's Laboratory of Neurobiology. He took a residency in neurology at the Massachusetts General Hospital and then conducted research at the Institute of Psychiatry in London on a Mosely Traveling Fellowship. In 1976, Dr. Hallett was appointed director of the Neurophysiology Laboratories at the Brigham, a post he held for eight years while also serving on the faculty of the Harvard Medical School, where he became an associate professor of neurology before accepting his present position at the NINDS. He currently serves as clinical professor of neurology at the Uniformed Services University for Health Sciences in Bethesda. A fellow and former vice president of the American Academy of Neurology (AAN) and an elected member of the American Neurological Association, he is an honorary member of the Australian Movement Disorder Society, the Australian Association of Neurologists, the German Society for Clinical Neurophysiology, the German Neurological Society, the Sociedad Latinoamericana de Movimientos Anormales, the Schweizerische Gesellschaft für Klinische Neurophysiologie, and the Société Française de Neurologie. Dr. Hallett has served as a director and president of the American Association of Neuromuscular and Electrodiagnostic Medicine (AANEM) and as president of the Movement Disorder Society (MDS) and the International Medical Society of Motor Disturbances. Among his many awards are the United States Public Health Service's Distinguished Service Medal, the 1999 Physician Researcher of the Year Award given by the Physicians Professional Advisory Committee to the Surgeon General, the Director's Award of the National Institutes of Health (NIH), the AANEM's Distinguished Researcher Award, the Dino Garavoglia Prize of the Italian Association for Neurological Research, the Pierre Gloor Award of the American Clinical Neurophysiology Society, the NIH's Outstanding Mentor Award, the first President's Distinguished Service Award of the of the MDS, the Movement Disorder Research Award of the AAN, and the AAN's President's Award. Dr.

Hallett is currently editor-in-chief of *Clinical Neurophysiology*, associate editor of *Brain*, and a member of the editorial boards of more than a dozen other professional journals. He is the author or co-author of more than five hundred scientific papers and the editor or co-editor of twenty books, including, most recently, (with C. Robert Cloninger, Stanley Fahn, Joseph J. Jankovic, and Anthony E. Lang) *Psychogenic Movement Disorders: Neurology and Neuropsychiatry* (2005) and (with Giorgio Cruccu) *Brainstem Function and Dysfunction*, which was published by Elsevier last year.

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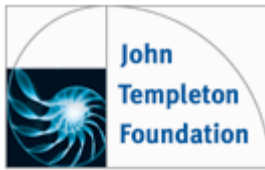
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Holder of the Glenwood and Martha Creech Eminent Scholar Chair in Science at Florida Atlantic University, **J. A. Scott Kelso** is also a professor of psychology, of the biological sciences, and of the biomedical sciences there. He has devoted the past quarter century to trying to understand how human beings (and human brains)—individually and together—coordinate their behavior. Dr. Kelso is considered one of the originators of coordination dynamics, a theoretical and empirical framework that aims to describe, explain, and predict how patterns of coordination form, persist, and change in living things on several levels. The focus of his current work is on how the brain, by using a subtle blend of integration among, and segregation between, its functioning parts, creates meaningful information that may be stabilized over time and used to direct ongoing activity. Dr. Kelso served as founding director of Florida Atlantic's Center for Complex Systems and Brain Sciences for two decades. Born in Ireland, he studied at Stranmillis University College in Belfast and was a schoolmaster before coming to Canada and taking a B.S. at the University of Calgary. He earned a Ph.D. in kinesiology and psychology at the University of Wisconsin in 1975. For the next several years, he served as an assistant professor of exercise science, with joint appointments in psychology and speech and hearing science, and as director of the Motor Behavior Laboratory at the University of Iowa. Appointed an associate professor of psychology and bio-behavioral sciences at the University of Connecticut in 1978, he was named a full professor in 1982 and also served for seven years as a senior research scientist at Yale University's Haskins Laboratories. Dr. Kelso accepted his present position in 1985. A fellow of the American Association for the Advancement of Science, the American Psychological Society, and the American Psychological Association, he formerly served as president of the South Florida Chapter of Sigma Xi and is currently a member of the advisory board of the Plexus Institute. He has an honorary degree from the University of Toulouse and is the recipient of numerous awards, including the MERIT and Senior Scientist awards of the National Institutes of Mental Health, the Distinguished Scientist Award of the North American Society for the Psychology of Sport and Physical Activity, and the Distinguished Alumni Research Achievement Award of the University of Wisconsin. Presently a member of the editorial boards of *Neural Networks*, *Journal of Motor Behavior*, *Human Movement Science*, *Motor Control*, *Chaos and Complexity Letters*, and *Cognitive Processing*, he serves as editor of the Springer-Verlag series

Understanding Complex Systems. Dr. Kelso is the author of some three hundred articles published in academic journals and essays in volumes of collected works. He co-edited five books and is the author of three others, *Human Motor Behavior: An Introduction* (1982), *Dynamic Patterns: The Self-Organization of Brain and Behavior* (1995 and 1997) and, most recently, (with D. A. Engstrom) *The Complementary Nature*, which was published by the Massachusetts Institute of Technology Press last year.

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## Top-Down Causation and Volition

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## PARTICIPANTS

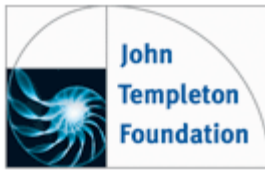
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### Hans Küng

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William Thomas Newsome, III  
Timothy O'Connor  
Sean A. Spence  
Evan Thompson  
Daniel M. Wegner

**Hans Küng** is an internationally known Roman Catholic theologian and president of the Global Ethic Foundation, which is dedicated to inter-cultural and inter-religious research, education, and encounter. Professor of ecumenical theology emeritus at the University of Tübingen, he is a prolific author who has long called for a more doctrinally liberal Church. Dr. Küng was born in Switzerland and studied at the Pontifical Gregorian University in Rome where he received licentiates in philosophy and in theology. He was ordained a priest in 1954, continued his studies in a number of European cities, and was awarded a doctorate in theology from the Institut Catholique in Paris in 1957. After two years of pastoral work in Lucerne, he was appointed to the Faculty of Catholic Theology at the University of Münster. He was named a full professor of fundamental theology on the Catholic Faculty of the University of Tübingen in 1960. Pope John XXIII appointed him *peritus* to the Second Vatican Council two years later, and he served as an expert theological advisor to the delegates until the Council's conclusion 1965. Two years earlier, he had taken up a professorship of dogmatic and ecumenical theology on the Catholic Faculty of Tübingen and served as the director of the new Institute for Ecumenical Research. Dr. Küng's earliest writing was on Christian existence, following from his dissertation on differences between Catholic and Protestant theology, which was published in English as *Justification: The Doctrine of Karl Barth and a Catholic Reflection* (1965 and 2004). He soon turned to the Church and Christian ecumenism with *The Council, Reform and Reunion* (1961 and 1965), *The Church* (1967 and 1976), and the controversial *Infallible? An Inquiry* (1971 and 1994), which led Pope John Paul II to revoke his official permission to teach as a Catholic theologian in 1979. Dr. Küng carried on in his academic and administrative posts at the University of Tübingen until his retirement in 1996. As he began working out his own theology of the exegetical and historical foundations of Christianity, he published, among other books, *On Being A Christian* (1976, 1984, and 1991), *Does God Exist?* (1980 and 1991), and *Eternal Life?* (1984 and 1991). Studies followed on inter-religious dialogue and the different world religions, including *Tracing the Way: Spiritual Dimensions in World Religions* (2002). In the nineties, he broadened his focus to worldwide political and economic issues and initiated a project called *Weltethos* (Global Ethic). He wrote *Global Responsibility: In Search of A New World Ethic* (1991), and his vision was embodied in a document, for which he wrote the initial draft, "Towards a Global Ethic: An Initial Declaration," which

was presented to the 1993 Parliament of the World Religions and endorsed by religious and spiritual leaders from many nations. He also drafted a “Universal Declaration of Human Responsibility” for the Inter-Action Council, an organization of former presidents and prime ministers. Through the years, Dr. Küng has been recognized for his scholarship and leadership with thirteen honorary degrees from universities in the United States, Canada, and the United Kingdom, numerous awards, among them the Interfaith Gold Medallion of the International Council of Christians and Jews, and, in 2001, then Secretary General of the United Nations Kofi Annan designated him as one of a nineteen-member Group of Eminent Persons. Among the most recent of his some fifty books are *The Catholic Church: A Short History* (2002), a chronicle of the Church as a world power and a call for it to adapt to modern needs, and *Der Anfang aller Dinge* (The Beginning of All Things), a discussion of the relationship between science and religion and the origin of the universe, of life, and of humanity, which was published by Piper in 2005 and will be published by Wm. Eerdmans later this year.



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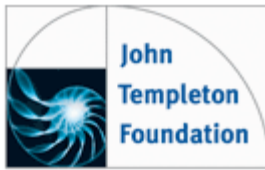
### **Nancey Claire Murphy**

William Thomas Newsome, III  
Timothy O'Connor  
Sean A. Spence  
Evan Thompson  
Daniel M. Wegner

A philosopher of science, **Nancey Claire Murphy** teaches at Fuller Theological Seminary where she is professor of Christian philosophy. Her latest book, (with Warren S. Brown) *Did My Neurons Make Me Do It?: Philosophical and Neurobiological Perspectives on Moral Responsibility and Free Will* (Oxford University Press, forthcoming next month), uses contemporary developments in neuroscience and philosophy of mind to defend robust conceptions of mental causation and of humans as beings capable of rational, free, and morally responsible action. Dr. Murphy, who was ordained in 1991, is a minister in the Church of the Brethren, a denomination related to the Mennonites. A *summa cum laude* graduate of Creighton University, she earned a Ph.D. in philosophy at the University of California, Berkeley, in 1980 and a doctorate in theology and philosophy of religion seven years later at the Graduate Theological Union in Berkeley. She was a teaching fellow at the Church Divinity School of the Pacific, a lecturer in philosophy at the Dominican School of Philosophy and Theology in Berkeley, and a visiting assistant professor of religion at Whittier College before joining the Fuller faculty as an assistant professor in 1989. She was named to her present position in 1998, and, since 2003, she also has been an adjunct professor at the International Baptist Theological Seminary in Prague. Dr. Murphy has held a National Science Foundation Fellowship and received a Creighton University Alumni Achievement Award. She serves on the board of directors of the Center for Theology and the Natural Sciences in Berkeley and was a member of the board of advisors of the John Templeton Foundation. A former corresponding editor of *Christianity Today*, Dr. Murphy presently serves on the editorial council of *Theology Today* and on the editorial advisory boards of *Zygon: Journal of Religion and Science* and of *Theology and Science*. In addition to contributing articles to scholarly journals and chapters to volumes of collected works, she has co-edited nine books, including (with William R. Stoeger) *Evolution and Emergence: Systems, Organisms, Persons*, which will be published this month by Oxford University Press. She is the co-author (with George F. R. Ellis) of *On the Moral Nature of the Universe: Theology, Cosmology, and Ethics* (1996) and the author of eight other books, including *Theology in the Age of Scientific Reasoning* (1990), which won awards from the American Academy of Religion and the Templeton Foundation, *Anglo-American Postmodernity: Philosophical Perspectives on Science, Religion, and Ethics* (1997), *Reconciling Theology and Science: A Radical Reformation Perspective* (1997),

*Religion and Science: God, Evolution and the Soul* (2002), and *Bodies and Souls, or Spirited Bodies?* (2006).

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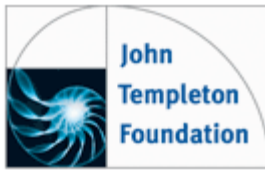
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**William Thomas Newsome, III**, is professor and chair of neurobiology at Stanford University School of Medicine. His research has focused on identifying the neural mechanisms underling visual perception, in particular deep questions involving visually-based decision making and the internal representation within the brain of the likely value of given actions. He has demonstrated that by stimulating a region of the midbrain (superior colliculus) of primates with microelectrodes, he could cause predicable changes in performance not simply a correlation between neural activity and behavior. His work is contributing to the mapping of cognitive functions of different brain structures and our understanding of normal physiology and cognitive processing. Dr. Newsome, a *summa cum laude* graduate of Stetson University in Deland, Florida, received his Ph.D. in biology from the California Institute of Technology. After a year of postdoctoral research at Caltech, he moved on to the National Eye Institute in Bethesda, Maryland, where he spent four years as a research fellow. He joined the faculty of the State University of New York at Stony Brook as an assistant professor of neurobiology and behavior in 1984 and, four years later, came to Stanford's School of Medicine as an associate professor. Named a full professor in 1999, he became chair of the neurobiology department in 2005. Dr. Newsome has also been an investigator at the Howard Hughes Medical Institute for the past decade. He was formerly a McDonnell Pew Visiting Fellow at Oxford, where he was senior visiting research fellow at St. John's College, and has been the recipient of a Sloan Research Fellowship and a Guggenheim Fellowship. A member of the National Academy of Sciences, his numerous other honors include the Rank Prize in Optoelectronics, the W. Alden Spenser Award for highly original contributions to research in neurobiology given by the College of Physicians and Surgeons at Columbia University, the Distinguished Scientific Contribution Award of the American Psychological Association, two Kaiser Awards for excellence in teaching given by Stanford medical students, and the Dan David Prize. Dr. Newsome currently serves on the editorial boards of the *Annual Review of Neuroscience* and *Current Opinion in Neurobiology*. He is the co-author of more than sixty-five papers published in scientific journals and a dozen essays in volumes of collected works.







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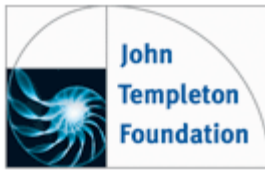
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A philosopher of mind and of religion who has written about the metaphysical requirements of free will, **Timothy O'Connor** is professor and chair of philosophy at Indiana University. He is an honors graduate of the University of Illinois at Chicago where he earned an undergraduate degree with distinction in philosophy as well as an M.A. in philosophy before going on to Cornell University. He studied there on a Susan Linn Sage Fellowship then on a graduate research fellowship and received a Ph.D. in philosophy in 1992. After post-doctoral research at the University of Notre Dame, he joined the Indiana philosophy faculty in 1993 as an assistant professor. Dr. O'Connor spent a year at the University of St. Andrews as a Gifford Research Fellow and was named to his present position in 2005. In addition to research fellowships awarded by Indiana, he also has been the recipient of a fellowship given by the Pew Scholars Program. He has won several awards for teaching excellence. Dr. O'Connor formerly served on the executive committee of the Society of Christian Philosophers. The author of more than thirty papers published in scholarly journals, which explore, among other things, the idea that mental states are ontologically emergent, he is the editor of *Agents, Causes, and Events: Essays on Indeterminism and Free Will* (1995) and the co-editor (with David Robb) of *Philosophy of Mind: Contemporary Readings* (2003). His first book *Persons and Causes: The Metaphysics of Free Will* was published by Oxford University Press in 2000, and he recently completed *Contingency: Theism and Ultimate Explanation*, which will be published by Blackwell in 2007. It sketches an account of how we are able to know nonempirical facts concerning what is possible and what is necessary, contends that such facts play an essential role in constraining our scientific theorizing concerning the world, and then refurbishes and defends Leibniz's argument that classical theism provides the best explanation for the ultimate empirical fact of existence itself.



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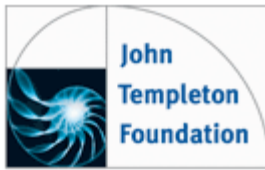
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**Sean A. Spence** is professor of general adult psychiatry at the University of Sheffield. His principle research focus is the regulation of voluntary behavior in healthy populations and those affected by neuropsychiatric disease. He serves as honorary consultant psychiatrist to the Sheffield Care Trust and consultant psychiatrist to the Sheffield Homelessness Assessment and Support Team. Educated at St. Mary and St. Joseph's Catholic School and Salvatorian College in Harrow, he studied medicine at Guy's Hospital in London where he earned an intercalated honors B.Sc. and a bachelor of medicine and a bachelor of surgery degree in 1986. After further training at various London hospitals, Dr. Spence accepted a Medical Research Council (MRC) clinical training fellowship to work on the MRC cyclotron unit at Hammersmith Hospital while also serving as honorary lecturer in psychiatry at the Imperial College School of Medicine, London University. He was named a Dewitt Wallace Visiting Research Fellow at New York Hospital-Cornell Medical Center's Functional Neuroimaging Laboratory in 1999 and awarded an M.D. by University College, London, the next year. Dr. Spence joined the Sheffield psychiatry faculty as a clinical senior lecturer in 2000 and was appointed to his present position in 2005. Elected a fellow of the Royal College of Psychiatrists last year, he is a past recipient of Guy's Gillespie Prize in Psychological Medicine, the Charing Cross Rotation Audit Prize, and the Royal College of Psychiatrists Research Prize and Medal, as well as several awards for papers and essays and numerous travel grants. He will hold the Royal Australian and New Zealand College of Psychiatrists' Traveling Professorship in 2008. Dr. Spence is a co-author of more than fifty papers published in scientific journals and the co-editor (with Peter W. Halligan) of *Pathologies of Body, Self and Space* (2002) and, most recently, (with Anthony S. David) *Voices in the Brain: The Cognitive Neuropsychiatry of Auditory Verbal Hallucinations*, which was published by Psychology Press in 2004. He is the co-author (with Ann Mortimer) of *Managing Negative Symptoms of Schizophrenia* (2001).



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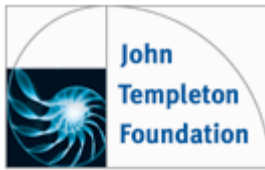
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A professor of philosophy at the University of Toronto, **Evan Thompson** has written extensively on how human consciousness, as inherently intersubjective, may be entwined with the rest of nature. His most recent book, *Mind in Life: Biology, Phenomenology, and the Sciences of Mind*, which was published earlier this year by Harvard University Press, argues that because our mental lives are so deeply involved with our bodies and the world beyond us, they cannot be reduced simply to brain processes inside the head. The starting point of much of his inquiry over the past decade and a half is that the mind, as a scientific object, presupposes our empathetic cognition of each other. Dr. Thompson is a *cum laude* graduate of Amherst College, where he was elected to Phi Beta Kappa, and received his Ph.D. in philosophy from the University of Toronto in 1990. While writing his dissertation, he studied at the Centre de Recherche en Epistémologie Appliquée (CREA) at the Ecole Polytechnique in Paris, and (with Francisco Varela and Eleanor Rosch) wrote *The Embodied Mind: Cognitive Science and Human Experience* (1991), one of the first books to explore systematically the relationship between Buddhist thought, particularly meditative psychology, and cognitive science. His postdoctoral research at the University of California at Berkeley and at the Center for Cognitive Studies at Tufts University was supported by a Social Sciences and Humanities Research Council of Canada (SSHRC) Fellowship. Dr. Thompson began his teaching career at the University of Toronto as an assistant professor of philosophy in 1991. After appointments at Concordia University in Montreal, Boston University, and York University in Toronto, where he became an associate professor of philosophy in 1998 and held a Canada Research Chair, he was named to his present position in 2005. He has been a visiting professor at CREA, the Center for Subjectivity Research of the Danish National Foundation in Copenhagen, and at the University of Colorado and is currently a fellow of the Lindisfarne Association, which was founded by his father, the social philosopher William Irwin Thompson. His work has been supported by several grants from the SSHRC, and for six years he held a McDonnell Fellowship in Philosophy and Neuroscience. Co-director for the Association for Phenomenology and the Cognitive Sciences, a member of the board of advisors of the Santa Barbara Institute for the Study of Consciousness, and of the scientific advisory board of the Mind and Life Institute, he was formerly executive editor for philosophy of mind of the *Canadian Journal of Philosophy* and is currently on the editorial committee

of *Phenomenology and the Cognitive Sciences*. Dr. Thompson is the author of some forty-five articles in academic journals and chapters in volumes of collected works and the editor or co-editor of five books, including, most recently, (with Philip David Zelazo and Morris Moscovitch) *The Cambridge Handbook of Consciousness*, which was published earlier this year by Cambridge University Press. In addition to *Mind in Life*, he is also the author of *Colour Vision: A Study of Cognitive Science and the Philosophy of Perception* (1995). Dr. Thompson is currently writing a new book entitled *Buddha and the Brain: Contemplative Neuroscience and the Nature of Consciousness*, which explores how Asian contemplative traditions and Western mind-brain science can collaborate beyond the science/religion divide in order to create new ways of scientifically investigating human consciousness and of fostering contemplative wisdom and cognitive spirituality.

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**Daniel M. Wegner**

**Daniel M. Wegner**, a pioneering social psychologist who is a professor of psychology at Harvard University, studies how we perceive and control our minds. He has done groundbreaking work in thought suppression and the nature of agency or conscious will. A graduate of Michigan State University, where he earned a baccalaureate degree and a Ph.D. in psychology in 1974, he began his teaching career at Trinity University in San Antonio, Texas, and was named a full professor in 1985. He moved to the University of Virginia as a professor of psychology five years later and was appointed to the William R. Kenan, Jr. Professorship in 1999. The next year he accepted his present position at Harvard. Dr. Wegner has been a visiting scholar at the University of Texas at Austin and a fellow at the Center for Advanced Study in the Behavioral Sciences in Palo Alto, California. His research has been supported by the National Science Foundation and is currently funded by the National Institute of Mental Health. A fellow of the American Association for the Advancement of Science, the American Psychological Association, and the American Psychology Society, he currently serves on the editorial boards of the *Journal of Personality and Social Psychology*, *Consciousness and Cognition*, *Canadian Psychologist*, and *Psychological Inquiry* and recently served on the board of reviewing editors of *Science*. Dr. Wegner has published more than one hundred articles in scientific journals and chapters in volumes of collected works. The co-editor of two books, he is the author or co-author of four others, including *Implicit Psychology: An Introduction to Social Cognition* (1977), (with Robin R. Vallacher) *A Theory of Social Action Identification* (1985), and *White Bears and Other Unwanted Thoughts: Suppression, Obsession, and the Psychology of Mental Control* (1989 and 1994). In his most recent book, *The Illusion of Conscious Will*, which was published by the MIT Press in 2002, he argues that the human feeling of free agency—the feeling that we consciously cause our actions—is created by the mind and the brain and serves as a guide to understanding ourselves, helping us to appreciate and remember our authorship of the things our minds and bodies do, and to developing a sense of responsibility and morality. He is currently preparing (with Daniel L. Schacter and Daniel T. Gilbert) a new textbook, *Introduction to Psychology*, which will be published by Worth.

