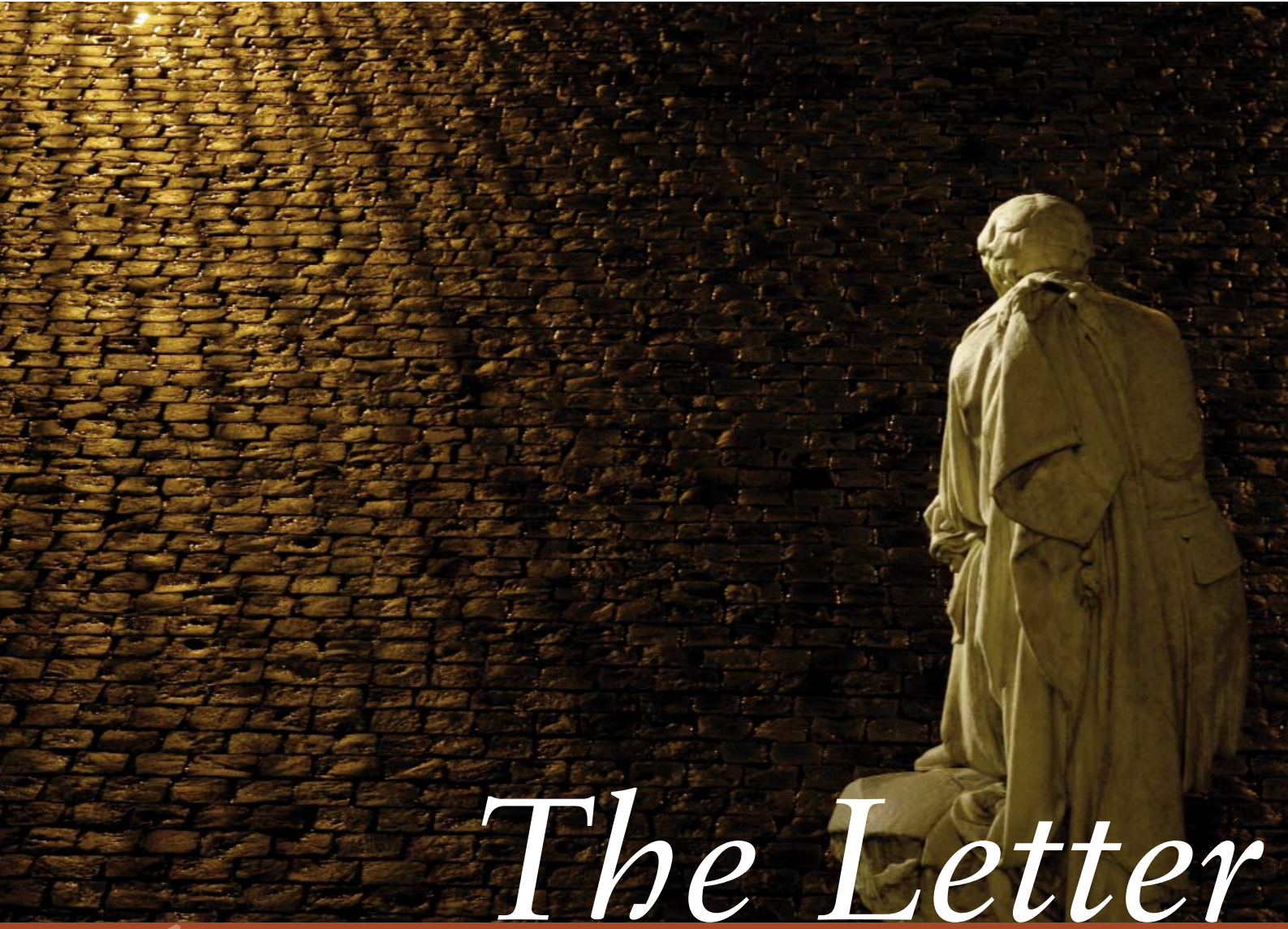

The Letter
of the Collège de France

1

N°1 Academic year 2005-2006

COLLÈGE DE FRANCE
1530

EDITORIAL

by Pierre Corvol
Administrator of the Collège de France
Professor, holder of the Chair of Experimental Medicine

The Collège de France is a unique Institution in many ways. Founded in 1530, its initial goal was – and still is – to promote learning at the cutting edge of research, to teach new areas of knowledge, to favor interdisciplinary exchanges. This is accomplished by academic courses, seminars and symposia held in the Collège de France. Every year, each Professor's courses differ from those given in previous years, thereby ensuring innovative teaching. There is no strict equivalent of the Collège de France in the Anglo-Saxon world. In fact, it is easier to define the Collège de France by saying what it is not rather than what it is! The Collège de France does not belong to the University system as it does not enrol students and it does not deliver diplomas. Everyone is free to attend any course, at any time in the year. Neither is it an Academy as there is very active research going on in the Collège de France itself. There are basic science research laboratories in mathematics, physics, chemistry, biology, etc… as well as strong research in humanities and social sciences. Because of its long expertise and tradition in humanities, the Collège de France has accumulated an exceptional collection of libraries, especially in Egyptology, Byzantium, the Middle and Far Eastern worlds. The laboratory of Social Anthropology, one of the very first created in the world, possesses one of the most important libraries of general anthropology.

The Collège de France has many interactions with countries outside of France. The Professors of the Collège de France have the possibility of giving part of their courses abroad. Reciprocally, temporary professorship positions are offered to foreign colleagues to lecture and participate in the Collège's life. In addition, two one-year revolving chairs (an "International" and "European" Chair) are open to foreign Professors for teaching any discipline. Post-doctoral positions and full facilities are provided by the Collège de France for foreign Fellows who wish to work in its laboratories or libraries.

The courses, colloquiums and seminars of the Collège de France are broadcast by the means of several communication media: website (www.college-de-france.fr), podcast, radio and webradio, etc. Publications, bibliography, research activities of the different laboratories are available through the web site. An English web site has just been opened. A *Letter of the Collège de France* relating some of the research performed in the Collège was launched in 2001. The present *Letter* is the first one of a yearly series of English *Letters of the Collège de France*. It assembles some of the papers published in the French-language *Letters* and highlights various aspects of the Institution's life. Its goal is to make everyone more familiarized with the Collège de France and with the role it plays, in terms of learning, teaching and research, throughout the world. ■

Teaching "Science in the Making"

Since the 16th century, the Collège de France has pursued a dual vocation: to be both a research centre at the forefront of knowledge and a place for the teaching of this new knowledge. The 52 chairs cover a vast array of disciplines, including mathematics, the study of great civilizations, physics, chemistry, biology, medicine, philosophy, literature, social sciences, economics, prehistory, archeology, history and linguistics.

Courses are mainly given in Paris. However, each professor is free to teach a part of his or her course in another major French city or abroad. Foreign scholars receive a particularly enthusiastic welcome. More than fifty of these are invited to give lecture series each year.

The Collège de France also owns rare books and specialized library collections recognized as among the foremost in Europe. They are working tools for the Collège's professors and researchers and are also accessible to outside specialists.

Courses are free and open to all, without enrolment requirements, as long as space is available.

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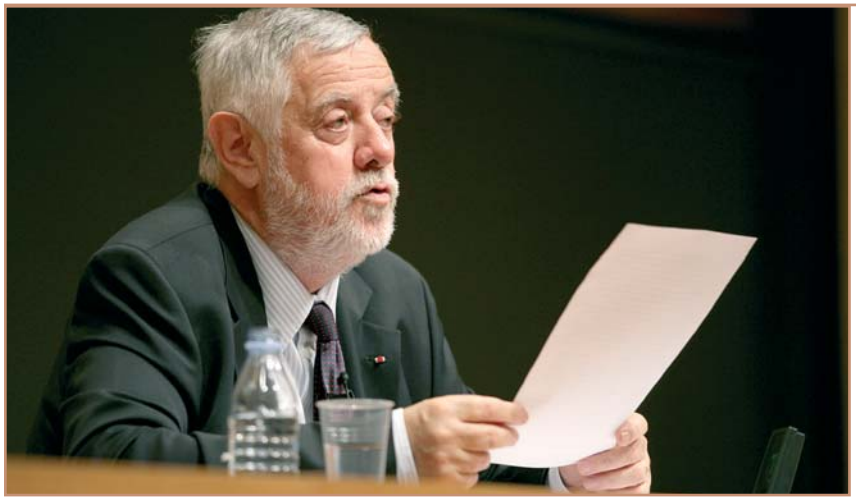
Closing Lecture



Professor Yves Coppens gave his closing lecture on 21st June 2005.

Y. Coppens has held the Chair of *Paleoanthropology and prehistory* since 1983.

I am telling you nothing new when I say that the history of Man is part of the history of life, which is part of the history of the Earth, which is part of the history of the universe. And this projects us into a history going back 12 to 13 billion years, the limit of our knowledge. Astrophysicists have noted that, over the years, matter spread and cooled, but that it also organized itself into complex structures. […]

And this situation was repeated when the history of life began. Living matter, over the 4 billion years of its existence, continued, for one part of itself, to organize itself into complex structures […] Thinking matter, of which we are the receptacle, thus appears in its turn to be the most complex and best organized state of matter currently in existence, and it was not by chance that this state appeared only 3 million years ago, after 4 billion years of existence for living matter, and 12 or 13 for inert matter.

But let's turn our attention to mankind.

Man is obviously a living being and he appears as such at the end of one of the many branches of the immense phyletic tree of the living world. When beings are classified, which all naturalists do in order to try and make sense of nature's astonishing creativity, humans are placed in the following categories: Eucaryotes, Metazoans, Chordata, Vertebrates, Gnathostomulida, Sarcopterygii, Tetrapods, Amniotes, Synapsids, Mammals and Primates.

In the tree just mentioned, one branch appears to me to be essential in our history, it is obviously the one that separates prehumans and humans from chimpanzees and their predecessors, our closest relatives: in other words, the fork occupied by our last common ancestor. As all primates have tropical origins, this branching off most likely happened in the tropics; as our chimpanzee relatives are definitely African, it must have occurred in the tropics of Africa. Study of the degrees of evolution of fossils discovered up to now, attributable consequently to one of the two branches or their common stem, and study of the molecular or cytogenetic clocks both agree that this fundamental branching off dates back no more than ten million years. So, here we have our birth certificate: the branch of prehumans and humans, our own, was born 10,000,000 years ago in tropical Africa.

[…] Here we are in possession of a superb collection of prehumans, all tropical and African, all standing, bipeds and climbers first of all, after that simply biped, and whose brain slowly grew. Some of them evolved into vegetarian and macrodont creatures, others into frugivores, and finally others into the omnivorous, microdont ancestors of the genus Homo.

As for the genus Homo, it appeared between 3,000,000 and 2,500,000 years ago, also in tropical Africa. The first humans were thus contemporaries and compatriots of the last prehumans, but were different from them as they were exclusively biped in spite of some vestiges of arboricolism, their encephalon was considerably larger (510 to 775 cm^3), more complex and better irrigated, they had a set of teeth suitable for an omnivore with front teeth that were stronger compared to the smaller side teeth, and their faces were much less protuberant.

[…] It seems clear that humans, like horses, elephants or wart hogs, react to changes in their environment by trying to adapt; the hominid, in changing his diet and increasing the size of his brain was only doing the

same as the Equidae who increased the size of their teeth and reduced the number of toes on each hoof to one. The prehuman, Australopithecus or Kenyanthropus evolved into the Homo, as the Hipparion evolved into the Equus. This means that at that time, the hominid was an integral part of his ecosystem and that he was affected by climate or environmental fluctuations just like any of his neighbours. It also means that it was the environment that made Man and that, without this event, the genus Homo would have had no reason to appear, at least there and at that particular time.

So, finally we appear to be, at that time and place, at the critical moment when the state of matter changed again, while waiting for the next change. This time, it was one part of living matter that, with the aid of the central nervous system, became thinking matter. For a naturalist, Man remains a primate, and this is not false. However, misplaced statements of the type "Man is a monkey" or "the monkey is human" are obviously only partly true, to say the least; again, it is just a question of common sense. Conscious life appears with Man, whom I will call, for want of anything better, philosophical, for the term perhaps does not cover only the genus Homo. Conscious life is defined as best we can by "knowing that one knows", it is revealed to us in practical terms by the first objects to be made. For the very first time in nature, stones were cut; a creature dared to change the shape of an object to use it for his own benefit. No other species has, for the time being, shared this audacity. After 12 or13 billion years of natural history it was truly the first sign of a cultural history, the term "culture" covering for a prehistorian anything that is not nature, i.e. technology of course, but also the intellectual, spiritual, moral, aesthetic, ethical facets etc. of the creature endowed with them.

The most ancient cut stones have been found on formations that are 3,300,000 to 3,200,000 years old (layer B2 of the Shungura formation in the lower Omo valley); we still have to find them in (and not on) these formations to be certain of their age. There is no dispute about other tools that have been discovered inside other formations, Ethiopian - Hadar - and Kenyan - Turkana -, dating back 2,600,000 years. If we accept this as proof of conscious life, which is fairly reasonable, we can date the emergence of a degree of corresponding reflection to between 3,500,000 and 2,500,000 years ago.

So, here we have a second birth certificate: conscious life was born 3,000,000 years ago in tropical Africa.

And Man immediately got moving. It was obviously not a decision on his part but, as his ecological niche was then getting bigger for climatic reasons, he spread with it. […]

So, let's imagine that this very ancient form of humanity already inhabited, 2 million years ago, the whole of the Ancient World, Africa and Eurasia, as far as a certain latitude obviously. Vicissitudes of climate were once again about to intervene in his history. […]

It has always been known that, for reasons of a decrease in territory, predation limitation and reduction in biodiversity, once they are established on certain islands, certain orders of Vertebrates undergo hormonal changes that transform them, over tens of thousands of years into dwarves or giants.

[…] Well! Man has surprised us by adding the family of hominids to the list of families affected by this strange phenomenon. Peter Brown, an Australian colleague, extracted last year from the Liang Bua site, west of Flores, an individual 1m to 1m20 tall, with a skull resembling that of a Homo erectus, and that had an endocranial capacity of 380 cm^3 (like Sahelanthropus) to 530 cm^3 (like the smallest of the Homo habilis), associated with a lithic industry and with a geological age of 12 to 18,000 years.

Thirty years ago, I proposed that we link the new anatomy of the genus Homo, from which we originate, to the climate change that was contemporary to it, and that we explain one by the other. This proposal was treated in a condescending manner and was regarded as deterministic. And here we have, two and a half million years after the emergence of the (H)omo, the demonstration of the role the environment played on the anatomy of the genus Homo when the culture was not strong enough to resist it. We have to admit that even in the age of Lascaux and the first domestications, Man was still, in some places in the world, powerless in the face of what the environment wanted to do with him!

Let's turn our attention to Africa and continental Asia combined. Homo erectus lived there, even if he was more ergaster in tropical Africa, mauritanicus in North-West Africa and erectus sensu stricto in Asia. As in Europe, Java or Flores, Homo erectus evolved there, and he was transformed into a shape bearing a skull with a round high vault and large cerebral volume, a short face with a big reduction in teeth and superstructures: and this form is called sapiens.

The majority of authors believe that Homo sapiens first appeared in Africa and then spread throughout the world following the route of Homo habilis, two million years

after him. A few others, including myself, believe that Homo erectus sapientized in the place where he was. […]

In any case, one thing is certain, between some hundreds of thousands and tens of thousands of years ago, 4 forms of humanity, conscious, intelligent, cultivated, coexisted on our planet, Homo sapiens, Homo neandertalensis, Homo soloensis and Homo floresiensis.

And then one fine day fifty thousand years ago, a convenient number but one that is of course approximate, for reasons of accessibility to territory but perhaps also for reasons of demographic or environmental pressure, Homo sapiens got moving again, if he ever really stopped moving. And he arrived in America on foot, without realizing like Christopher Columbus that he was discovering it. He ended up in Australia, arriving there on a raft. He went to Europe, to Java and probably later on to Flores. In America and Australia, there was nobody. In Europe, in Java, and in Flores, Sapiens, who was called Cro-magnon in the first case and Wadjak in the other two, met his predecessors. […]

Man's cultures, in other words Prehistory, has of course also taught us a lot during the 3 million years mankind has existed.

We have seen them emerge such a long time ago and with characteristics that were then so diversified that some people have wondered whether several hominids did not invent at the same time tools of the second degree. And then these tools, at first only present from time to time, became a permanent and almost compulsory presence. It was a couple, Man-and-tools as they say in mechanics, which then established itself and which has never been separated since then.

[…] So, this is approximately what is known about Man and his history, or at least what we believe we know about it.

Man is linked in a simple and continuous manner to the biosphere, to his planet and to his universe. He is the cousin of all living things that exist or have existed. To be more precise, it is obvious that he comes from the animal world. His closest relatives, in today's nature, are the chimpanzees (including the Bonobos). He represents the most complex and the best organized state of matter known, being able to reflect on his own thinking. Man was born in the tropics of Africa some 3 million years ago, from efforts to adapt to a heatwave. All mankind on Earth has the same origin, the same ancestors. At that time, mankind consisted of about one hundred thousand individuals who barely lived beyond the age of twenty. Since then there have been 100 billion, and man, now domesticated, has multiplied his life expectancy by three or four. For 3 million years, like a child in school, Man has made progress in everything, and it is the increase in his knowledge that has made him a free Man, who is becoming freer and freer without ceasing to be responsible, including for his own liberty. It is obviously these strange characteristics that have conferred on him his dignity. ■

Extracts from the closing lecture

CHAIR OF ARTISTIC CREATION 2005-2006

First holder of the Chair of *Artistic Creation,* Architect. Pritzker Prize 1994, Major Award for urbanism, 2004.

Christian de Portzamparc

gave his inaugural lecture on 2nd February 2006.
His course, entitled "Figures of the world, figures of time", began on 24th February 2006.

Extract from the inaugural lecture:

"Can we teach creation?

We can testify to an experience. What has enriched mine is the fact of constructing, drawing, writing, thinking, even painting, to build or allow others to build, with a leading question: What meaning does architecture have? Architecture concretises time. To evoke it, we are in the habit of presenting the masterpieces, the heroic proofs of the existence of the discipline, the models. But to talk about creation, about what we can dream and calculate today, this would involve taking a very academic way. The world is no longer the same. Unlike the scientific method that defines its corpus within a located general system, we have here to considerably widen the viewpoint in order to perceive our time and create.

Seeking to express the meaning of architecture, what it transforms, and looking to encircle the territory of the thought that it raises, I would like to evoke all this vast field that is accessible to us and that opens to our viewpoint on the surface of the ground… where we appeared, walk, breathe and work. This field that makes all things visible, those that were already there and those that we produce, our environments, our objects, our million objects spread on plains in the middle of trees and rivers. All this space that we constantly model, this sensitive environment, transformed and produced by man on the planet, is an artefact, an artificial copy of nature, made to serve us. It also drifts away from us little by little. [...] For me, it is indeed this production, this ceaseless dialogue of man with his environment that would define our interest in architecture. [...]

The Inaugural Lecture *is available to the Fayard editions and on video (co-production of the Collège de France/CNED)*

The commitment in production characterises architecture and distinguishes it from science. However, it is above all our relation to the truth that is fundamentally different from one case to another. [...]

Thinking about what architecture teaches us today, in both its effects and its production, is striking. It is a figure of the world.

"I would never want to stop being amazed by watching a locomotive" said Guillaume Apollinaire. I believe that astonishment is the heuristic initiative in any creation, and this astonishment is similar to that of the scholar in the sense of: the discovery, and it is similar to that of the philosopher in the sense of: the existential question. With architecture, in cities and buildings, I am curious and amazed; they are like books I would say, but no, it is not enough to say it, it puts me in situation, my body is other. I am amazed at Peking, and at the banks of the Seine, at Manhattan, at the sky cut all the way to the ground by the prospect of its vertical streets, and by Sao Paulo and its endless plain of small towers and its streets that resemble narrative frescoes of shop windows and houses. I am amazed that symmetry was a sort of unstated dogma during centuries of architecture, that the idea of architecture survives, and I am amazed to see cities turn into countries.

I do not consider architecture as thought without including this urban condition widened in its totality..."

PHILOSOPHY OF LIFE SCIENCE

Lecture by Patrick Suppes on: *The Neuropsychological Foundations of Philosophy*

Prof. Patrick Suppes

Prof. Anne Fagot-Largeault, holder of the Chair of Philosophy of Life Science

As a young man Patrick Suppes served in the meteorological department of the American Armed Forces during the Second World War, in Asia. His training in Physics and Mathematics had enabled him to do specialised military training in hydrodynamics. The manner in which meteorologists summarise complex empirical data with the aid of mathematical tools remains one of his scientific reference models. After the war, he studied for a Doctor of Philosophy degree at the university of Columbia, New York. His director of research was Ernest Nagel. He has been teaching Philosophy of Science at the University of Stanford in California for fifty years. He is one of the rare contemporary philosophers to have produced valuable scientific work, as well as philosophical work. His articles published on the theory of measurement, on the processing of hidden variables in quantum mechanics and on the linear training models used by psychologists have been widely influential. He believes that the role of a philosopher is not to compete with scientists on their own ground, but rather to clarify the presuppositions inherent in scientific work. In this way, he participated in the great debate of the seventies concerning the "foundations" of mathematical set theory and in reflections on the "axioms" of rational decision-making that were proposed in order to give formal descriptions of the behaviour of actors in economic life. He became interested early in the use of computers in education and had set up a research laboratory on the Stanford University campus to elaborate software for the learning of logic and languages. This same laboratory is today involved in a programme of research in the area of neurological science to study the cerebral correlates of mental representations, through the methods of recording and statistical analysis. In parallel, for several years Patrick Suppes has been reflecting, as a philosopher, upon the ancient problem of "free will" and on the manner in which this problem is radically modified by the fact that today it is possible to define empirical situations in which it is impossible to decide between the deterministic hypothesis and that of random behaviour.

Prof. Suppes has been invited to the Collège de France several times. Some of us will remember his lectures in 1979, at the invitation of Professor Vuillemin, which gave rise to the publication of the book *Logique du probable* (Flammarion, 1981). In November 2005, this time at the invitation of Prof. Fagot-Largeault, he gave a public lecture entitled "Neuropsychological foundations of philosophy". In the wake of this lecture, the Chair of Philosophy of Life Science organised two seminars with the teams of Prof. Olivier Dulac (Necker Hospital) and Dr Catherine Chiron (Inserm U663, "Child Epilepsy and Cerebral Plasticity"), working on the cognitive repercussions of certains kinds of epilepsies on the developing brain. Prof. Patrick Suppes presented a few elements of the research carried out in his laboratory on the structural isomorphisms between words and their cerebral representations. Dr Lucie Hertz-Pannier (Inserm U663 and Necker Hospital), Dr Christine Bulteau (Inserm U663 and Rothschild Foundation), Dr Mathieu Milh (Inserm U29) and Dr Isabelle Jambaqué (Boulogne Institute of Psychology – University of Paris 5) gave presentations respectively on the contribution of imagery to visualisation in normal and pathological neural networks during the development of language in children, cognitive development after hemispherectomy, the development of sensimotor networks and the development of memory. The following participated in the ensuing lively discussion: Professors Henri Korn, Pierre Buser, Robert Naguet (Academy of Science) and Prof. Alain Leplège (University of Paris 7). Finally, as he had already done informally during one of his visits to Paris in 2002, Prof. Suppes again held a question and answer session with doctoral students in the Working Group on Ethics and the Philosophy of Science (GTEPS). During this latest visit, Prof. Suppes was presented with the Collège de France medal. ■

Prof. Stanislas Dehaene holder of the Chair of Experimental Cognitive Psychology

A seminar on comatose states and related clinical syndromes

On March 22nd of this year, the Collège de France held a seminar on coma and related syndromes. This workshop was organised by Dr Lionel Naccache, neurologist at Pitié-Salpêtrière (AP-HP) and member of the unit directed by Prof. Stanislas Dehaene (Chair of Experimental Cognitive Psychology), assisted by Prof. Jean-Pierre Changeux (Chair of Cellular Communications).

The day's primary objective was to confront a small group of European experts in the medical care provided to patients suffering from comas or similar syndromes (vegetative state, akinetic dumbness, state of minimal consciousness) with specialists of the neurosciences of consciousness, for the purpose of opening exchanges between these two domains which usually remain disjoint.

Coma and related syndromes present obvious human and medical challenges, but they also constitute a source of essential information for the elaboration of a theory of the cerebral bases and the physiological mechanisms that underlie conscious experience. Nowadays, the progress of medical imaging allows for the investigation of the cognitive residual processes of non-conscious patients, either by recording neurophysiological signals by means of the electro-encephalogram and evoked potentials, or by measuring regional cerebral variations of hemodynamics with the help of positron emission tomography or functional magnetic resonance imaging. These methods, combined with more or less complex sensory stimulations, can reveal cognitive unconscious processing such as the detection of an auditive change, the reaction to one's own name, or even the analysis of sentences. In a few years, our knowledge of these residual processes has progressed to the point that their measurement sometimes allows one to predict, with a strong rate of success, the probability of an imminent return of consciousness in certain patients.

During the morning, several presentations allowed one to approach these various subjects. Lionel Naccache first exposed the theoretical foundations as well as the neurological applications of a neuroscientific model of consciousness, the model of the global conscious workspace ("Conscious Neuronal Workspace Model") developed for several years by Stanislas Dehaene, Jean-Pierre Changeux and their colleagues. Dr Steven Laureys (Liège) then addressed the state of the art of the functional cerebral imaging of patients affected by comas or by vegetative syndromes, a domain which he pioneered. Dr Catherine Fischer (Lyon) proceeded to a comparable synthesis of electrophysiological methods derived from the analysis of the EEG, which she has used and developed for several years in the civil Hospice of Lyon. Dr Damien Galanaud, neuroradiologist in Pitié-Salpêtrière presented a new estimate method for the prognosis of coma patients' return to consciousness, based on the exploitation of a variety of MRI sequences (including water diffusion sequences and MRI spectroscopy).

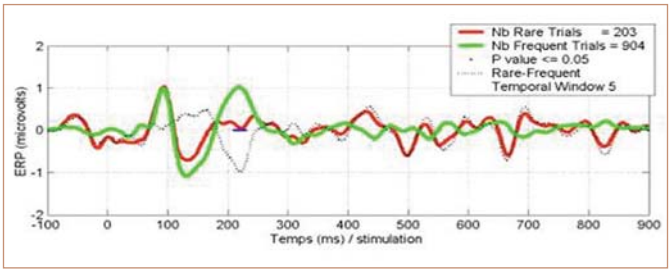
Early afternoon was dedicated to clinical cases of pharmacological interest. Steven Laureys presented a patient in a minimal state of consciousness, paradoxically improved by a gabaergic agonist that is usually prescribed as a hypnotic. Lionel Naccache described a coma patient whose neurophysiological investigation revealed the appearance of a rich cognitive integration of the auditive environment as a result of an injection by anexate, a molecule used to fight the effect of benzodiazepines.

Prof. Jean-Pierre Changeux showed afterwards all the interest that can stem from the study of the "fundamental bricks" of consciousness by means of animal models, notably that of the mouse. These models allow one to investigate minutely the causal role of specific neurotransmission pathways, notably the

cholinergic nicotinic system, by means of genetic engineering and of behavioural and pharmacological studies. They raise however the difficult question of the minimal behavioural criteria which would allow one to impute a conscious state to animals and humans alike. To try to answer this question, Dr Tristan Beckinstein (Buenos Aires) presented a new behavioural approach aimed at measuring the patients' ability to actively maintain a mental representation. This method, based on conditioning across a temporal delay ("delay versus trace conditioning"), opens original perspectives. Prof. Stanislas Dehaene then described a tentative taxonomy of the various types of non-conscious cognitive processes, recently published, and which derives directly from the theoretical model of the conscious workspace. This taxonomy allows one to resolve the apparent conflicts between experimental studies and clarifies the different reasons for which a mental unconscious representation can remain inaccessible to the conscience.

In relation to this theoretical framework, Dr Nicolas Chausson (Pitié-Salpêtrière) was able to present, in a critical way, the behavioural clinical tools presently used to appreciate the patients' degree of consciousness. A variety of scales and scores are available, each presenting advantages and weaknesses. The possibility of developing new criteria, based on the cognitive neuroscientific approach, was the subject of much discussion. Prof. Louis Puybasset (Pitié-Salpêtrière) then presented the project of a vast study of clinical research, coordinated through several hospitals in France, and dedicated to the evaluation of MRI sequences in the prognosis of the patients that became comatose following a cranial trauma. Finally, three other collaborative research projects were evoked, which would involve Paris, Lyon and Liège, without excluding it other groups that are motivated by the same questions.

At the conclusion of this stimulating day, the theme of the cerebral bases of consciousness and its changes in coma and related syndromes seemed ready for new exchanges, and all participants agreed to meet again next year in either Paris, Liège or Lyon. ■



Predicting the recovery from coma by means of evoked cognitive potentials. The figure shows the auditory evoked potentials respectively evoked by frequent sounds (green curve) and by rare sounds (red curve) in a coma patient (L. Naccache and coll., work in process). The difference of these two curves (in dotted lines) reveals an unconscious detection of the auditive novelty at about 200 milliseconds after the beginning of the stimulus (MMN for Mismatch Negativity). The presence of a MMN predicts a return to consciousness with a positive predictive value of 90% (Fischer and coll., Neurology, 2004, 63, 669-673). Seven days later, this patient regained consciousness.

Prof. Mireille Delmas-Marty holder of the Chair of Comparative Legal Studies and Internationalization of Law

The "ID" Network: The Franco-American Meeting*

The Internationalization of Law is an ancient phenomenon that is being repeated as international tribunals, commissions and regulatory agencies spring up at different levels of jurisdiction (regional and global), each one competent in a different sector (commerce, competition, but also human rights, environmental, health and employment law). The consequently increased juridical nature of diplomatic relationships and recourse to national and international judges have disrupted the balance between law and politics in international relationships, all the more so as the legislative power of national legislatures is thus progressively reduced.

This is why, as a logical follow up to the lecture given last year at the Collège de France by Stephen Breyer, Associate Justice of the Supreme Court of the United States, a Franco-American network on the internationalization of law ("Réseau ID") has been created to bring together, once a year, a small number of university professors and judges from the highest courts to critically analyze the situation. Given the composition of the network, the theme of the first meeting, held at the Collège de France on 10-11 April 2006, could be none other than "The Role of National Judges in the Internationalization of Law".

On the basis of cases presented in areas as varied as competition law, separation of church and state, and the death penalty, the debates have shown that in spite of increased exchanges and certain similarities, judicial cultures remain different, and structural conceptions of the relationship between politics and law are almost at opposites. While in France and, on a wider scale, across Europe, the direct applicability of international norms leads to the emancipation of national judges, or even to emulation stemming from the competition created by the development of international tribunals, the situation is developing somewhat in the opposite direction in the United States. Despite the oft-cited judicial reminder that "*international law is part of our law*" and the commitment of the nation's founding fathers to international law, contemporary concepts do not favour the direct applicability of international law. As a result of the strict separation of power, judges do not possess the democratic legitimacy to apply international law if Congress has not specifically provided for its integration into American law.

Comparatists and internationalists therefore need to work together, first to examine the ways in which national legal systems have constructed their relationships both with each other and with international law, and second, to elucidate the evolution in these relationships and propose models for the future. While a rapprochement on the basis of a common, pluralist law might still seem utopian given the absence of a true international community, it is nonetheless true that, as the American professor Michel Rosenfeld put it, pluralism seems to be "both the problem and the solution".

In any case, the "réseau ID", which has also come to mean "Imagination and Law", has provided a framework that is sufficiently new and fertile for all of the participants to have asked for a second meeting in 2006-2007. Complemented by the creation of two other networks (Franco-Brazilian and Franco-Chinese), the project might, during a third phase, lead to an international, interdisciplinary seminar covering law, international relations, and economics. ■

Participants

Diane AMANN, Prof. University of California at Davis, King Hall School of Law
Robert BADINTER, Senator
Stephen BREYER, Associate Justice, Supreme Court of the United States
Guy CANIVET, Chief Justice, Cour de Cassation
Vivian CURRAN, Prof. University of Pittsburgh School of Law
Mireille DELMAS-MARTY, Prof. Collège de France
Olivier DUTHEILLET DE LAMOTHE, Member of the Conseil Constitutionnel
Antoine GARAPON, Magistrate
Bruno GENEVOIS, Chairman, Litigation Section, Conseil d'Etat
Emmanuelle JOUANNET, Prof. University of Paris 1
Pierre MOREL, former French Ambassador to China
Horatia MUIR WATT, Prof. University of Paris I
Naomi NORBERG, Coordinator, French-American "Réseau ID"
Michel ROSENFELD, Prof. Benjamin Cardozo School of Law
Hélène RUIZ FABRI, Prof. University of Paris 1
Frédéric JENNY, Advisor, Cour de Cassation, former Vice-Chairman, Competition Council.

Prof. Michel Zink and Stephen Breyer

* With the support of the Paris UMR of Comparative Law and the national Ministries of Education, Higher Education and Research (Directorate for International Relations and Co-operation) and Foreign Affairs (Directorate for the Americas and the Caribbean). The French name "Réseau ID" (Internationalisation du Droit) has been maintained to keep the connection between "ID" and the word "idée" (idea).

Christian Giaume

Chair of Neuropharmacology (holder: Prof. J. GLowinski)

Research Director at the CNRS

Dr C. Giaume presenting the projects of his research team during a meeting on 29th March 2006 at the Collège de France.

The team "Junctional communication and interactions between neuronal and glia networks" led by Dr C. Giaume, originates from the Chair of Neuropharmacology, led by Prof. J. Glowinski. This research group is at present associated with the unit Inserm U587 led by Prof. C. Petit at the Pasteur Institute and will start as an independent Inserm unit in January 2007. For several years, this team has studied the interactions between neuroglia and neuron. Neuroglia cells, the astrocytes in particular, being henceforth considered as active and regulating elements of the cerebral activity in normal and pathological situations, it is this context that unites the projects of the team, which consists of 12 people. The researches that it leads mainly concern a particular mode of direct communication between cells that is assured by communicating junctions permeable in small-size molecules (ions, second messengers, energetic metabolites, amino acids). These connections confer to astrocytes an organization in networks allowing them to interact with neurons and contribute to the cerebral functions, not as independent elements but as groups of coupled cells.

It is now well established that the astrocytes bring a structural, metabolic and trophic support to the neurones. Furthermore in numerous pathological situations, they undergo complex and durable modifications leading to the appearance of a reactive phenotype and to changes in their functions, disrupting their interactions with neurones. Generally, astrocytes have a neuroprotective action, particularly against excitotoxines and oxidizers implied in the neuronal death. On the other hand, they release substances, which either favour the survival of neurones or release potentially deleterious signals. Hence, astrocytes play a central role in the neuronal viability by insuring a balance between protective and toxic effects. Although, unlike neurones, astrocytes are not nervous cells capable of transmitting nerve impulses, these cells are characterized by an elaborated calcium signaling and are capable of propagating in the shape of intercellular calcium "waves". In so far as it has been demonstrated that increases of intracellular calcium are capable of inducing neuronal responses and of modifying the synaptic activity, this calcium inter-astrocyte signaling, in which the junctional communication plays a role, is henceforth considered a key element in the neuron-neuroglia interactions.

At present, this team's projects concern several aspects of the astrocytic networks such as their role in the control of the neuronal activity and survival, studied by a multidisciplinary approach of molecular biology to calcium imaging using diverse preparations (in vitro to in vivo). It is particularly a question of analysing the regulation and the spatial organization of these networks in several areas of the brain, notably the hippocampus and the cortex, in addition to determining the role of these astrocyte networks on the neuronal activity and the synaptic plasticity during protocols of long or short term potentiation. On the other hand, the team is interested in defining the level of junctional communication and the contribution of astrocytar networks in psychopathological situations (inflammation, neurotoxicity, neurodegenerative diseases). In fact, an important imbalance to the balance between protective and toxic effects of astrocytes could result from a change in the organisation and the range of astrocyte networks. It is already known that the expression pattern of connexins, the molecular constituents of the communicating junctions, is modified during experimental lesions and cerebral pathologies. Moreover, this team suggests studying the regulation of the communicating junctions by factors produced in these situations (pro-inflammatory cytokines, peptides, phospholipides, neurotransmitters), which will allow identifying the molecular mechanisms leading to an inhibition of the astrocyte networks. To this end, the team plans to determine if a junctional communication blockage by invalidation of the genes encoding the astrocyte connexins is involved in the release and/or the progress of cerebral damages induced by an excitotoxicity and/or an inflammation. In fact, in the central nervous system the inflammatory answer is characterized by a glial reaction, notably a microglial and astrocyte activation. This step is for example detected during the progress of a neurodegenerative disease such as Alzheimer's disease. Consequently, one of the team's objectives is to determine how the junctional communication and the expression of junctional proteins in astrocytes are modified in genetic models, thus developing certain symptoms of this neurodegenerative disease.

Glial cells henceforth considered important actors in the cerebral functioning, could eventually represent new therapeutic targets in the treatment of cerebral pathologies. ■

In support of the development of their work, Christian Giaume and his team received a 45 000 euros subsidy from the CRPCEN – Caisse de Retraite et de Prévoyance des Clercs et Employés de Notaires (the Retirement and Prevention Plan for Solicitors 'Clerks and Notaries' Employees). Mrs Liebert-Champagne, Public Adviser and President of the Board of Directors of the CRPCEN handed an initial payment during a ceremony that reunited the members of this young team, the two vice-presidents of the CRPCEN, as well as the Collège de France Administrator, Jacques Glowinski. The CRPCEN would like to invest itself concretely in projects of public interest and develop, within the framework of its Social Welfare, and for several years, a program of patronage that is open to fundamental medical research.

From left to right: Norbert Sentier, Prof. Jacques Glowinski, Christian Lefebvre, Monique Liébert-Champagne, Christian Giaume.

The Budé Committee

Prof. Philippe Kourilsky

In his talk on Tuesday 18th April 2006 in front of fifteen members of the Budé Committee, Professor Philippe Kourilsky presented the main points of a report that was handed in at the end of March to the Ministers of Foreign Affairs, Health and Research. The report was entitled: "Action by France to improve world health. Monitoring and studying infectious diseases".

The report is based on a worrying fact: during the last century, French medicine and research, military medicine, the Pasteur Institute diaspora, the State's efforts at co-operation, the emergence of dynamic NGOs, all these gave our country a pre-eminent place in the global fight against diseases, especially infectious ones, particularly in developing countries where they are a major cause of mortality and morbidity with 14 million deaths per year and hundreds of millions of people of all ages severely handicapped. Not long ago, the French were almost undoubtedly the best. This is no longer the case. France no longer plays a role equal to its history, its tradition, its values, and the huge humanitarian needs that have to be met.

There are several explanations for this decline. Overall, our efforts are insufficient. Health only accounts for 4 % of our spending on aid (APD – Public Aid for Development), against an average of 11 % for the countries of the OECD (Organization for Economic Cooperation and Development) and 18 % for the United Kingdom. In addition, France's policies lack clarity and effectiveness. Too dispersed and loosely coordinated, they are the result of a strategy that has been poorly defined by a large number of people who do not oufficiently communicate with each other.

There is thus a blatant discrepancy between what politicians say at the highest levels of the State, when health is rightly one of the key priorities in their speeches, and the reality of the means put at our disposal. If this situation continues, France will not be able to fulfil its commitments at a time when other countries are increasing their efforts, when our country could make a powerful contribution to what Europe is doing and when health diplomacy is becoming more and more important throughout the world. Furthermore, we must not disappoint the many French-speaking countries that expect our support. Finally, the subject of infectious diseases is a particularly topical one, and our own health security is involved. There are international and security issues at stake here, with potentially destabilizing effects on economic and political life.

To redress the situation, the report recommends in particular that we:

– Define an overall strategy to improve coordination between all those involved and France's policies and influence in health diplomacy while increasing the percentage of our aid budget (APD) allotted to

health to bring it up to the average of OECD countries.

– Make the monitoring of infectious diseases and research that is directly linked to this monitoring an absolute priority.

– Increase local support for health policies and local human resources through appropriate training schemes.

– Rationalize the network of local facilities that depend on metropolitan France and structure it on a regional basis.

– Look again at the role, involvement and coordination of academic bodies as actors in the field and improve the conditions of expatriation.

– Do not create a new agency. Set up a "French Alliance for world health", a public-private partnership bringing together all those involved to redefine strategy, to adjust means and objectives that are a priority, and to oversee the institutional changes that are necessary.

The report and its summary can be consulted on the Collège de France website, Chair of Molecular Immunology (www.college-de-france.fr). ■

The Budé Committee

A willingness to enter into dialogue with those in charge of the economy.

The Collège de France's policy of openness also requires it to have a privileged relationship with the managers of firms in the public and private sectors. The confrontation of ideas and the synergetic efforts of people working in different but complementary fields often lead to innovation.

The Collège's professors would like to have a better understanding of what preoccupies managers in the economic sector and the major developments they envisage in the future. Direct exchanges with people such as these can only enrich their reflections on subjects like the training and guidance of students and researchers, the relationship between fundamental and applied research, technological innovation, enhancing the prestige of research, the general organization of research in France and in Europe, and more widely, the evolution of our society in the political, economic and social sectors. They feel that it is indispensable to have a more precise vision of what is at stake for civil society in order to face up to the challenge presented by the speed at which American or Japanese research policies are developing and the numerous repercussions this will have. It was in this context, and in order to create a favourable framework for these reflections, that the Collège de France's Assembly of Professors decided to found the "Budé Committee", a club of company directors associated with the Collège de France. Mr Bertrand Collomb, President of Lafarge and of the AFEP (French Association of Private Enterprises), who took part in drawing up proposals for this project, agreed to be President of the Committee.

Based on excellence and independence, the Budé Committee is a privileged place where people can meet each other. The Budé Committee has organized in the Collège de France a series of breakfast talks on major topical issues of the day.

Belief, reason and unreason
Reopening colloquium of the Collège de France
13th and 14th octobre 2005

The autumn colloquium of the Collège de France is the expression of the institution's real collegiality: it is the only colloquium whose subject is determined by the Assembly of the Professors, which also monitors the preparation. It illustrates the specificities of the Collège de France: multi-disciplinary, practising research at the highest level – the quality of the speakers shows it – and making it accessible, at the same time, to the largest public, because admission is unrestricted and free of charge, "within the limits of the available seats": The proviso is an apt one, since this year two lecture halls were not enough to welcome auditors who moved in numerous numbers, and among whom many people had to hear the conferences via video projections transmitted live in several rooms at the Collège de France.

These colloquiums have considerably renewed the public of the Collège, which is younger and very diversified. In addition, and thanks to the partnership with France Culture, the live audio broadcasting on the Internet site of the Collège de France, and the publication of Proceedings by the publishers Odile Jacob, these colloquiums are no longer strictly reserved for the Parisians: They are virtually accessible to almost everyone. They constitute an essential part of the plan through which the institution performs its mission of knowledge spreading.

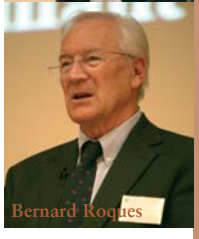
The review that we provide here proposes an inevitably partial and subjective course, which works hard toward reliably restoring the spirit, if not the letter, of the few interventions on which it lingers.


Philippe Descola


Svante Pääbo


Scott Atran


Harvey Whitehouse


Bernard Roques

Gerard Fussman introduced the colloquium by recalling that rational thinking is not obvious: "any scientific discovery collides with the successful opinions or with the collectively admitted beliefs". The GMO (Genetically Modified Organism), the researches on the human embryo, the AIDS prevention methods meet very intense oppositions. In the United States, where there is nevertheless cutting edge scientific research, the teaching of the evolutionary theory is still disputed. Also, the collisions between old beliefs and modernity, often likened to scientific progress and for that reason, are sometimes gory. Just as we die from terrorism, we die from beliefs that forbid blood transfusions.

However, "it would be too simple to summarise the conflict between reason and belief as an opposition between science and religion. Copernicus, Galileo, Pascal, Newton and the Arabic and Indian astronomers before them were profound believers. There are rational beliefs, scientific hypotheses for example. On the other hand, scientific practice does not protect against the attachment to received opinions".

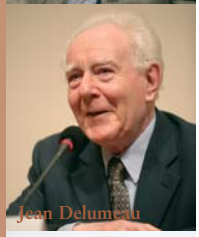
Today, we can raise the old question of belief and reason using new definitions. First, because it is no longer certain that, as professed by western thinking, following the teaching of the creationist religions, belief and reason separate radically the man from the animal. Then, because the progress of the neurosciences brings new evidence to the belief and reasoning processes. Finally, because the human sciences also bring new elements concerning the conflicts between belief and reason.

In his lecture, Philippe Descola highlighted contrasts between various representations of the world, putting in evidence the anthropological dimension of the issue. "Questioning some of the attributes that give man his peculiarity requires first admitting that his own appropriate identity can only be defined by agreement". We emphasize the genome, "but it is only the last one of the numerous criteria that the West has advanced from Antiquity in its ambition to single out humanity. […] The most commonly evoked today are already present among Plato, Aristotle, Xenophon or Lucretius". Nevertheless, the conviction that the human being can be characterised as a being of belief and reason is far from being hegemonic, even in western tradition. In the animistic cultures, "the human condition exceeds many limits of the human race. Animals, plants, spirits, elements of the environment and even artefacts are reputed to possess an inwardness of the same nature as humans, a reflexive and intentional capacity". Nevertheless, endowed with a similar inwardness as humans, "these sorts of disguised humans, namely the animals and plants, distinguish themselves from men through their clothing of feathers, hairs, scales or bark". What distinguishes


Olivier Houdé


Jean-Pierre Changeux


Pascal Mallet


Jean Delumeau


Gérard Fussman


Michel-Louis Rouquette


Marcel Froissart

between creatures, in this animistic anthropology, is the body, "a kind of envelope that is removable from the inwardness" – the body, its usages and its technical appendages.

The astonishment that seizes us when faced with a very foreign ontology comes from the fact that the spontaneous representation that has been common to us, in the West, for at least two centuries, is exactly the opposite: "contrary to the animistic peoples, we reserve the privilege of inwardness only to humans, […] while we do not hesitate to also recognize that the physical aspect of our humanity situates us in a material continuum" within which nothing distinguishes us.

Since Darwin, we admit "that the physical difference between us and the other world entities is degree and not nature, while the moral difference, that distinguishes us from animals and even from other superior primates, is perceived as absolute." Besides these naturalist and animistic ontologies, P. Descola defines totemic as well as analogical ontologies where the division line between the body and the spirit is a lot less clear.

"A question then can come to mind, stemming from the realization that the naturalist cosmology is not only the only one in which true anthropology saw the light of day, but that it is also the only one to have allowed within a tremendous explosion of scientific activity. It is true that a world in which nature and human nature had become independent from each other offered probably the most favourable environment for the origin and the development of the scientific revolution that marks the advent of the modern era. But, can we infer for that reason, from the rationality of scientific activity, a rationality of the representation of the world that has favoured its development? […] It would be to set up a system of beliefs about the world, that is so effective and plausible, as an universal and indisputable model".

The question relative to the specificities of human thinking and reasoning and its links to the brain, its functioning and its evolution was approached under the angle of the neurosciences and the cognitive sciences, that are in the heart of the works of Svante Pääbo, Jean Decety, Harvey Whitehouse, Bernard Roques, Olivier Houdé and Jean-Pierre Changeux. They provided an insight into new cognitions that could allow renewing the conflict question between reason and irrational beliefs, first at the level of individuals, but also at the level of societies, notably by the intermediary of education, or other relational phenomena. Pascal Mallet returned to certain prejudices, as regards the tendency of teenagers to succumb to sometimes extremist beliefs. It will be interesting here to return to the lectures and to the works of the speakers, involving materials whose interpretation presumes conditions of precision that the summary can only betray.

Religious beliefs were present in numerous papers. To explain their growing presence around the world – including the United States –, Scott Atran advances that science, which handles human beings and intentions as simple fortuitous elements of the universe, is hardly capable of relieving the existential anguish of people, their fear of death, of lies, of catastrophes or of loneliness, nor their thirst for love and justice. It does not state what we have to do, but only what we can do. Instead, religion prospers "because it takes charge of people's most profound emotional aspiration and of the moral needs on which society relies." Religions cost time and sacrifices, the mythical stories that they are based on are contra-intuitive, derogating from the regulations dictated by our innate cognitions of certain natural laws. Nevertheless, "after all is said and done, emotion is stronger and more convincing than reason". Explaining religion thus constitutes a serious problem for any evolutionist approach of human thinking and society.

To explain this phenomenon, S. Atran proposes an evolutionist hypothesis: the supernatural agents are easily evoked, "insofar as the natural selection has programmed the cognitive schemas for the detection of agency faced with uncertainty" to respond automatically to uncertainty, which is omnipresent. He suggests the existence of psychological mechanisms based on modular processes, capable of lasting and being transmitted through learning more easily than a kind of information which is difficult to process, such as scientific theories. "They are then more susceptible to become durable aspects of human cultures, such as the belief in the supernatural".

As in an echo, G. Fussman recalled that "the life of Buddha, however legendary it is, is the best witness of this opposition between rational, deductive perception of the truths, and vision which we can consider as mystic […] of these truths".

According to him, "The Buddhist rationalism is only a fiction of Westerners". In fact, "the perfect intuitive knowledge which Buddhism promises is only accessible to completely exceptional beings.

[…] As ordinary beings, we have no chance in quickly accessing this truth, hence this liberation, except through trusting the word of the great man: The faith (Sraddha), blind trust in the teaching of the master, is the first step along the path of liberation". For the majority of the people, the Buddhist way towards the truth is thus that of faith without criticism, and Buddha has all the characteristics of a god, except the creative power.

In the context of a more western history, Nathan Wachtel analysed the rational practices of the Iberian Inquisitions and Jean-Claude Pecker put into perspective Copernicus's conflict with dogma and criticised the discontinuist conceptions of the history of sciences for the benefit of a cumulative conception. Other statements shed light on different sides of the conflict between science and religion. We have notably seen two aspects of the intervention of religion in the scientific field: the one aspect in the United States, with the new offensives of creationism under the form of the intelligent design doctrine, the new shape of the opposition to the Darwinian evolutionism, whose ideological and political positions were recalled by Dominique Lecourt; while the other aspect is in the Balkans, where certain Moslem groups claiming to Islamise the sciences, have gone as far as proposing a "scientific" exegesis of the Koran, which reflects a more general attempt toward the rationalisation of religion whose stakes were exposed by Nathalie Clayer.

But the debate was never reduced to an opposition between belief and reason, or between religion and science. In the big fear of the plague, of which Jean Delumeau has made himself the chronicler, the irrational is not the privilege of the religious: it is everywhere and it contaminates the spirits as the plague spreads through cities, for the misfortune of those that are executed as "door greasers" and "plague spreaders". Religion is also not the only thing that seeks to get involved in scientific speech. Political ideology seized it in a similarly indefensible way, in the case of the Lyssenko affair: Armand de Ricqlès pointed out its progress and its effects on French science.

Claude Singer, retracing itineraries of collaborationist scientists under the German occupation of France, has also shown that scientists were not shielded from going adrift and from doubtful usages of rationality.

Michel-Louis Rouquette exlained these phenomena of "social thinking", that are inherent to all societies, and the mass ceremonies that accompany them. "Celebration of the link, of its usages and its effects, the ceremony works to convert sociability into cognition: I 'believe' what is thus publicly made justifiable and what appears in some respect as socially necessary". I am confronted with a plan of evidence that implicates me in a way that gives me a shared identity, a status of recognition, and all in all, a *reason*. "Reason is in the ceremony much more than in the thinking. Being together in an organised way amounts to knowing on good authority". The social thinking builds a sort of common sense, which is a shared rational fate. We can act without believing, follow without being convinced: "it is sufficient not to have an accessible or conceivable road: 'through which it happens, writes Montaigne, that what is outside the hinges of custom, we believe it to be outside the hinges of the reason'".

As one sees, the question of rationality extends widely beyond the opposition between science and religion. In the scientific field itself, the question is not so simple, and the history of the sciences is full of very vivid controversies. Anne Fagot-Largeault reported irrational behaviour, in the medical field, whether it concerns the patient or the doctor. She showed how medicine had had to get rid of certain established dogmas, and recalled the watchword of medicine based on evidence (EBM, Evidence Based Medicine): challenge the dogmas. She put back into perspective the question of the evaluation of psychotherapies, by underlining that the role of medicine is not to cure people – with a constant risk of coercion: we saw it in the totalitarian regimes –, but to treat diseases, with respect for people.

On a different note, Marcel Froissart brought to mind some "epistemological ruptures" in the history of physics, which appears then, not as a beautiful straight line, but as continuous detours of reason. He summarises them as follows.

"The Greeks did not conceive the continuous. The chemistry of the XIXth century introduced integers into reactions. The dimension of atoms was amazing (1865). The load of the electron confirmed it (1910). Atoms were formed of electron-retaining nuclei (1909). We dismembered the nucleus into nucleons: proton (1919), neutron (1932). The β disintegrations do not preserve energy: the neutrino was missing (1930), the basis of *weak interaction*, which would only be seen in 1956. Electrodynamics and weak interaction were combined in electroweak theory (1967), and verified in 1983.


Jean-Claude Pecker


Dominique Lecourt


Anne Fagot-Largeault


Nathan Wachtel


Claude Singer


Armand de Ricqlès


Nathalie Clayer

The nucleus holds together thanks to a meson. In 1937, we wrongly believed that we observed it. The Π meson appeared in 1947. The nuclear force followed an isotopic symmetry that arranges nuclei in multiplets. New strange particles appeared: the strangeness is a novelty. The isotopic multiplets of the strange particles are spaced out, as by symmetry in 3 dimensions, SU (3): dimensions associated with 3 quarks. The discovery of the Ω- reinforces the theory of quarks. Electrons are diverted on quarks (1970). Quarks have another characteristic, colour, and Quantum Chromodynamics explains their interaction (1973).

The purpose of physics is to unify different phenomena. What about chromodynamics and gravitation? Chromodynamics and electroweak conjoin when the energy grows, with a possible unification, a super symmetry. The unification with gravity is more distant". ■

M.K.

The Hugot Foundation of the Collège de France funded this colloquium.

Programme

13th October 2005

Reason and belief at the origin of mankind

- The frontiers of humanity
  Philippe Descola, Professor at the Collège de France
- Molecular investigations of the uniqueness of the human brain
  Svante Pääbo, Professor at Max-Planck-Institut für evolutionäre Anthropologie, Leipzig
- The representation of others in the neurosciences
  Jean Decety, Professor at the University of Washington, Seattle
- The cognitive origin of religions
  Scott Atran, Professor at Michigan University
- Cognition and religious transmission
  Harvey Whitehouse, Professor at Queen's University, Belfast

Reason breaks free from belief or it does not

- Dream, drug and consciousness
  Bernard Roques, Professor at the University of Paris V
- The first cognitive learning of the child
  Olivier Houdé, Professor at the University of Paris V
- The neural bases of the habitus
  Jean-Pierre Changeux, Professor at the Collège de France
- Wisdom and fanaticism during adolescence
  Pascal Mallet, Professor at the University of Paris X-Nanterre
- Reason breaks free from belief in antique Greece
  Jean-Pierre Vernant, Professor at the Collège de France

14th October 2005

Rational and irrational

- The big fears: Fear of the plague
  Jean Delumeau, Professor at the Collège de France
- Belief, rationalism and mysticism in Indian Buddhism
  Gérard Fussman, Professor at the Collège de France
- Social thinking and mass ceremonies
  Michel-Louis Rouquette, Professor at the University of Paris V

Epistemological ruptures and the oppositions that they evoke

- Epistemological ruptures in physics
  Marcel Froissart, Professor at the Collège de France
- Copernicus : Reason, intuition and dogma
  Jean-Claude Pecker, Professor at the Collège de France
- The American "scientific creationism": an endless history?
  Dominique Lecourt, Professor at the University of Paris VII
- Medical uncertainty
  Anne Fagot-Largeault, Professor at the Collège de France

The drifts of reason and belief

- The logic of stakes: the rational practices of the Iberian Inquisitions
  Nathan Wachtel, Professor at the Collège de France
- French science adrift: itineraries of the collaborationist scientists under the German occupation
  Claude Singer, School Director of the Centre of the Contemporary Jewish Documentation
- The Lyssenko affair in France
  Armand de Ricqlès, Professor at the Collège de France
- The current Balkan Islam, between science and consequentive research
  Nathalie Clayer, research Director at the CNRS (national center for scientific research)

First Collège de France symposium abroad

«A better world for everyone : realistic project or crazy dream ?»

The first symposium held by the Collège de France abroad took place on 8th and 9th March 2006 in the premises of the Royal Academy of Belgium in Brussels. The symposium, co-presided by Jean-Pierre Changeux (Collège de France) and Jacques Reisse (Free University of Brussels), was organized with the Royal Academy of Belgium, the Catholic University of Louvain and the Free University of Brussels. A large number of people attended what the Belgian media, both spoken and written, described as a major event in the cultural life of Brussels. At the opening session, Mrs Joëlle Bourgois, French ambassador to Belgium, Mr Léo Houziaux, Permanent Secretary of the Royal Academy of Belgium, Mr Jacques Glowinski, administrator of the Collège de France and Mr Pierre de Maret, Rector of the Free University of Brussels underlined the importance of the event. The Collège de France as an educational institution wishes to play a role in constructing a Europe of science and culture and this voluntarist approach is very welcome given the difficulties that the construction of Europe is experiencing today. The Europe of science and education is already a reality and any action that can strengthen and cement this edifice has to be encouraged. Moreover, the theme of the symposium "A better world for everyone: realistic project or crazy dream?", which J. Reisse explained in the prelude to the symposium, could not leave anyone indifferent. During the two days, the twenty speakers who addressed the symposium endeavoured to deal with the questions asked and, for certain of them, to suggest answers. The symposium's programme was designed in such a manner as to give equal prominence to Human Sciences and Natural Sciences, and this aim was achieved in full.

© Omer Fabre

Jean-Pierre Changeux — Jacques Reisse — Joëlle Bourgois — Léo Houziaux — Jacques Glowinski — Pierre de Maret

We will mention briefly here some of the subjects that were broached during the symposium, and we will group the presentations together into themes whereas, during the symposium, and this was quite deliberate, the presentations alternated between those dealing with Human Sciences and those dealing with Natural Sciences. A collective book containing the different contributions will be published in a few months time by the publisher Odile Jacob (Paris).

E. Zaccai (Brussels) dealt with sustainable development from a mainly historical perspective, explaining when this notion was first introduced and how it has evolved during the last twenty years. P. Rosanvallon examined some utopian systems for organizing society that were established in past centuries. The speaker showed that many of these systems, despite being based on generous or egalitarian notions, were associated with practices or ideas that imposed constraints. None of these Utopias whose aim was to create a better world really succeeded. P. Guesnerie and M. Delmas-Marty dealt with the economic policy aspects and legal aspects of globalization. Both of them mentioned those bodies whose role it is today to define and apply supranational policies in economic matters (examples: the WTO and IMF) or in legal matters (example: the International Court of the Hague), but both of them showed how limited the power of these structures is. Good governance at world level requires bodies of this type and others yet to be created to play a regulatory role and be endowed with the power to have their decisions enforced. Nevertheless, the differences between political regimes and scales of values in the large number of independent States that make up the UNO, create major obstacles to the establishment of such bodies. C. Tahon (Solvay, Brussels) spoke about the profound changes that have

been affecting industry for half a century. Industry is obviously one of the main actors in globalization; it produces wealth and has to be profitable. Industry is also often seen as a major source of pollution that affects our environment. C. Tahon tackled these questions and did not avoid dealing with sensitive issues. She pointed out that any cost-benefit analysis or even cause-consequence analysis has to be in-depth before any conclusions can be drawn about the advantages or disadvantages of industrial policies and about the responsibility of industry compared to that of each one of us. P. Smets (Brussels) also examined the responsibility of industries in the construction of the better world that we all aspire to. He described the evolution of the standards that industry must abide by and which have reduced the risks of major accidents. The speaker also showed how practices and mentalities within industry have evolved, and which, at least in our countries, has led to better acceptance of the notion of social responsibility. Having said this, there is still some way to go, all the more so now that the economy has been globalized. In the same context, T. Pairault (Paris) gave a presentation on China and its recent development, which produced very useful comparisons between different models of society, between a Western capitalist democracy and a country with a capitalist economy but under strong State control. The speaker indicated that China's economic growth might seem big when compared to that of Western European countries, but that it was nothing exceptional when compared to other Asian countries. He also pointed out certain weaknesses in the Chinese model of economic development and the uncertainty surrounding the future. P. de Maret (Brussels) spoke about Africa and its future, insisting on the extraordinary diversity of this huge continent and the difficulty of dealing with such a complex situation in a global manner. For the speaker, there is real cause to be concerned about the future of the populations of Africa, and particularly their health. Some of the NGO's policies are far from being optimal and many African regimes do not have the moral, and consequently the political authority, to apply the courageous policies that are required in such a serious situation.

The better world to be constructed will have to be very different from the one we know now, if only because the Earth's population will have increased to 9 or 10 billion people by 2050. F. Bartiaux (Louvain la Neuve) discussed the problems associated with this growing population, which will affect the various regions of the world in very different ways. There could be a serious problem with both food and natural resources, which would make the better world mentioned in the title of the symposium somewhat hypothetical. Demographic problems are raising major questions about the future of towns and cities and J. Barthélemy (Mons) devoted his presentation to this issue. How can the town planner design the more human cities of tomorrow, given that a growing proportion of the world's population will live in urban conglomerations? These demographic and urban problems must also be studied within the context of climate changes that can already be observed and predicted. The presentation given by A. Berger (Louvain la Neuve) focused on the influence of human activity on the evolution of the climate. Today, it is more or less accepted that the increase in greenhouse gases in the atmosphere, and particularly carbon dioxide, is having a serious effect on the Earth's climate. This global warming, which is particularly apparent in the northern hemisphere, is already having important consequences for sea levels, agriculture and supplies of fresh water. These effects are bound to get worse, even if international agreements are enforced. These profound climate changes should be taken into account now when medium- and long-term policies are being defined. In this context, it is important to rethink our energy policy and the presentation given by E. Brézin (Paris) provided some avenues of thought in this direction. The use of wind turbines and solar energy is obviously one alternative to the use of fossil fuels but it is not hard to see that these alternative sources will never be able to totally replace the sources of energy used today. In countries like France, Belgium, Sweden and the USA, where political stability in the medium term would appear to be assured, nuclear energy remains the most realistic solution. However, there is a fundamental issue here of the risk and the perception of this risk and this creates a problem in getting people to accept nuclear energy. There has to be a dialogue between experts and ordinary citizens. The same comment could be made about genetically modified organisms and M. Van Montagu (Gand) spoke about this issue during the symposium. The speaker gave his

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Edwin Zaccai, Pierre Rosanvallon, Roger Guesnerie, Mireille Delmas-Marty, Christine Tahon, Paul-F. Smets, Thierry Pairault, Françoise Bartiaux, Jean Barthélemy

presentation an unambiguous title "Of the necessity for transgenic plants", and he defended his point of view with conviction. It is certain that the optimization of plants no doubt began ten thousand years ago, when man became a farmer. All the plants that are used in our food are genetically modified organisms, and there is a paradox in the fact that what our ancestors practised blindly through trial and error is considered to be safe, whereas better-controlled genetic manipulations unleash feelings of fear. According to the speaker, the countries of the South that are already experiencing food problems will only find an eventual solution if they grow genetically modified plants. Having plants that need less water or are more resistant is becoming an urgent necessity. Among the modifications that man has involuntarily brought to nature are the assaults on its biodiversity. In his presentation, G. Bœuf (Paris and Banyuls) showed how human activity is affecting the biosphere. It is not a new phenomenon, but it has acquired worrying proportions. The talk was illustrated by a large number of examples taken from the marine world in particular, and they leave no doubt as to the seriousness of the problem and its often irreversible nature.

In the field of medicine, recent advances in human genetics have aroused great hopes with the deciphering of the human genome. Nevertheless, and as J-L. Mandel (Collège de France and Illkirch) clearly pointed out, knowledge of the complete sequence of the nucleotides in the human genome will not lead immediately to therapeutic applications. Nor will it enable us to classify individuals according to their genetic inheritance and the pathological risks that might be associated with it. We are far from having a perfect understanding and mastery of the regulation and expression of the genes and the availability of common curative or preventive medicines based on genetic analysis is a long way off. Animal experiments are a necessity for those who wish to develop new medicines. However, as A. Burny (Gembloux and Brussels) showed, experiments using animals have many advantages, but they also have some shortcomings. Consequently, experimenting on humans cannot be rejected outright and the speaker outlined the possibilities but also the limitations of experimenting on humans themselves. It is certain that experimenting on animals, and even more so on humans, raises serious ethical problems. These were broached in the presentation given by G. Hottois (Brussels) who demonstrated that there is a close link between ethics and philosophy by referring to the writings of specialists in this field (Jonas, Habermas and Engelhardt) and by showing how dependent ethical views are on the modernist or postmodernist approach of the person who holds these views.

The world in future will depend more and more on scientific advances and the presentations given by J. Livage and J-M. Lehn, both from the Collège de France, illustrated what chemistry contributes and will contribute in the way of new tools. J. Livage demonstrated that biochemical processes that have not yet been totally elucidated enable micro organisms to synthesize sophisticated materials at ambient temperatures, whereas industry generally synthesizes these same materials at high temperatures. The particular case of silica is one example of this. J. Livage showed that today's chemist is able to make silica casings in mild conditions and possibly include in these casings living micro organisms that will retain usable metabolic properties. J-M. Lehn outlined what molecular self-assembly will enable us to do from today onwards and described very convincingly the future of this supramolecular chemistry of which he is a co-founder. Once again, in this case, the living world contains remarkable examples that can inspire us to live differently and in an even better manner.

It was a very rich symposium, but it did not provide an unequivocal answer to the question "A better world for everyone: realistic project or crazy dream?" Who could have believed that it might be otherwise? Nevertheless, and as J-P Changeux underlined in the conclusion, the symposium clearly demonstrated that tomorrow's world is going to be very different from the world we know. There will be many formidable challenges ahead and only true solidarity and genuine organization on a worldwide scale will perhaps allow the children and grandchildren of those who currently inhabit the Earth to live in acceptable conditions, and certainly better ones than those that would exist if humanity was to postpone once again the action that is necessary in many areas. ■

J. Reisse and J.-P. Changeux

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André Berger, Édouard Brézin, Marc Van Montagu, Gilles Bœuf, Jean-Louis Mandel, Arsène Burny, Gilbert Hottois, Jacques Livage, Jean-Marie Lehn

Programme

8th March 2006

- Jacques Reisse, *Université Libre de Bruxelles*
  Why such a colloquium on such a subject?
- Edwin Zaccai, *Université Libre de Bruxelles*
  Durable development: a project and its resonance
- Jacques Livage, *Collège de France*
  Materials: from ceramics to soft chemistry
- Marc Van Montagu, *Ghent University*
  Of the necessity of transgenic plants
- Roger Guesnerie, *Collège de France*
  Governance in a globalized market
- Christine Tahon, *Solvay S.A. Belgium*
  Development and industrial impacts
- Jean-Marie Lehn, *Collège de France and Université Louis Pasteur, Strasbourg*
  Chemistry and auto-organisation; information, intention, selection
- Paul-F. Smets, *Université Libre de Bruxelles*
  Gendarmes and values, or how to promote the social responsibility and the durable development of companies
- Édouard Brézin, *École Normale Supérieure, Paris*
  Freedom is the power of democracy and its electrification
- Pierre de Maret, *Université Libre de Bruxelles*
  The African challenge
- Jean-Louis Mandel, *Collège de France, IGBMC, Illkirch*
  Individuality of the human genome and predictive medicine: Are they applications to expect or to fear?

9th March 2006

- André Berger, *Université catholique de Louvain*
  The climate of the XXIst century under the influence of human activities
- Jean Barthélemy, *Faculté Polytechnique de Mons*
  An urbanism in the service of cultural diversity and durable development
- Pierre Rosanvallon, *Collège de France*
  The metamorphoses of the notion of utopia
- Françoise Bartiaux, *Université catholique de Louvain*
  Population, societies and environment: what are the relations and what are the myths?
- Arsène Burny, *Agricultural University, Gembloux*
  Mice and men
- Thierry PAIRAULT, *École des Hautes Études en Sciences Sociales, Paris*
  The red shoes of the Chinese economy
- Gilbert Hottois, *Université Libre de Bruxelles*
  Bioethics at the test of philosophy
- Gilles Bœuf, *Université Pierre et Marie Curie, Paris*
  What does the future hold for biodiversity?
- Mireille Delmas-Marty, *Collège de France*
  Legal humanism and globalization

THE COLLÈGE DE FRANCE'S INTERNATIONAL SCIENTIFIC AND STRATEGIC ORIENTATION COMMITTEE (COSS)

The decision to organize symposiums abroad is the result of a suggestion made by the international scientific and strategic orientation committee (COSS, Comité d'orientation scientifique et stratégique) created by the Collège de France in 2002. The COSS consists of twelve key figures from abroad who are not connected to the institution. They are chosen by the Assembly of the Professors. The President and Vice-President are also chosen by the Collège de France's Assembly. The Secretary general is appointed by the members of the COSS.

The members of the COSS are appointed for a period of four years and, at the end of the period, half of the members are replaced.

The role of the COSS is to analyze the Collège de France's scientific and strategic orientations and the conditions for fulfilling its missions, so that it can put forward recommendations on how these might evolve or be enhanced. The COSS also undertakes to examine the coherence of the institution's strategy, the significance and exploitation of the multidisciplinarity of the chairs, the international policy, the adequacy of research means in relation to the objectives that have been fixed and the optimization of administrative structures. Finally, it should be pointed out that it is not the COSS's role to examine individually the scientific activities of each chair, which are already evaluated by research bodies and the Ministry of National Education, Higher Education and Research. ■

Goethe's Theory of Colours
Somewhere between Science, Art and Philosophy

Joint Seminar by the Chair of History of European Medieval and Modern Art and the Chair of Philosophy of Language and Knowledge
Collège de France
25th November 2005

Goethe's *Theory of Colours (Farbenlehre)*, published by him in 1810 and which he stated in the twilight of his life to be, along with *Faust*, his most important work, had a paradoxical fate. Although it was conceived by its author as a scientific theory, alternative to that of Newton (which he considered purely and simply erroneous), scholars not only decided against approving it, but they (quasi) unanimously considered it to be alien to the experimental methods and conceptual framework of modern Physics. In contrast, it has consistently enjoyed unrivalled prestige and authority with painters, artists in general and numerous philosophers and art theorists alike. The neo-impressionists, but also Itten, Kandinsky or Klee, to name but a few, openly identified with it.

This dichotomy (too) well established for two centuries, seems to have been challenged recently. On the one hand, certain commentators, like Dennis Sepper (*Goethe contra Newton*, 1988) consider that "even if the explanation of colour given by Goethe is far from satisfactory", recent progress in the domain of optics and the wave theory of light are "compatible with Goethe's project of a chromatic, a physical (i.e. natural) science of colour." On the other hand, recent art history research has tended to give a vision of Goethe's theory no longer as an "erratic block" but rather as the "fruit of a long tradition" of reflection on the "*coloris*" (R. Rosenberg)[1] by theorists of painting and painters themselves; which leads one to ask whether the influence of his work on the ideas and particularly on the practices of the latter was as real as has been stated.

And so it seems that the time has come to re-open the case. This time we should no longer set the different approaches of historians of art, science and philosophy against each other, but rather build on what they have in common. This is what Jacques Bouveresse and Roland Recht – who teach the *Philosophy of Language and Knowledge* and the *History of European Medieval and Modern Art* at the Collège de France – are setting out to do this year by combining their seminars under a joint heading: *Goethe's* Theory of Colours, *Origins and Influences, Problems and Controversies*. The first day[2] of this event took place on 25th November 2005.

In his detailed study of Goethe's correspondence, particularly with Schiller, the first reader of the drafts of his work and also of some of his autobiographical writings, such as the *Confession of the Author*, which concludes the work, Roland Recht has brought out the decisive role played by the trip to Italy (1786-8) in the genesis of the latter. For Goethe, the discovery of the Italian countryside and Italian paintings was the revelation that led him to explore the mysteries of colour. Since no work and no treaty provided him with the solution that he was looking for, he sought it in the study of natural phenomena, that is, in Physics. But experiencing colours means experiencing the visible. In order to remain faithful to natural phenomena, the physics of colour may not be based on experiments drawing on mathematical hypotheses that in turn refer to hidden processes, such as that of Newton's prism. Its source and its criterion should be found only in the experience of looking. Goethe wrote "Every act of looking [naturally] turns into observation, every act of observation into reflection, every act of reflection


Prof. Roland Recht


Prof. Jacques Bouveresse

1. A distinction is traditionally made between the *colours* which an artist has at his disposal in order to paint on his canvas (the colours in his palette) and the *colour* ('*coloris*') which is the visual effect resulting from choice and from the mixture and use of colours in the painting: the light-dark relationship, for example, falls within the realm of the "science of colours".
2. The other day events will take place on 15th and 16th June 2006.

into the making of associations: thus it is that we theorize every time we look carefully at the world."

Focussing his attention on Newton's celebrated prism experiment, Michel Blay (CNRS, Paris), endeavoured to show why Goethe and numerous XVIIIth Century authors, such as Marat and Father Castel, were unable to understand it and thus found themselves condemned to failure in their attempts at reproducing it. In his *Letter to Henry Oldenburg*, secretary of the Royal Society, which in fact constitutes the official report of his experiment (1672), Newton conforms to the empirical dogma of Bacon's induction theory, as though his theory resulted from observation. A study of his *Working notes* shows that this was not the case. The prism experiment is constructed in a very specific manner with the aim of developing a hypothesis previously formulated. The general fact highlighted by Newton (the multiple nature of homogeneous or monochromatic light) is not demonstrated by simple observation. Recognition of this fact presupposes the adoption of a new way of looking at light. Criticisms of Goethe were founded on "a naïve reflection and a poor understanding of Newton's prism experiment. They demonstrate *a contrario*, from an epistemological point of view, the specific nature of a fact in the realm of physical science: there is no such thing as pure empiricism."

If Goethe's conception of what a theory of colour should be turns its back on what science had become during his era, it is, however, as Jacqueline Lichtenstein (University Paris IV) has stated, caught up in an "illusion which consists in believing that there exists no other form of rationality apart from scientific rationality, thus denying that art is an intrinsically cognitive capacity." In the *Theory of Colours*, she draws our attention to the fact that the painters' analyses and those of authors who, like Roger de Piles, drew their reflections directly from workshop practices, have their place in the part dedicated to the history of colours, but are not present in the chapters dedicated to the theories of colour in the strictest sense. "The analyses of the painters are excluded from the theoretical area of knowledge. [...] In the light of the epistemological criteria that determine the modern idea of theory, these often piece-meal collections of thoughts and analyses, which we collectively term theories of art are, in fact, real monsters, because they are "practical theories". She specifies, however, "to a certain extent, Goethe's analysis is, in a strange way, a continuation of that of the colour theorists."

It is this continuity that Raphaël Rosenberg (University of Heidelberg) brought to light by bringing forth two figures who are almost forgotten today – Louis Bertrand Castel, a very famous Jesuit of his time and designer in 1725 of a "Clavecin pour les yeux" (Ocular Harpsichord) capable of transforming every piece of music by "playing" it in colours and Mary Gartside, author of a manual for learning to paint flowers: Essay on Light and Shade, on Colours and on Composition in general (1805). Each of them is first and foremost interested in the effects of colour. Father Castel's invention was not based, as are the traditional theories on harmony, on the principles of Pythagoras, but rather on "a real phenomenology of effect" – the effect produced by certain colours on the spectator may be the same as that produced by certain notes on the hearer. As for Mary Gartside, she was without a doubt (although we mistakenly attribute this to Goethe) the first to have observed that "luminous colours move towards the eye and cold colours move away from it". In order to support her explanations on contrast and harmony between colours, she included in the book an astonishing series of eight completely abstract watercolours.

Jacques Bouveresse undertook the evaluation of the status of Goethe's theory on the basis of contemporary scientific and philosophical works, successively examining five possibilities: "(1) that it is a defendable theory (practically no scientist has ever consented to this); (2) that it is a scientific theory that has been refuted (which a minority of the most charitable scientists probably believe); (3) that it is not a false scientific theory but rather a pseudo-scientific theory (which an overwhelming majority of scientists have always believed); (4) that it does not belong to the realm of science, not because it is pseudoscientific but because, in reality, it falls within the category of poetry or art, even if Goethe himself did not consider it in this light; (5) that it is not scientific, not because it is not connected with metaphysical speculation or art, but because (as Wittgenstein maintained), it is, after all, more closely connected to philosophy, understood as an undertaking of conceptual analysis and clarification, rather than to science as such." ■

Jean-Jacques Rosat

Jack Ralite, honorary mayor of Aubervilliers, former government minister, senator, and Carlo Ossola

As part of our commitment to teach in other places, it frequently happens that we travel far and wide to meet colleagues and teach within research contexts that are familiar to us – in terms of work methods, the framework of references and the perception of scientific subjects. On the other hand, very rarely are we in direct contact with or do we serve realities that, although physically close to us, culturally are far removed. Yet, in our Parisian suburbs, almost every municipal authority houses as many nationalities as those we might visit in several years of travelling and teaching.

At an international symposium in Stresa in October 2004, devoted to the new poverties of the 21st century, the former Secretary General of the UN, M. Boutros-Boutros Ghali, drew the participants' attention to the fact that around 2020 more than 60% of the world's population will live in *megalopolises* surrounded by huge suburbs, whose quality of life will be very precarious. During the same symposium, the senator for Aubervilliers, M. Jack Ralite, presented some impressive statistics concerning the communes of the northern and eastern suburbs of Paris.

Joint project of the Collège de France and the Aubervilliers Town Council

A series of lectures on themes of universal significance capable of getting civilizations to engage in dialogue with each other.

In order to reflect further on this subject, we met M. Ralite, in the presence of M. Jacques Glowinski, administrator and M. André Miquel, emeritus administrator of the Collège de France, and we worked out a plan to establish an agreement between the Collège de France and the Aubervilliers Town Council to organize a series of lectures (one per month for seven months) on themes of universal significance capable of getting civilizations to engage in dialogue with each other.

Didier Bezace, director of the Municipal Theatre, André Miquel and Jack Ralite

Jacques Glowinski, former administrator of the Collège de France, André Miquel and Jack Ralite

The Assembly of the Professors of the Collège de France approved the scheme, and a series of lectures will take place, in Aubervilliers, during the academic year 2006-2007. The theme will be: *Classics of human memory.*

Professor André Miquel inaugurated this series on 5th June last at the Aubervilliers municipal theatre, with a lecture on the *Thousand and One Nights*. This was followed by a concert of the works of Bach, Mozart, Ravel and Schumann, interpreted by Amandine Beyer on the violin and Laurence Beyer on piano. ■

Carlo Ossola

Projected programme
for the academic year 2006 - 2007

1. **L'Odyssée**
   Jean-Pierre Vernant, *emeritus professor at the Collège de France*
2. **La Divine Comédie**
   Carlo Ossola, *professor at the Collège de France*
3. **Don Quichotte**
   Francisco Jarauta, *professor at the University of Murcia (Espagne)*
4. **Notre besoin de Rimbaud**
   Yves Bonnefoy, *emeritus professor at the Collège de France*
5. **Une parole universelle: Victor Hugo**
   Max Milner, *emeritus professor at the University of Paris III-Sorbonne*
6. **L'autre Europe: Ivo Andric**
   Predrag Matvejevic, *professor at the University of Roma - La Sapienza (Italia)*

REORGANIZATION OF THE COLLÈGE DE FRANCE LIBRARIES

On 26th June 2005 the Assembly of the Professors of the Collège de France adopted proposals for reorganizing the libraries, both general and specialist, of the Collège de France and the Instituts d'Orient (Oriental Institutes). These changes have come into effect from 1st January 2006. The aim was to reaffirm the uniqueness of the services provided by the Collège de France's libraries. They are open to the outside, integrated into the network of university and research libraries, and a partner of the BULAC (University Library of Languages and Civilizations).

Building up a priceless patrimony

To understand the impact of this reorganization, it is necessary to recall how, over time, this exceptional documentary patrimony was built up. By its nature and through its missions, the Collège de France has occupied, since 1530, an original position in the fields of teaching and research. It was here that, in France, Greek, Arabic, Sanskrit, Chinese, Assyrian and of course, with Champollion, ancient Egyptian were first officially taught. The professors who taught these subjects were often among the best in the world in their subjects. The documents they used were for a long time their own personal property, the fruit of acquisitions, exchanges or of tributes from French and foreign colleagues. Many were bequeathed to the Collège de France. Thus a very rich collection was built up, but it was split up among the different chairs, and sometimes kept in specialized institutes.

In 1936, these collections were organized for the first time into a general library. From the end of the 1970s, the number of acquisitions made by the Collège de France has increased considerably, making some of its specialized collections equal to anything found in the best libraries in the world. At the same time, we started to computerize the catalogues, which did present some difficulty given the specificity of the collections. It is a highly complex task to catalogue books written in Chinese, Indian, Tibetan, Arabic, etc. both in their original language and in Latin transcription with all the cross-referencing and indexing that this entails.

A few examples

The library of the Egyptology Institute is probably the best in the world; given the fact that Egyptology has been, since its beginnings, a major discipline of the Collège de France.

The library of the Institute of the Chinese Superior Studies hosts a unique collection of local monographs.

The library of the Institute of Indian Studies has a complete cartographic coverage of the Indian sub-continent as well as a computerised photographic library of 20 000 slides.

The library of the Institute of Byzantine Studies, in the process of reorganisation, is already the best in Europe in its field.

An agreement is currently in the process of negotiation with the Asian Society to improve the availability of its library's extremely rich resources to researchers.

The library of the laboratory of social Anthropology, created since its introduction to the Collège de France by Claude Levi-Strauss, is one of the most important libraries of general anthropology in France.
Its originality is to work in close association with the CNRS (national centre for scientific research), where it hosts a very important research team, and the École des Hautes Études en Sciences Sociales. It thus benefits from the scientific contribution and the talents of many highly ranked researchers.

The reorganization project

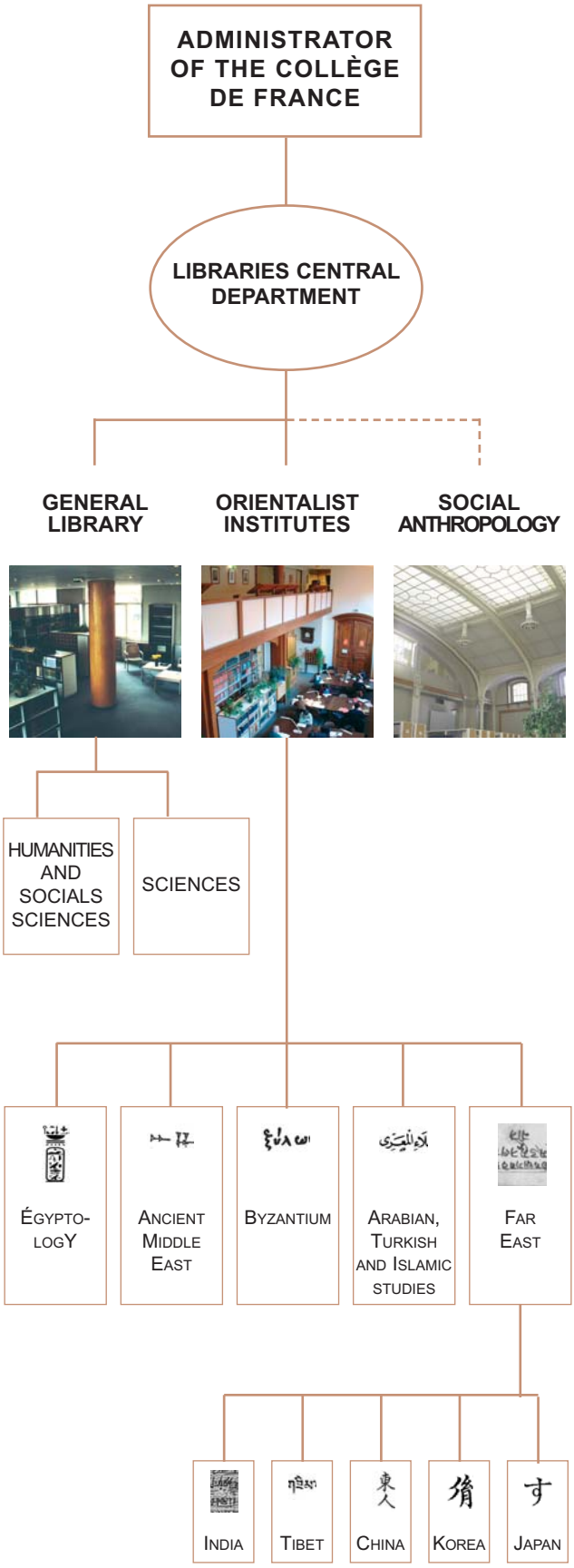
Today the reorganization of the libraries has become a necessity.

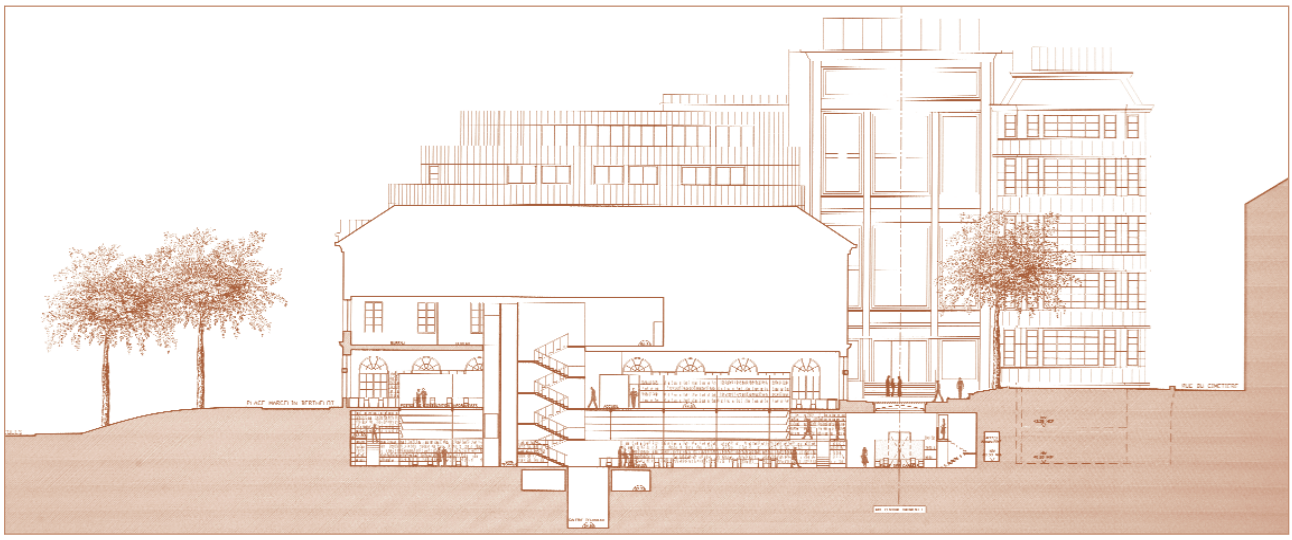
- The lack of space is a chronic problem for libraries. The reinstallation of the general library in premises that have been entirely renovated, but which do not have the capacity to hold the 120,000 volumes in the collection, means that the library's missions must be redefined now, so that we can separate those works that need to be present in our main building at Place Marcelin Berthelot from those that can be kept elsewhere.

- In a general context of a shortage of funds and library staff – and of increased competition between the institutions concerned –, it has become essential to highlight the specificity and usefulness of the Collège de France's collections, and to make them more visible. The lack of staff limits the number of readers the libraries can accept: these libraries will therefore be reserved for researchers – which complies with the Collège de France's vocation. It also limits the opening hours, which will have to be adjusted in accordance with the availability of staff.

The reorganization project will enable us to create one single archive for printed, sound and photographic collections that represent a large share of France's and the world's intellectual memory. Certain tasks will be centralized, particularly those concerning the management of staff and the libraries' technical operations: cataloguing, interconnecting computerized catalogues, coordinating acquisitions, the storage of large instruments, bringing together and putting in a safe place old publications of great bibliophilic and patrimonial value, etc. The aim is to rationalize and modernize the Collège de France's library system.

Organization chart





Cross section of the future library

Reorganized and modernized spaces

The general library will soon be installed in premises that are being built anew in the East wing of the Chalgrin building, Place Marcelin Berthelot (Paris). As for the premises in Cardinal Lemoine Street, which house the specialized libraries, they will be redesigned. The structure will be changed to reinforce these libraries' vocation to provide excellence.

The photographic and sound documents as well as the films need special precautions and computerized inventories. The Collège de France library system has been rethought to ensure its development, to make the libraries more accessible to researchers while preserving their patrimonial value and respecting the constraints imposed by conservation requirements.

A rationalized organization

The reforms approved by the Assembly pf the Professors will see the implementation of the following principles:

● All of the Collège de France's documentary collections will be held in one single department.

This will consist of:

1. A general library, which will be located in the new premises under construction at Place Marcelin Berthelot. It is not intended to be exhaustive, except with regard to the history of the Collège de France and its Professors. Some specialized collections will be kept nearer the laboratories.

2. Two specialized libraries: the Oriental libraries and the library of the Laboratory of Social Anthropology, which are located at Cardinal Lemoine Street. Some of them contain exceptional collections that complement those of the BULAC, and will remain reference libraries on a national and European scale. Partnerships with the CNRS (French national research centre) and the BULAC have been signed.

These three elements are from now on regarded as a single body with its own unique budget; it is managed by the head librarian of the Collège de France, assisted by a deputy and a scientific council.

● This department is now part of the French network of university and research libraries. It is open to all the staff of the Collège de France as well as to researchers outside the Collège de France, and particularly those institutions that have signed agreements with the Collège.

● General policy directions concerning documentary materials will be decided by the Assembly of the Professors represented by its Administrator, who presides over the libraries' Scientific Council. This council, now set up, is open to representatives of other institutions, viz. the head of the sub-department of libraries and documentation at the Ministry of Research, a representative of the director general of the CNRS, the director of the BULAC, etc.

A prime place on a French and European scale

This reorganization now enables us to affirm the unity of the system; promote collaboration with other Parisian and foreign libraries; allow many researchers outside the Collège de France access to scientific documentation that their research depends on and retain, for certain collections, original management procedures that have proved their worth.

The General Library's mission is to provide its users, irrespective of their discipline, with services that allow

them to find the works and periodicals they need; to advise them how to use these resources, particularly digitized resources available on CD-Rom or on the Internet; to assemble a collection of books and periodicals. Its task is also to bring together and keep all written materials relating to the history of the Collège de France and its Professors.

Some of its collections are of exceptional importance (history of Spain and of Latin America, Caucasian languages etc). The Oriental Institutes, located in Cardinal Lemoine Street, house under one management specialized libraries that, in their fields, are the best in France and often in Europe. This structure by Institutes is historical: the core of these libraries is made up of the former libraries of different chairs. The new organization guarantees the continued existence of libraries that might have been threatened by a vacancy in a chair in the scientific field concerned. The permanent participation of researchers not belonging to the Collège de France in the management of these libraries is a guarantee of continuity. It is also a guarantee of adaptability: indeed, researchers are best placed to manage the acquisitions policy and to spot useful new titles.

These libraries are visited by many foreign researchers. Even if donations and bequests of works are numerous, maintaining these collections at the highest level will require more and more money and space: the production of books in China, Japan and India is increasing exponentially, as is the scientific output concerning these countries.

The group of Institutes located in Cardinal Lemoine Street forms a place of intense, interdisciplinary and very free intellectual life.

In its desire to enhance the status of this exceptional patrimony and to make it available to the scientific community, the Collège de France has undertaken a wide-ranging reform, with the assistance of institutions devoted to safeguarding and exploiting cultural riches, to the transmission of knowledge and the evolution of the sciences. ■

M.K.
adapted from documents presented by Professor Gérard Fussman to the Assembly of the Professors of the Collège de France

The Collège de France Library or should we say libraries?

Our libraries have always been carefully looked after by successive administrators and the professors in charge of the scientific side of their activity. During the last ten years, they have undergone a delicate transformation supervised by the administrator, Jacques Glowinski. Work is well under way on the future General Library and reinstallation will soon take place. The current team is at the moment planning the return of collections that have been stored temporarily at Fleury-Mérogis. New arrangements, outlined in the present issue of the Letter, will also be in place when the library reopens.

It would not be fair to think that the General Library and its staff have been leading an easy life during this period of apparent latency. Since l997, the collections (around 120,000 works) have been moved around a great deal from illustrious surroundings to places that are less commendable, between the erudite rue des Écoles, the bare plains of the Val de Marne, the hospitable basements at Chatenay-Malabry, the orchards of Meudon, the pipe dreams of Nogent to finally end up at Fleury-Mérogis. However, there is now light at the end of the tunnel after all these long tribulations…

During this time, the staff have been involved in a race against time and have planted the first seeds of their future strategy for providing services so that everything will be in place when the library reopens: they have drawn up the outlines of a charter, redefined the nature of documentation, "weeded out" obsolete or unsuitable collections and produced a plan for developing electronic documentary sources.

The reduction of space and means has had a negative effect on subscriptions and acquisitions. On the other hand, as we were unable to use our own collections, inter-library lending and the sourcing of documents from distant places have grown considerably.

To ensure bibliographical coordination between the Collège's different specialist libraries, the first step was to create a catalogue. This catalogue was first created in the specialist libraries, starting with the IEOs (Institutes of the Far East) and the library of Arabic and Islamic Studies (with texts using non-Latin characters included), then in the General Library. It is at present a central element of our policy of cooperation with the libraries department, which supervises or coordinates the cataloguing of

acquisitions made by the libraries of Assyriology and History of Eastern Christianities. Today, at this address http://quinet.college-de-france.fr, six of the Collège de France's bibliographical databases can be consulted on the Internet. Apart from the General Library and the Library of Egyptology, which were the first ones, it is possible to consult simultaneously or selectively in one single search the databases of the Byzantine Library, the Library of Semitic Studies, the Library of Assyriology and the Library of the History of Eastern Christianities. Catalogues in non-Latin characters, in view of their distinctive feature, will be included subsequently. The IEOs can access them at the following address http://quinet.college-de-france.fr:81.

For 2 years now, we have been part of the system of higher education documentation - the SUDOC (Système universitaire de documentation de l'enseignement supérieur), which has a register of several million references. For a long time, it has enabled our own teachers and researchers to find references and source from outside our institution the documents they need. It also enables us to show outside researchers how extensive our specific, and in some cases unique, collections of works are. The General Library uses the SUDOC as a tool in its retrospective cataloguing, profiting from the work done by other research libraries that possess the same works. In the not too distant future we hope that the specialist collections of the libraries of the Instituts d'Orient (Eastern Institutes) will also be included in this immense national catalogue, and we will thus be able to see the complementary nature of the collections belonging to the Collège de France and to its partners, the Bibliothèque Universitaire des Langues et Civilisations (University Library for Languages and Civilisations) and the École Normale Supérieure.

At the same time, following the initiative of the library of the Institut de Biologie (Institute of Biology), the libraries of the Collège de France have joined together to present on one site the online reviews to which they have taken out subscriptions. It is possible, from any workstation connected to the Collège de France network, to access the unabridged version of around one hundred reviews (exact sciences and human sciences) by logging on to the site http://doc-ib.college-de-france.fr/ejournalsCdF/. In addition, certain laboratories have access to bibliographical or textual databases that are subject to subscriptions like JSTOR (Journal Storage), and which contain the archives of digital publications.

The installation of the General Library in its new premises will bring it back to the heart of the Collège de France, and will ensure better coordination with the Scientific Council. This will also be accompanied by the implementation of new services using the facilities offered by the IT networks: discussions about acquisitions, creation of bibliographies, training in how to search databases, the sourcing of documents from distant places, the monitoring of new developments in documentation. ■

Marie-Renée Cazabon

The Asiatic Society and the Collège de France*

The Asiatic Society's first meeting was held on 1st April 1822, a French manifestation of European countries' fascination with Orientalism at the beginning of the 19th century. The Collège de France had indeed just created in 1814 the Chairs of Chinese and Sanskrit. The Royal Asiatic Society was established in London in 1824, the Deutsche Morgenländische Gesellschaft and the American Oriental Society in 1842.

The first president of the Society was quite naturally Sylvestre de Sacy (1758-1838), professor of Persian at the Collège, and its honorary president was the Duke of Orléans who, when he became King Louis-Philippe, still continued his patronage of the Society. There were then 37 foreign associate members and 111 subscribers, with famous names like Chateaubriand among them by 1823. Its regulations then were more or less similar to today's. The Society acquired personal civil status by royal edict on 15th April 1829, which entitled it to receive donations and bequests. Its statutes were revised by decree on 16th June 1910.

In its early years the Council included several members of the government: the Duke of Richelieu, minister of Foreign Affairs, then president of the Council; the Marquis of Clermont-Tonnerre, Navy, then War minister, etc. The other members of the Council were Orientalists only by profession, but they were very famous (Rémusat, Chézy, Champollion the younger, etc.).

The society was very open: its main centre of interest was initially intended to be literature and history, but it soon came to include knowledge of the geography, economies and contemporary politics of the countries of the Orient in its fields of study. Aristocrats took an interest in it, mainly those who had come back from abroad and who had experience of countries other than France (the Duke of Richelieu had commanded Russian troops against the Turks). It also aroused the interest of intellectuals who were curious about a world that had been hidden up to then and where discoveries revealed unsuspected connections with the West. These common roots came to light as a result of different events: the Egyptian expedition (the letter to M. Dacier dates from 1822), the discovery by Bopp in 1816 of the common parentage of languages known as "Indo-European", which he noted in his book entitled "On the Conjugation System of Sanskrit in comparison with that of Greek, Latin, Persian and Germanic", or the publication of "Chinese Grammar" by A. Rémusat (1822).

The departure of a lot of society people in 1830 meant that the Asiatic Society no longer hesitated between being a "literary salon" or an "institution of learning". From that moment, it brought together those who were to make 19th-century Orientalism famous in its many forms, most of whom were Collège de France professors: A. Rémusat and S. Julien (China), E. Burnouf (Persia and India), J.F. Champollion and G. Maspéro (Egypt), J. Oppert (cuneiforms, which he was an expert at deciphering), E. Renan (Bible); from more modern times were S. Lévy, P. Pelliot, P. Demiéville, L. Renou, J. Filliozat, É. Benveniste, A. Caquot.

The Society publishes a journal called the "Journal asiatique" (JA) and, up to now, 292 issues have appeared. It publishes the minutes of meetings, but, more importantly, scientific articles or reviews of works relating to Orientalism. It also has a library of 100,000 printed works in every field of Orientalism, mostly comprising bequests from the scientific libraries of its members: E. Chavannes, P. Demiéville (China), E. Sénart (India), J. Bacot (Tibet) J. Filliozat (Indian medicine); it is current practice for its members to donate their works.

Among the library's many treasures are engravings, the archives of the Kingdom of Campa and different types of manuscripts written in the various Asian languages (parchments, Asian papers, palm leaves). Finally, it possesses the scientific archives of several scholars, like the collection of glass photographic plates from A. Foucher's missions to Afghanistan.

19th century Orientalism has to be seen as part of the continual growth in the number of fields of study. Today, the growing number of documents available and the difficulty in exploiting them often make it impossible for experts to access fields related to their own speciality. Creating a forum in which experts can come together is a necessity and the Society has retained its original function as a link and a coordinator. The length of time it has been in existence is proof of the interest it has aroused; its fellow organizations around the world, older in the Orient, younger in the West, have built up a network that has enabled Western research to study the many civilizations and cultures that are exterior to it, but which are often the source of many of its questions and the responses to them. ■

Prof. Jean-Marie Durand
Vice-President of the Asiatic Society

* This presentation of mine has drawn its inspiration from a memorandum containing a wealth of information on the Asiatic Society written by Pierre-Sylvain Filliozat, member of the Institute, son of Jean Filliozat who was a professor at the Collège de France from 1952 to 1978, and serving vice-president of the Asiatic Society. The illustrations in this article come from works in the Asiatic Society's library.

INTERNATIONAL RELATIONS

The Collège de France's international relations are based primarily on the professors' own network of personal contacts throughout the world. This is an informal network with a large number of contacts, and it forms the basis for the Collège's international reputation.

About fifteen agreements have been signed or are currently being negotiated with universities and foundations in twelve countries: Germany, Brazil, Canada, Egypt, Spain, USA, Italy, Lebanon, Mexico, UK, Singapore and Sweden. The agreements also aim to favour the arrival of post-doctorals at the Collège de France.

One of the Collège de France's missions as an institution is to contribute to France's international influence. Therefore, the Collège has developed an international policy whose aim is to make it better known and to develop its relations and exchanges with equivalent institutions in other countries. The College has an international committee on scientific and strategic orientation (COSS) whose recommendations reinforce this policy direction.

This international policy is supported by those institutions that represent France in the countries concerned, and it has different components.

The Collège de France's courses abroad

They are an integral part of the Collège's courses and appear in the official programme. The inviting institutions, university or partner institution, choose their guests and take care of accommodation and living expenses. The Collège is responsible for travelling expenses – helped by the Ministry of Foreign Affairs in some cases.

Emeritus Professors may also be invited to give courses abroad, as well as certain professors from the École Normale Supérieure.

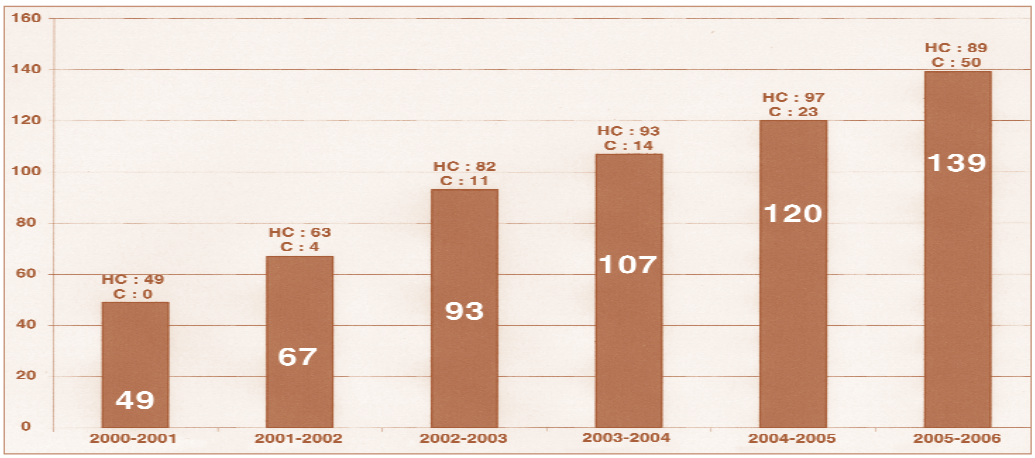
Guest professors

On the recommendations of its members, the Assembly of the Professors invites around forty key figures to give lectures at the Collège de France every year. These lectures are filmed and broadcast on an internet site that was created in partnership with the École Normale Supérieure (http://www.diffusion.ens.fr/college/). The Collège publishes summaries of the lectures in its *Yearbook* (Annuaire, Cours et travaux du Collège de France) and in the *Letter of the Collège de France,* and supports their wider publication in partnership with the publisher Odile Jacob. Its aim is to create an active network of exchanges with the guest professors.

Lecturers and post-doctorals at the Collège

The College has about sixty lecturer positions, as lecturer, PRAG (University teachers) or ATER (temporary teacher and researcher), a large percentage of which are for young foreign researchers who come for one or two years. The Hugot Foundation organizes a reception for these researchers every year. It also awards the Hugot prize every year to a young foreign researcher, and for the prizewinner there is also a position as lecturer for one year. ■

Number of hours teaching abroad by permanent professors



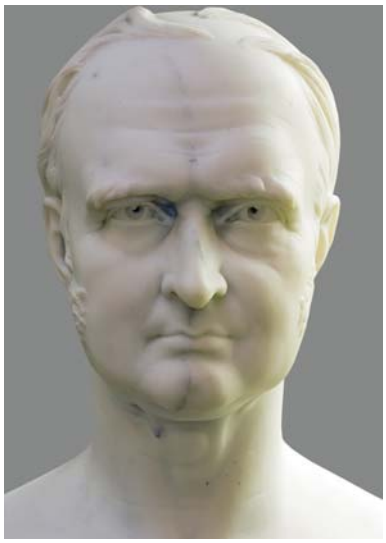
HC (hors convention): over and above agreement
C (convention): in accordance with agreement

THE GLOBE OF ÉLIE DE BEAUMONT (1798-1874) AT THE COLLÈGE DE FRANCE

By Jacques Touret
Professor Emeritus (Petrography-Mineralogy)
Vrije Universiteit Amsterdam (the Netherlands)
Member of the Royal Dutch Academy of Arts and Science

Mineralogy Museum
École des Mines
60 Boulevard Saint-Michel, Paris 75006

The Collège de France possesses a magnificent map of the world, a masterpiece of nineteenth century cartography. It consists of a globe with a diameter of over one metre on a solid wooden base. The base map is in German and Alexander von Humboldt immediately springs to mind. Over and above its highly detailed physical geography, including, in particular, all of the world's mountain ranges, one can see on it the routes taken by the great discoverers, from Magellan to Captain Cook. A complex mass of large circles in various colours (black, red, green, blue) that have been traced by a steady hand is especially noticeable. No particular indications are given, apart from several letters (D,t) at certain intersection nodes. Few geologists today could guess that it is in fact a representation, without doubt the most complete ever made, of the "réseau pentagonal" (pentagonal network) of Léonce Elie de Beaumont, professor at the Collège de France and holder of the Chair of Natural History of Inorganic bodies from 1832 up till his death in 1874. From the outset, the theory of Elie de Beaumont was the object of lively controversy. Only specialists in the history of science remain familiar with it today. However, it is nonetheless true that this model, as we would name it today, represented a major school of thought in the nineteenth century and was, especially, the first attempt at a global tectonic theory, a century before Xavier Le Pichon and several others discovered the plates.



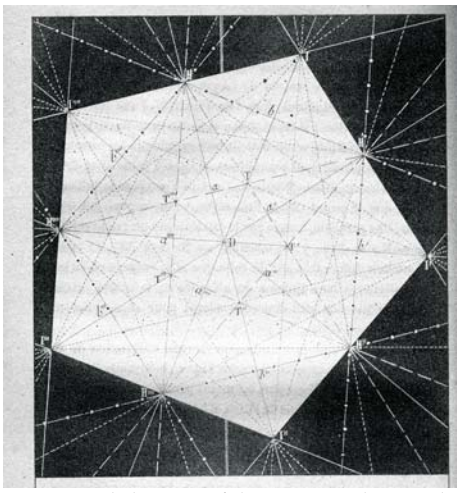
Bust of Élie de Beaumont at the École des Mines

Jean Baptiste Armand Louis Léonce Elie de Beaumont, the great figure of nineteenth century French geology.

At the very least we may say that Jean Baptiste Armand Léonce Elie de Beaumont (1798-1814) held all the most prestigious positions during his long career. Professor (1827), then Director of the École des Mines, Chief Engineer of the Mines (1832), Professor at the Collège de France (on the death of Cuvier in 1832), Inspector General in 1845, member of the Institute (1835), then permanent secretary of the Academy of Science from 1853 onwards and, finally, to top it all, Senator in 1852. Majoring from the Polytechnique and the École des Mines, he entered the Corps des Mines in 1820, where, after a short trip to England, he was given the responsibility, along with Armand Dufrénoy, of creating a geological map of our country based on the English model. He thus engaged upon a course of untiring activity, covering thousands of kilometres on foot or on horseback, and making the numerous field observations that were to make him one of the most

experienced geologists of his time. The result of this work was the publication in 1841 of the six sheets of the "Geological Map of France, under the direction of Mr Brochant de Villiers, General Inspector of the Mines, by Messrs Dufrénoy and Élie de Beaumont, inspectors of the Mines". This was work of a singularly modern nature, whose general outline – in particular the structure of the sedimentary layers of the Paris Basin – are still of current relevance. It was during these surveys that Élie de Beaumont was to develop an idea that affected all his later activities: The relief structures at the surface of the globe, in particular volcanoes and mountain ranges, are due to the deep thrust of magma liquids that tend to raise a thin but solid shell (crust). The typical form of volcanoes is thus a single 'upheaval crater' whilst mountain ranges correspond to a linear upheaval along the great cracks distributed homogeneously over the surface of the terrestrial globe. In any case, the fundamental causes are identical: they are linked to the cooling down and thus to the ancient contraction of the earth during the geological periods. The basic hypothesis is that the terrestrial globe cools down and contracts, creating protuberances at the surface "similar to those of a wrinkled apple"

On the basis of this brief summary, today it is easy to underline the errors of an explanation that is in contradiction with immediate observation, in particular where upheaval craters are concerned. From the very beginning, Élie Beaumont's ideas were criticised, in particular by Charles Lyell and those who held to the tenets of the "actual causes" hypothesis. He valiantly defended his position, supported by several disciples from the Collège de France and the École des Mines.



Geometrical elements of the pentagonal network (according to A. Vézian, 1863, p. 32).
Continuous lines: primitive circles, long dashed lines: octahedrons, dotted lines: regular dodecahedra, short dashed lines: rhombic dodecahedra, double lines Remda meridian

The authority that his official functions gave him enabled his ideas to have considerable repercussions. Well after the First World War, many geological maps still mentioned the main directions of the "mountain ranges" and it was only at the beginning of the second half of the Twentieth Century that the name of Élie de Beaumont and his pentagonal system became forgotten history. This was as undeserved as the adulation of the century before since, as Celal Sengör so masterfully demonstrated in 2005 during his lectures as holder of the International Chair of the Collège de France, all was not erroneous in the complex way of thinking patiently elaborated by the Parisian group. This was the case in particular for the notion of the geo-syncline, which was to dominate geological thinking until the advent of plate tectonics. There was two Americans, James Hall and James Dwight Dana , who coined the name and became known as the fathers of the concept – especially in the English-speaking world –, but the definition that he gave (in the preface of a paper on the subject of palaeontology!) existed already in Élie de Beaumont's works.

The Pentagonal Network

As a Polytechnician, Élie de Beaumont was very mathematically minded. Mathematics, he believed, should govern the order of the natural world (Auguste Comte is not far away). He therefore believed that the cracks resulting from the earth's contracting over the ages should be positioned in a rational way and cover the whole of its surface. All mountains are not contemporaneous, so the appearance of cracks occurs in successive waves, but "the logic of events means that" two immediately successive cracks are orthogonal. The source of this statement is pure intuition, as is the way of dividing up the sphere of reference into a certain number of identical sectors, which must divide its surface in a continuous and homogeneous manner. The analogy with the crystallographic school of thought is obvious – and underlined by Élie de Beaumont himself.

He begins by envisaging the simplest system: 8 spherical triangles cut out on the sphere by a tri-rectangular axis system. The planes tangential to each of these triangles define a regular bounded octahedron and it is possible to project onto them every point of the spherical surface by gnomonic projection (intersection of the plan with the radius of the sphere passing through the point under consideration).

This octahedral system was quickly abandoned, as it was too simple. Élie de Beaumont then proceeded by successive complications, observing that a network consisting of 15 large circles, termed "primitive",

intersecting in such as way as to form 12 regular spherical pentagons, makes it possible to draw a grid whose complexity was entirely satisfactory to him. Other figures are derived through permutation on the summits or the middle of the ridges (octahedrons and regular or rhombic dodecahedra). In all, a total of 61 large circles, which constitute, as a whole, the "pentagonal network".

This definition is purely theoretical and mathematical. If Beaumont's intuition is exact, the directions of the system must coincide with the directions of the different "mountain ranges", measured during field observations. The approach of Élie de Beaumont results from his own field observations or his cartographical analyses. The first observations, presented verbally to the Academy of Science in 1829, concern 4 systems, which do in fact possess a certain temporal and directional homogeneity, at least on a European scale (Ardennes, Cornwall, Alps, Pyrenees). The Pyrenees range in particular is, indeed, in a very straight line and we can be sure that its example played an important part in confirming Élie Beaumont's certainty that his theories were correct. After publication (Annals of Natural Sciences, Paris, 1830), the number of characteristic directions grew rapidly to 12 (1833), then to 15, and reached 96 in 1852, in his Notice on mountain ranges ("and I'm a long way off finishing", he added).

The need remained to make the directions of the mountain ranges coincide with those of the pentagonal network. Élie de Beaumont gave the following explanation on this key point in his structure: "I thought that, if the large primitive circles of the pentagonal network represented what we may call the primitive form of the external configuration of the globe, it would suffice to place the network formed by these 15 circles on the terrestrial globe to make it possible to see the position in which it should be placed so as to be in harmony with all of the geographical configurations, and that, if such a position existed, and was taken, the very principle of my work would be corroborated ipso facto and the possibility of its establishment confirmed." As a result, I placed onto a globe with a diameter of 50 cm, a movable net formed by a part of the principal circles of the network and composed in such a way as to be applied exactly to this sphere, embracing it with rigorous precision. Several preliminary trial and error procedures led me to simply install this network on the tri-rectangular triangle resulting from the cross-over of the large comparative circles of the "Tenare" and "Andes" ranges and the "Mediterranean Volcanic Line". Other writings mention other direction references, in particular the "Remda Meridian" in Saxe, which Élie de Beaumont, perhaps making a distant reference to Werner, seems to consider as a sort of original meridian for all of his

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system. Whatever the case may be, the result has been obtained: there is a correlation between the theoretical network and the facts observed on the ground, which as a whole must be exact.

The Globe at the Collège de France

In the light of the preceding information, it is clear that the representation of the earth's relief and of the pentagonal network in three dimensions constitutes an essential element of the school of thought and the demonstration. Playing on his double membership of the École des Mines and the Collège de France, Élie de Beaumont distributed work meticulously, giving each one clear and precise objectives. His numerous activities prevented him from fulfilling all his roles personally, and so he found a colleague to second him in each institution. At the École des Mines, Alphonse Béguyer de Chancourtois, firstly professor in topography, then assistant in teaching geology, assumed this function. Élie de Beaumont simply gave an inaugural lecture every year, on the cooling of the planet. Then de Chancourtois would give all further lectures. At the Collège de France, this task was undertaken by Charles Sainte Claire Deville, a replacement lecturer re-appointed for seventeen consecutive years. Deville, of Caribbean origin, was made responsible after several years for the organisation of world meteorological stations and sometimes needed to find a replacement for himself... These colleagues would have the honour of becoming official holders of their positions on the death of Élie de Beaumont, but, in each case, this would only be for a short time: three years for Béguyer de Chancourtois and barely eighteen months for Sainte Claire Deville, during which time the latter was able to give only one lesson, fortunately faithfully recorded and published by his successor at the Collège, F. Fouqué.

The 50 cm globe at the École des Mines

At the École des Mines, Béguyer de Chancourtois had a whole series of small sized globes made (around 20 to 50 cm in diameter), of which four have been preserved (Library of the École des Mines). These are working models, of which the smallest give indications concerning elements of the pentagonal network on a white background or, particularly in the case of the largest of them (50 cm), giving material form to elements of the network, using pins linked by threads on a topographical background.

However, for the Collège de France, he wished to create a spectacular globe, the most complete representation of his model. On 28th January 1850, he requested permission to do this from the Administrator (see letter).

We have looked in vain for other information on this "Grinum Globe" mentioned in Élie de Beaumont's letter. These events took place during the period when great discoveries were made on the planet and several German firms were manufacturing globes, in particular in Berlin and Dresden, launched by the momentum of Alexander von Humboldt's work. The most famous manufacturer is Carlo Adami, whom Hans Kiepert succeeded in 1844. He was to work from 1852 in C. Reimer's firm. The Globe at the Collège de France was probably created in 1850 or 1851. It is likely that it was made by H. Kiepert before he began working for Reimer. It was, doubtless, a special order, which may explain the fact that the constructor is not mentioned. Whatever the case may be, the administrator acquiesced to Élie de Beaumont's wishes, and an administrative Customs note for the year 1851 exempts the globe from entry payments. It was at this time that it must have arrived in Paris. It was adapted there and Élie de Beaumont had the large circles of the pentagonal network traced onto it; work of exemplary graphic perfection that was probably done at the Collège. As is the case on the globes of the École des Mines, certain letters indicate the nature of the large circles. A colour code probably corresponds to the different types of circles. The lines are very regular, even though they were obviously drawn by hand, doubtless with the help of spherical rulers. Few specialists were capable of carrying out such work, and it is more than likely that the artists mentioned by Béguyer de Chancourtois were called upon: Bertaut and especially E. Picart, the expert designer who in 1868 would enter the Service de la Carte géologique détaillée de France (The Detailed Geological Map of France).

To Barthélémy Saint Hilaire,
Administrator of the Collège de France

Dear Administrator,

For the demonstrations that I did during my geology lectures at the Collège de France, almost every year I used a *terrestrial globe*. Up till now I have been able to use a medium sized globe belonging to myself for this purpose, but since I have had to use this globe for special work, this year I need to borrow another, but it can only be *borrowed* on a temporary basis.

This circumstance causes me to think, dear Administrator, that the expense involved in acquiring the globe for the Cours d'Histoire Naturelle Inorganique (Inorganic Natural History Lectures) at the Collège de France would be adequately justified, but at the same time it also seems to me that the Collège de France can only acquire a globe that is very finely made.

According to the information that I have obtained, I believe that the "*Grinum Globe*", of about one metre in diameter, publicised in Berlin a few years ago, would correspond very well to the object I had in mind. The price of this globe, with the transport and customs costs, would be 460 Francs. Some additional expense would be incurred in order to facilitate its handling. Total spending would thus amount to *around 500 francs*.

I would not be able to raise the money for this expenditure from one single year of teaching costs and even if I were to spread it over two years it would drain them heavily. I am therefore taking the liberty of asking you if it would not be possible to grant an extraordinary credit of 500 francs to the Cours d'Histoire Naturelle des Corps Inorganiques (Natural History Lectures on Inorganic Bodies) for this special object.

I am honoured to be your most humble servant and devoted colleague,

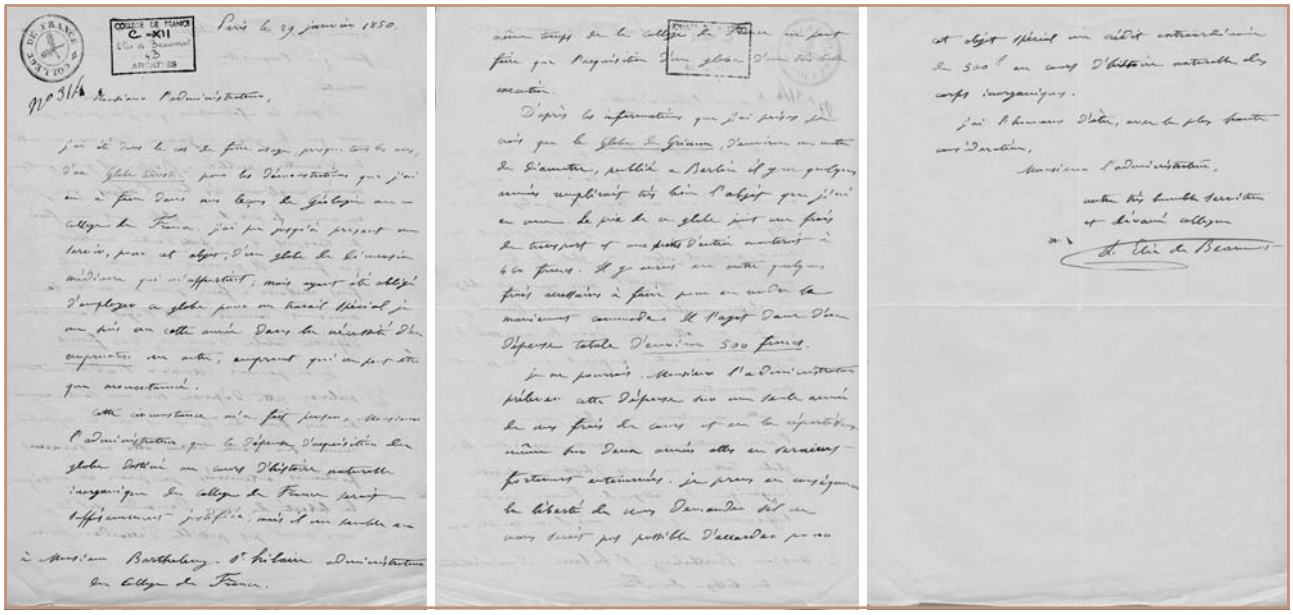
Your obedient servant,
Léonce Élie de Beaumont.

A nostalgic conclusion

What happened to this masterpiece, once it had been created? The working globes of the École des Mines bear the traces of intensive work and have been used for the drawing up of gnomonic maps – the great system of which Béguyer de Chancourtois had dreamed, in embryonic form. On the contrary, the Collège de France globe remained in its original condition. It does not seem to have been used much. Doubtless, it never left the Collège, unlike the globes of the École des Mines, exhibited in particular at universal Exhibitions. After

1852, Élie de Beaumont's lectures were not directly related to the pentagonal network: volcanic and metal-bearing emanations (1853-4); rocks of igneous origin from the three-fold point of view of their composition, classification and seam (1854-55); and volcanic phenomena in general (1855-56). He then asked Sainte Claire Deville to stand in for him, until his death, and the latter's lectures reflected his own areas of interest (in particular, volcanology). He paid tribute to his master only during the single lesson that he gave as official holder of the post (1875-76), giving, in particular, a very complete description of the pentagonal network. But his lectures, published at a later date by his successor, François Fouqué, featured not one single figure and certainly not one word about the globe. Fouqué would himself become a Professor at the Collège de France in 1877, but was first and foremost a mineralogist and specialist in petrography, as was his disciple and successor, August Michel Lévy. It appears that nobody found a reason to use the globe. It was only during the period immediately before the Second World War that a holder of the tectonics theory, Paul Fallot, would again occupy the Chair. In his inaugural lecture, the latter certainly paid a vibrant tribute to Élie de Beaumont, but he never mentioned the existence of the globe, with which, however, he must have been familiar because he inherited it in his department.

Élie de Beaumont was doubtless keeping this teaching globe in reserve for the day when he would have provided irrefutable and obvious proof of the perfect coincidence between the directions of the mountain ranges and the theoretical systems. As François Fouqué said, having been well acquainted with him during his studies: "When I went to see him, he was always at his work desk, at one end of a line of small parts, in front of a table loaded with maps, busy tracing new alignments." This long awaited day never arrived, and Élie de Beaumont, more and more isolated within the remaining faithful few, died one morning in 1874 in his castle in Carnon, alone with his certainties. ■



Handwritten letter from Élie de Beaumont to Barthélémy Sainte Hilaire, 28th January 1850. (Archives of the Collège de France).
Text duplicated on page 38.

PHILATELY AND THE COLLÈGE DE FRANCE

Stamps issued bearing the effigies of Collège de France professors

Since 1927, many stamps have been issued bearing the effigies of Collège professors. To date twenty-eight professors can be "collected" by philatelists.

The founder of the Collège de France, François I, and the man who inspired him, Guillaume Budé, have appeared on

envelopes since 1956. A stamp showing the Collège de France building was issued in 1997.

André Marie AMPÈRE
(1775-1836)
General and Experimental Physics
1824 - 1836
Issued: 1936

Raymond ARON
(1905-1983)
Sociology of Modern Civilization
1942 - 1945
Issued: 2005

Henri BERGSON
(1859-1941)
Greek and Latin Philosophy
1900 - 1904
Modern Philosophy
1904 - 1921
Issued: 1959

Claude BERNARD
(1813-1878)
Medicine
1855 - 1878
Issued: 1978

Marcelin BERTHELOT
(1827-1907)
Organic Chemistry
1865 - 1907
Issued: 1927

Abbé Henri BREUIL
(1877-1961)
Prehistory
1929 - 1947
Issued: 1977

Maurice de BROGLIE
(1875-1960)
General and Experimental Physics
1942 - 1945
Issued: 1970

Jean-François CchampollION
(1790-1832)
Archeology
1831 - 1832
Issued: 1972

Jean Nicolas CORVISART
(1755-1821)
Medicine
1796 - 1804
Issued: 1964

Georges CUVIER
(1769-1832)
Natural History
1800 - 1832
Issued: 1969

Bernard HALPERN
(1904-1978)
Experimental Medicine
1961 - 1975
Issued: 1987

Frédéric JOLIOT
(1900-1958)
Nuclear Chemistry
1937 - 1958
Issued: 1982

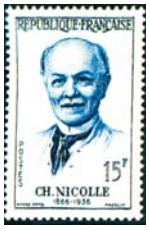
René LAENNEC
(1781-1826)
Medicine
1822 - 1826
Issued: 1952

Paul LANGEVIN
(1872-1946)
General and Experimental Physics
1909 - 1946
Issued: 1948

René LERICHE
(1879-1955)
Medicine
1937 - 1950
Issued: 1958

Jules MICHELET
(1798-1874)
History and Morals
1838 - 1852
Issued: 1953

Jacques MONOD
(1910-1976)
Molecular Biology
1967 - 1973
Issued: 1987



Charles NICOLLE
(1866-1936)
Medicine
1932 - 1936
Issued: 1958

Étienne OEHMICHEN
(1884-1955)
Mechanical and Biological Aerolocomotion
1939 - 1955
Issued: 1957

Antoine PORTAL
(1775-1836)
General and Experimental Physics
1824 - 1836
Issued: 1971

Guillaume POSTEL
(1510-1581)
Oriental Language
1538 - 1543
Issued: 1982

Ernest RENAN
(1823-1892)
Hebraïc, Chaldaïc and Syriac Languages
1862 - 1892
Issued: 1973

Charles Augustin de SAINTE BEUVE
(1804-1869)
Latin Poetry
1854 - 1869
Issued: 1969

André SIEGFRIED
(1875-1959)
Economic and Political Geography
1933 - 1946
Issued: 1975

Louis Jacques THÉNARD
(1777-1857)
Chemistry
1804 - 1845
Issued: 1957

Paul VALÉRY
(1871-1945)
Poetics
1937 - 1945
Issued: 1954

Nicolas Louis VAUQUELIN
(1763-1829)
Chemistry
1801 - 1804
Issued: 1963

Hyacinthe VINCENT
(1862-1950)
Epidemiology
1925 - 1936
Issued: 1962

Institutional Data

Collège de France Organization Chart

Administrator of the Collège de France: **Pierre CORVOL**
The Administrator of the Collège de France is a Collège de France professor, elected by his/her colleagues to direct the institution for a period of 3 years, renewable twice.

Professors of the Collège de France

I – MATHEMATICAL, PHYSICAL AND NATURAL SCIENCES

- Analysis and Geometry — Alain CONNES
- Differential Equations and Dynamical Systems — Jean-Christophe YOCCOZ
- Partial Differential Equations and Applications — Pierre-Louis LIONS
- Number Theory — Don ZAGIER
- Quantum Physics — Serge HAROCHE
- Elementary Particles, Gravitation and Cosmology — Gabriele VENEZIANO
- Geodynamics — Xavier LE PICHON
- Climate and Ocean Evolution — Edouard BARD
- Observational Astrophysics — Antoine LABEYRIE
- Chemistry of Molecular Interactions — Jean-Marie LEHN
- Chemistry of Condensed Matter — Jacques LIVAGE
- Human Genetics — Jean-Louis MANDEL
- Genetics and Cellular Physiology — Christine PETIT
- Biology and Genetics of Development — Spyros ARTAVANIS-TSAKONAS
- Morphogenetic Processes — (not appointed yet)
- Molecular Immunology — Philippe KOURILSKY
- Experimental Cognitive Psychology — Stanislas DEHAENE
- Physiology of Perception and Action — Alain BERTHOZ
- Experimental Medicine — Pierre CORVOL
- Historical Biology and Evolutionism — Armand de RICQLÈS

II PHILOSOPHICAL AND SOCIOLOGICAL SCIENCES

- Philosophy of Language and Knowledge — Jacques BOUVERESSE
- Philosophy of Life Science — Anne FAGOT-LARGEAULT
- History of Syncretisms in Late Antiquity — Michel TARDIEU
- Anthropology of Nature — Philippe DESCOLA
- Economic Theory and Social Organization — Roger GUESNERIE
- Modern and Contemporary History of Politics — Pierre ROSANVALLON
- Contemporary Arab History — Henry LAURENS
- Rationality and Social Science — Jon ELSTER
- Comparative Legal Studies and Internationalization of Law — Mireille DELMAS-MARTY

III – HISTORICAL, PHILOLOGICAL AND ARCHAEOLOGICAL SCIENCE

- Neolithic and Bronze Age European Civilizations — Jean GUILAINE
- Pharaonic Civilization: Archaeology, Philology, History — Nicolas GRIMAL
- Assyriology — Jean-Marie DURAND
- History and Civilization of the Achaemenid World and of the Empire of Alexander — Pierre BRIANT
- Epigraphy and History of the Ancient Greek Cities — Denis KNOEPFLER
- Religion, Institutions and Society in Ancient Rome — John SCHEID
- Indo-Iranian Languages and Religions — Jean KELLENS
- History of India and Greater India — Gérard FUSSMAN
- History of Modern China — Pierre-Étienne WILL

- National Antiquities — Christian GOUDINEAU
- Turkish and Ottoman History — Gilles VEINSTEIN
- French Mediaeval Literature — Michel ZINK
- Modern and Contemporary French Literature: History, Criticism, Theory — Antoine COMPAGNON
- Modern Literatures of Neo-Latin Europe — Carlo OSSOLA
- Literary Creation in English — Michael EDWARDS
- History of European Medieval and Modern Art — Roland RECHT

Annual Chairs

- Chair of Artistic Creation — Pascal DUSAPIN
- European Chair — Guy ORBAN
- International Chair — Daniele VITALI
- Chair of Technological Innovation - Liliane Bettencourt — (not appointed yet)

Administration

- Director of Cultural Affairs and External Relations: Florence TERRASSE-RIOU
- Director of Administrative and Financial Affairs: Jean-François RIGONI

Lectures Given by the Professors in Provincial France and Abroad

IN FRANCE

ÉCOLE DES HAUTES ÉTUDES EN SCIENCES SOCIALES - ANTENNE DE TOULOUSE
- Jean GUILAINE (holder of the Chair of Neolithic and Bronze Age European Civilizations)
  Cities, villages and the countryside during the Bronze Age

UNIVERSITÉ PAUL CÉZANNE – AIX-MARSEILLE III
- Édouard BARD (holder of the Chair of Climate and Ocean Evolution)
  Solar activity and climate
- Xavier LE PICHON (holder of the Chair of Geodynamics)
  The risk of tsunamis in the Western Mediterranean

UNIVERSITÉ DE BORDEAUX III MICHEL-DE-MONTAIGNE
- Pierre BRIANT (holder of the Chair of History and Civilization of the Achaemenid World and of the Empire of Alexander)
  1. The Virtual Interactive Achaemenid Museum: status of questions
  2. Montesquieu and the Historiography of Alexander the Great during the XVIIIth Century

UNIVERSITÉ DE BRETAGNE OCCIDENTALE, BREST
- Jean-Marie LEHN (holder of the Chair of Chemistry of Molecular Interactions)
  Recent Progress in Supra-molecular Chemistry

UNIVERSITÉ PIERRE-MENDÈS-FRANCE DE GRENOBLE
- Anne FAGOT-LARGEAULT (holder of the Chair of Philosophy of Life Science)
  Biomedical Anthropology

UNIVERSITÉ CLAUDE BERNARD DE LYON I
- Jean-Louis MANDEL (holder of the Chair of Human Genetics)
  Fragile X Syndrome Mental Handicap: diagnostic aspects and pathophysiological mechanisms

UNIVERSITÉ DE NICE – FACULTÉ DES LETTRES, ARTS ET SCIENCES HUMAINES
- Jean GUILAINE (holder of the Chair of Neolithic and Bronze Age European Civilizations)
  The Pre-History of Cyprus

UNIVERSITÉ DE POITIERS
- Philippe DESCOLA (holder of the Chair of Anthropology of Nature)
  Four ways to make a world

UNIVERSITÉ DE RENNES
- Jacques LIVAGE (holder of the Chair of Chemistry of Condensed Matter)
  Biomineralization and Soft Chemistry

- Thomas PAVEL (Professor of French Literature at the University of Chicago, USA, and holder of the International Chair 2005-2006)
  How to listen to literature

UNIVERSITÉ MARC BLOCH DE STRASBOURG
- Pierre BRIANT (holder of the Chair of History and Civilization of the Achaemenid World and of the Empire of Alexander)
  The Biography and Historiography of Alexander: report and method

- Christian GOUDINEAU (holder of the Chair of National Antiquities)
  Celts, Gauls and Galatians: problems of History and Historiography
  Vercingetorix, Myth and Reality

- Roland RECHT (holder of the Chair of History of European Medieval and Modern Art)
  Perception and description

- Gilles VEINSTEIN (holder of the Chair of Turkish and Ottoman History)
  The Succession Question during the Ottoman Dynasty.
  Ottoman diplomacy and palaeography

UNIVERSITÉ LOUIS PASTEUR DE STRASBOURG
- Jean-Marie LEHN (holder of the Chair of Chemistry of Molecular Interactions)
  Principles and Illustrations of Supra-molecular auto-organisation

- Pierre CORVOL (holder of the Chair of Experimental Medicine)
  1. Research into new genes in the area of Cardiovascular Patho-physiology
  2. New Factors in Angiogenesis

UNIVERSITÉ DE TOURS
- Thomas PAVEL (Professor of French Literature at the University of Chicago, USA, and holder of the International Chair 2005-2006)
  How should we listen to literature? Receiving literary work

LECTURES ABROAD

ALGERIA
- Faculté des Sciences Biologiques de l'USTHB (Université des Sciences et de la Technologie Houari Boumédienne) and Institut Pasteur d'Alger
  - Philippe KOURILSKY (holder of the Chair of Molecular Immunology)
    The notion of specificity in the immune system

BELGIUM
- Université de Charleroi
  - Jean KELLENS (holder of the Chair of Indo-Iranian Languages and Religions)
    Apocalypses and ends of the world

CANADA
- University of British Columbia, Vancouver
  - Pierre-Étienne WILL (holder of the Chair of History of Modern China)
    Democracy, Human Rights and the Traditional Chinese Political Order
    Reading Chinese Judicial Cases of the Late Imperial Period

- Université du Québec à Montréal (in accordance with agreement)
  - Édouard BARD (holder of the Chair of Climate and Ocean Evolution)
    Millenial Climate Variation during warm periods of history: External cause or internal oscillation?

CHINA
- Shanghai Second Medical University (SSMU)
  - Philippe KOURILSKY (holder of the Chair of Molecular Immunology)
    The Concept of System in the Immune System

EGYPT
- Université Senghor, Alexandria (in accordance with agreement*)
  - Spyros ARTAVANIS-TSAKONAS (holder of the Chair of Biology and Genetics of Development)
    The Paradigms and Challenges of the Biology of Development

- Nicolas GRIMAL (holder of the Chair of Pharaonic Civilization: Archaeology, Philology and History)
  The Geopolitics of the Middle East during the Second Century AD. according to Egyptian Sources

- Cairo University
  - Henry LAURENS (holder of the Chair of Contemporary Arab History)
    Autobiography – Arab Politics

GERMANY
- Freie Universität, Berlin
  - Gérard FUSSMAN (holder of the Chair of History of India and Greater India)
    Buddhism at the frontiers of India around our time

GREECE
- Aristotle University, Thessalonika
  - Jean-Marie LEHN (holder of the Chair of Chemistry of Molecular Interactions)
    Supra-molecular Chemistry-Concepts and Perspectives

ITALY
- National Centre for Research (CNR), Rome
  - Michel ZINK (holder of the Chair of French Mediaeval Literature)
    Poetry and Narrative: The Power of the Fable

- École française de Rome
  - John SCHEID (holder of the Chair of Religion, Institutions and Society of Ancient Rome)
    Ad Deam Dia. L'esplorazione di un bosco sacro nel suburbio di Roma (La Magliana)
    The General Topography of the Ad Deam Dia site (La Magliana)
    The Commentaries of the Arval Brothers: Inscriptions and Architecture in the sacred wood of Deam Dia (La Magliana)

- Florence University, LENS - European Laboratory for Non-Linear Spectroscopy
  - Serge HAROCHE (holder of the Chair of Quantum Physics)
    Information on Quantum Physics

- University of Pisa (Scuola Sant'Anna)
  - Alain BERTHOZ (holder of the Chair of Physiology of Perception and Action)
    Common Principles in the Control of Movement and Locomotion

- University La Sapienza, Roma
  - Alain BERTHOZ (holder of the Chair of Physiology of Perception and Action)
    The Basic Cognitive Principles of Interaction with Others

JAPAN
- University of Tokyo – Graduate Schools for Law and Politics
  - Mireille DELMAS-MARTY (holder of the Chair of Comparative Legal Studies and Internationalization of Law)
    Comparative Law and International Law

LEBANON
- Université Saint-Joseph, Beyrouth (in accordance with agreement*)
  - Henry LAURENS (holder of the Chair of Contemporary Arab History)
    Europe and the Muslim World in the XIXth and XXth Centuries

POLAND
- Jagellone University, Cracow – Institute of Archeology
  - Jean GUILAINE (holder of the Chair of Neolithic and Bronze Age European Civilizations)
    From East to West: The Ancient Neolithic Period in the Mediterranean

UNITED STATES

- University of Pennsylvania
  - Michel ZINK (holder of the Chair of French Mediaeval Literature)
    Narrative Poetry: The Medieval Example?

- Wesleyan University
  - Michel ZINK (holder of the Chair of French Mediaeval Literature)
    Poetry and Narrative: The Example of Rutebeuf

SPAIN

- Real Academia Sevillana de Ciencias and Instituto de Investigaciones Químicas, Seville
  - Jean-Marie LEHN (holder of the Chair of Interactive Molecular Chemistry)
    Supra-molecular Chemistry-Molecular Recognition and Self-Organization

- Pablo de Olavide University, Seville
  - Philippe DESCOLA (holder of the Chair of Anthropology of Nature)
    Recent research into the Anthropology of the Environment

- Marcelino Botín Foundation - University of Madrid (in accordance with agreement*)
  - Édouard BARD (holder of the Chair of Climate and Ocean Evolution)
    Time scales of climatic changes

SWEDEN

- University of Uppsala (in accordance with agreement*)
  - Jean-Pierre CHANGEUX (holder of the Chair of Cellular Communications)
    1. The theory of allostery 40 years later: from regulatory enzymes to transcription factors;
    2. Isolation and characterization of a receptor channel: the receptor of the neurotransmitter acetylcholine;
    3. Allosteric transitions of the acetylcholine receptor, gain of function mutations and the concept of allosteric disease;
    4. Role of neuronal nicotinic receptors in cognitive learning and access to consciousness examined with genetically modified mice.

  - Roger GUESNERIE (holder of the Chair of Economy Theory and Social Organisation)
    Unresolved Problems in Economic Theory

  - John SCHEID (holder of the Chair of Religion, Institutions and Society of Ancient Rome)
    1. Male and female presence on the Forum Boariu
    2. Violence and legality in the Res Gestae Divi Augusti

SWITZERLAND

- Université de Genève
  - Pierre CORVOL (holder of the Chair of Experimental Medicine)
    Angiogenesis and Cardiovascular Patho-physiology

  - Jean-Louis MANDEL (holder of the Chair of Human Genetics)
    1. Fragile X Syndrome Mental Handicap: Patho-physiological Mechanisms and the Function of FMRP Protein
    2. From Myotubular Myopathy to Myotubularins, a Broad Family of Phosphoinositide Phosphatases

- Université de Lausanne
  - Jean-Louis MANDEL (holder of the Chair of Human Genetics)
    X-Chromosome-related Mental Handicap: Genes, Phenotype-Genotype Correlation and Epidemiology

TUNISIA

- Institut Pasteur de Tunis
  - Christine PETIT (holder of the Chair of Genetics and Cellular Physiology)
    Synapses: The Morphofunctional and Molecular Specificity of Ribbon Synapses in the Cochlea

- University of Tunis
  - Gilles VEINSTEIN (holder of the Chair of Turkish and Ottoman History)
    The Ottoman Empire and its boundaries (XVth-XVIIIth Centuries)
    The Ottoman Empire and its servants. The Limits of State Centralisation

- University of Sfax
  - Christine PETIT (holder of the Chair of Genetics and Cellular Physiology)
    The Physiology and Molecular Patho-physiology of Synapses in the Cochlea

TURKEY

- Galatasaray University and Institut Français d'Études Anatoliennes (Istanbul)
  - Pierre BRIANT (holder of the Chair of History and Civilization of the Achaemenid World and of the Empire of Alexander)
    Political Unity and Cultural Diversity in the Achaemenid World: The case of Asia Minor
    "Achaemenid Decadence" and "The Sick Man of Europe": The Achaemenid Persian Empire and the Ottoman Empire from a Comparatist Perspective by Historians and European Political Analysts (end of the XVIIIth – beginning of XIXth Centuries)

  - Michel TARDIEU (holder of the Chair of History of Syncretisms in late Antiquity)
    The Current Debate on Monotheism: Philosophy, History, and Science of Religions

*** Agreements with foreign Universities and Foundations:**

1. Germany: Ernst Robert Curtius Chair, Bonn University (1997).
2. Brazil: Lévi-Strauss Chair, Institute of Advanced Studies, University of São Paulo (1997).
3. Canada: with the Quebec Universities (CRÉPUQ), (2003).
4. Spain: Botín Foundation Chair, Santander (2004).
5. Italy: with the National Research Council (2004)
6. Sweden: with Uppsala University (extended to all Swedish Universities), (2004).
7. Brazil: Celso Furtado Chair, with the Rio de Janeiro Universities Forum, (2004).
8. Egypt: with the Université Senghor, Alexandria, (2005).
9. Singapore: with «A*STAR», Agency for Science, Technology and Research (2005).
10. Lebanon: with the Université Saint Joseph, Beirut (2006).
11. United States: with the University of Chicago (2006).
12. Mexico: with five Universities.

Lectures and Lecture Series by Foreign Professors

by Invitation of the Assembly of the Professors

State chairs reserved for foreign scholars

- Manfred KROPP, Professor at the University of Mainz (Germany)
  October 2005: The Origins of the Koran
- Vincent FERRONE, Professor at the University of Turin (Italy)
  October 2005: The Enlightenment in the Europe of the Old Order between History and Historiography.
- Wilhelm SCHLINK, Professor and Former Director of the Institute of Art and Archaeology of the University of Freiburg (Germany)
  November 2005: "... we must speak about art": Jacob Burckhardt, Art Historian.
- Balazs GULYAS, Professor, Karolinska Institute, Stockhom (Sweden)
  February 2006:
  1. Core Networks and recruited fields: the logic of information processing in the human brain;
  2. Four facets of a neuroimager's single brain: relationship between behaviour, cerebral blood flow/metabolism, neuronal activity and neurotransmitter dynamics;
  3. Personality, cognition, neuropsychiatry and multireceptor fingerprinting of the human brain;
  4. Dissection of consciousness.
- Manfred BIETAK, Professor, President of the Institute of Egyptology of the University of Vienna (Austria)
  February 2006:
  1. Predecessors and origins of the Hyksos;
  2. Temples and cults in Avaris and the end of Avaris;
  3. Egypt and its relations to the Minoan world and the New Kingdom;
  4. Was the tuthmoside stronghold Peru-nefer at Avaris?
- Gérard KARSENTY, Professor, Baylor College of Medicine, Houston, Texas (USA)
  February-March 2006:
  1. Genetic and Molecular control of Bone Mineralization;
  2. Genetic and Molecular Elucidation of Hypothalamic Control of the Bone Mass;
  3. Transcriptional control of Osteogenesis;
  4. Central control of the Bone Mass and its Therapeutic Implications.
- Chris SCARRE, Professor at the University of Durham (United Kingdom)
  March 2006: Megaliths of the British Isles.
- Hans BOTS, Professor at the University of Nimègue (Netherlands)
  March 2006: A Cultural Communication in Europe during the Age of Reason: France/ Netherlands, 1550-1750.
- Antonio GARCIA-BERRIO, Professor at the Complutense University of Madrid (Spain)
  March 2006: The Poetic Qualities of Literature
- Werner ECK, Professor at the University of Cologne (Germany)
  March 2006: Cologne during the Roman Era
- Marc HAUSER, Professor at Harvard University (USA)
  March-3 April 2006: Evolution of Aesthetics, Mathematics, and Language Morality.
- Jean-Jacques NATTIEZ, Professor at the University of Montreal (Canada)
  May 2006: Unity or Break-up of Musicology? (proposals for a general musicology).
- Alfonso ARCHI, Professor at La Sapienza University, Roma (Italy)
  May 2006: EBLA (24th Century A-D.)
- Luciano CANFORA, Professor at the University of Bari (Italy)
  May 2006: The Prestige of Cicero and the Myth of Spartacus: Mediaeval and Romantic Reception.
- Adam SCHWIMMER, Professor at the Weizmann Institute, Rehovot (Israël)
  May 2006: Anomalies and Holography.
- Grigorii VILKOVISKY, Professor at the Lebedev Physical Institute of Moscow (Russia)
  May 2006: Expectation values and vacuum currents of quantum fields.

- Peter WESTBROEK, Professor at the University of Leiden (Netherlands)
  May-June 2006: The Discovery of the World.
- Kevin PADIAN, Professor at the University of California, Berkeley (USA)
  June 2006: Macroevolution and the Structure of the Theory of Evolution.
- Polymnia ATHANASSIADI, Professor at the University of Athens (Greece)
  June 2006: Towards Group Thinking: The Rise of Intolerance in later antiquity.

Claude-Antoine Peccot Foundation *

- Laurent BERGER, IHES, Research Officer at the CNRS
  March 2006: Galoisian Ideas and P-adic Analysis
- Emmanuel BREUILLARD, Research Officer at the CNRS
  May-June 2006: Qualitative Properties of Discrete Groups.

Winaretta Singer Fund lectures: Princesse Edmond de Polignac

- Giuliano TOCCO, Superintendent of the archaeological monuments of Salerno, Benevent and Avellino (Italy)
  October 2005: New Archaeological Research at Velia.
- Mark ELVIN, Professor at the National University of Australia
  October 2005: The Scientific Mind in Imperial China at the beginning of the XVIth Century.
- Patrick SUPPES, Professor at Stanford University (USA)
  November 2005: Neuropsychological Foundations of Philosophy.
- Marcel BOYER, Professor at the University of Montreal (Canada)
  November 2005: The Value of Risk Management: A Frontier Analysis.
- Fabiana CACCIAPUOTI, Curator at the National Library of Naples (Italy)
  November 2005: The Writing of Zilbadone: From Fragment to System
- Antonio PRETE, Professor at the University of Sienna (Italy)
  March 2006: Poetic Thought in the Zilbadone by Leopardi.
- Andreas KABLITZ, Professor at the University of Cologne (Germany)
  April 2006: The Troubadours' Conception of Love and Poetry.
- Solomon FEFERMAN, Professor at Stanford University (USA)
  May 2006: Godel's Theorem, Minds and Machines.
- François MOREL, Professor at Princeton University (USA)
  May 2006:
  1. The Paradoxes of the Fertility of the Oceans: The Fierce Battle;
  2. The Paradoxes of the Fertility of the Oceans: The problem of CO^2.
- Michael SANDEL, Professor at Harvard University (USA)
  May 2006:
  1. The Case against Perfection (On the Ethics of Genetic Engineering and Enhancement);
  2. The Moral limits of Markets.
- Thomas PALFREY, Professor at Princeton University (USA)
  May 2006: Quental Response Equilibrium: A General Approach to Bounded Rationality in Social Interaction.
- Chakir PIDAEV, Director of the Uzbekhistan Institute of Archaeology at Samarcand
  June 2006: Archaeological Exploration of Ancient Termez.

*** The Claude-Antoine Peccot Foundation**

Several successive donations (in 1886, 1894, 1897, and 1902) made it possible, first to create grants, which were later changed into prizes; then, in addition, from 1900 onwards, to allocate a certain number of lectures to mathematicians of less than thirty years of age who had distinguished themselves in the subjects of theoretical or applied mathematics.

Events at the Collège de France – 2005-2006

❍ Collège de France's Institute of Biology Workshop
4th October 2005

❍ Franco-Brazilian Conference on Scientific and Technological Cooperation (Brazilian Ministry of Education)
10th October 2005

❍ Autumn colloquium of the Collège de France: Belief, Reason and Unreason
13-14th October 2005

❍ Conference: What Research for Safety? (Ministère de l'Éducation nationale, de l'Enseignement supérieur et de la Recherche)
18th October 2005

❍ MURS conferences (Mouvement universel de la responsabilité scientifique - Global Movement for Scientific Responsibility)
18th October 2005, 21st February, 4th April and 30th May 2006

❍ INSERM Grand Prize (National Institute of Health and Medical Research)
19th October 2005

❍ Seminar: New information in the Cardiovascular Area (Leducq Foundation)
27th October 2005

❍ Evans Conference (Professor Émile Étienne Baulieu)
14th November 2005

❍ Opening Lecture of the École de Chaillot
15th November 2005

❍ Installation day, Institut Universitaire de France
18th November 2005

❍ Yarshater Conferences (UMR 7528 The Iranian and Indian Worlds)
21st, 23rd, 25th, 28th and 30th November 2005

❍ Prize of the Académie des sciences (INRIA)
30th November 2005

❍ Seminar: The Self-Consciousness of Poetry Poetry and Narrative: from the Middle Ages to the Modern Era, a Confrontation (Professors Yves Bonnefoy and Michel Zink)
1st, 2nd and 3rd February 2006

❍ European Seminar on Research into the fight against cerebral disability (Association for Therapeutic Education and the Re-education of Children with Cerebral Motor Disorders)
3rd February 2006

❍ General Assembly of LEEM Recherche (Medicine Industry)
2nd May 2006

❍ Seminar: Centre and Periphery (Professors Jean-Marie Durand and Michel Tardieu)
31st May and 1st June 2006

❍ Seminar: Abraham Ecchellensis and the science of his age (Professor Henry Laurens)
9-10th June 2006

❍ Seminar: Law as an Instrument of Economic Intelligence: How to Defend the Heritage of Industry (Ministry of Justice, Institut d'Études et de recherche pour la sécurité des entreprises)
20th June 2006

❍ European Alzheimer Congress (National Union of Alzheimer Associations)
30th June 2006

❍ International Seminar
Celts and Gauls: Archaeology Confronts History (European Archaeological Centre of Mont-Beuvray, Chair of National Antiquities of the Collège de France)
3-7th July 2006

Outside events

❍ First Collège de France Seminar to be held abroad: 'A Better World for All: Realistic Project or Crazy Dream?'
8-9th March 2006
Collège de France, Académie royale de Belgique, Université catholique de Louvain and Université libre de Bruxelles

Prizes and Decorations

■ Professor Gabriele Veneziano (holder of the Chair of Elementary Particles, Gravitation and Cosmology), received the Enrico Fermi Prize from the Italian Physics Society

■ The 18th Bristol Meyers Squibb prize was awarded to Professor Christine Petit (holder of the Chair of Genetics and Cellular Physiology).

■ The book by Professor Christian Goudineau (holder of the Chair of National Antiquities), *L'enquête de Lucius Valerius Priscus,* has recently received the Historical Novel Prize for 2005, awarded during the *Rendez-vous de l'histoire* at Blois.

■ Professor Jean-Pierre Changeux (holder of the Chair of Cellular Communications), received the DART/New York University Award for the year 2006.

■ Professor Michael Edwards (holder of the Chair of Literary Creation in English), has been appointed Officer in the Order of the British Empire by Queen Elizabeth II.

■ Professor Anne Fagot-Largeault (holder of the Chair of Philosophy of Life Science), has been awarded membership of the Académie royale des sciences, des lettres & des beaux-arts de Belgique.

■ Professor Emmanuel Le Roy Ladurie (holder of the Chair of History of Modern Civilization), has been awarded honorary membership of the Academy of Japan.

Research Teams Received

Research Teams Received at Collège de France for four years

■ UMR 7148: MOLECULAR GENETICS, PHYSIOLOGY AND BEHAVIOUR
François TRONCHE

■ UMR 7119: SEMITIC STUDIES
Christian ROBIN

■ UMR 7572: CENTRE FOR THE STUDY OF BYZANTINE HISTORY AND CIVILIZATION
Jean-Claude CHEYNET

■ UMR 7129: CENTRE FOR RESEARCH INTO CHINESE AND JAPANESE CIVILIZATION
Alain THOTE

■ EA 518: INSTITUTE OF INDIAN STUDIES
Lyne BANSAT-BOUDON

■ INSTITUTE FOR RESEARCH INTO TEXT HISTORY
Anne-Marie EDDE

■ THE INSERM TEAM: GENES AND ARTERIAL PRESSURE MINERALOCORTICOÏD
Xavier JEUNEMAÎTRE

■ U691 CENTRAL NEUROPEPTIDES AND CARDIOVASCULAR HYDRIC REGULATION
Catherine LLORENS-CORTES

■ U667 THE DYNAMICS AND PATHO-PHYSIOLOGY OF NEURONE NETWORKS
Jean-Michel DENIAU

■ COMPUTERISED NEUROSCIENCES
Misha TSODYKS

Unité mixte de recherche (UMR) : Combined Research Unit
U: Unit

Maîtres de Conférences and Attachés Temporaires d'Enseignement et de Recherche (ATER)* at the Collège de France – 2005-2006

- AMANN Jean-Paul
Attached to the Chair of Philosophy of Life Science
- BEGORRE-BRET Michael
Attached to the Chair of Economic Theory and Social Organization
- BEN GUIZA-VERNIERS Raya
Semitic Studies
- BOISSIERE Michel
Attached to the Chair of Chemistry of Condensed Matter
- BORKOWSKI Virgine
Attached to the Chair of Observational Astrophysics
- CAI Hua
Attached to the Chair of Anthropology of Nature
- CARROZA Laurent
Attached to the Chair of Neolithic and Bronze Age European Civilizations
- CASTETS Marie
Attached to the Chair of Human Genetics
- CHAPUIS-SCHMITZ Delphine
Attached to the Chair of Philosophy of Language and Knowledge
- DAKHLY Leila
Attached to the Chair of Contemporary Arab History
- FRATEANTONIO Christa
Attached to the Chair of Religion, Institutions and Society of Ancient Rome
- HAN Hee-Jin
Attached to the Chair of Philosophy of Life Science
- DARD Séverine
Cultural Affairs
- DEBATTY Bertrand
Roman History
- DELEAGE Pierre
Attached to the Chair of Anthropology of Nature
- FAVIER Agnès
Attached to the Chair of Contemporary Arab History
- FROGER Nicolas
Neuropharmacology
- GALAUP Ariane
Attached to the Chair of Experimental Medicine.
- HEMADI-CHALACH Myriam
Attached to the Chair of Chemistry of Condensed Matter
- ITURRIO Xavier
Institute of Biology
- KEMPF Hervé
Attached to the Chair of Experimental Medicine
- KIRSCH Marc
Attached to the Chair of Philosophy and History of Scientific Concepts
- LARDIERE Olivier
Attached to the Chair of Observational Astrophysics
- LE MAGUERESSE Corentin
Attached to the Chair of Cellular Communications
- LEFEVRE Gaëlle
Attached to the Chair of Genetics and Cellular Physiology
- LICARI Laetitia
Attached to the Chair of Climate and Ocean Evolution
- LOUIS Julien
Attached to the Chair of History of European Medieval and Modern Art
- MALARINO Ezequiel
Attached to the Chair of Comparative Legal Studies and Internationalization of Law
- MARTI Lionel
Attached to the Chair of Assyriology
- MARTIN-CHENUT Katia
Attached to the Chair of Comparative Law and International Law
- MASDEHORS Peggy
Attached to the Chair of Molecular Immunology
- PALIERAKI Eugenia
Contemporary History
- PERNIN Isabelle
Attached to the Chair of Epigraphy and History of the Ancient Greek Cities
- QARRY Angie
Attached to the Chair of Quantum Physics
- ROSAT Jean-Jacques
Attached to the Chair of Philosophy of Language and Knowledge
- SAVA Elena
Attached to the Chair of Linguistic Theory
- SCHARIF Ariane
Neuropharmacology
- SHARMA M.K.L
Attached to the Chair of History of India and Greater India
- SCHULTE Sonia
Attached to the Chair of Climate and Ocean Evolution

* ATER: Temporary Teaching and Research Assistant

- SINHA Ajit
Attached to the Chair of Economy Theory and Social Organization
- SEVALIE David
Attached to the Chair of Assyriology
- SFEIR-KHAYAT Jihane
Attached to the Chair of Contemporary Arab History
- SPICQ Delphine
Attached to the Chair of History of Modern China
- THOUROUDE Nicolas
History of France during the Enlightenment
- TIERNEY Patrick
Neuropharmacology
- VALENTINI Andrea
Attached to the Chair of French Mediaeval Literature
- VAUTRIN Céline
Cultural Affairs
- VERDO Geneviève
Attached to the Chair of Modern and Contemporary History of Politics
- ZAGO Michela
Attached to the Chair of History of Syncretisms in Late Antiquity
- ZITTER Tiphaine
Attached to the Chair of Geodynamics

Maîtres de conférences of the Collège de France

- ANG Isabelle
Attached to the Chair of History of Modern China
- BOMBARDE Odile
Attached to the Chair of French Mediaeval Literature
- BOUY Christian
Attached to the Chair of History of India and Greater India
- DELAHAYE Hubert
Attached to the Chair of History of Modern China
- DOLBEAU Jean
Particle Physics
- FABRE Catherine
Attached to the Chair of French Mediaeval Literature
- JACQUET-PFAU Marie-Christine
Attached to the Chair of Modern Literatures of Neo-Latin Europe
- KOULAKOFF Annette
Neuropharmacology
- KRIKORIAN Ralph
Attached to the Chair of Observational Astrophysics
- LAMANDE Noël
Attached to the Chair of Experimental Medicine
- LEWINSKI Liliana
History and Anthropology of Meso- and South-American Societies
- MAISANT Corinne
Attached to the Chair of History of European Medieval and Modern Art
- MILLERET Chantal
Attached to the Chair of Physiology of Perception and Action
- MONSORO Anne-Héléne
Attached to the Chair of Biology and Genetics of Development
- PERNOT Jean-François
History of France during the Enlightenment
- PICKFORD Martin
Paleoanthropology and prehistory
- PICQ Pascal
Paleoanthropology and prehistory
- SOLINAS Francisco
Attached to the Chair of History of European Medieval and Modern Art
- SZELAGOWSKI Isabelle
Attached to the Chair of History of India and Greater India
- VIALES Noëlie
Attached to the Chair of Anthropology of Nature

* In 1977, the Assembly of the Professors of the Collège de France created the Hugot Foundation of the Collège de France, dedicated, in compliance with the wishes of Hélène and Jean-Pierre Hugot, whose gifts made its creation possible, to the support of work and research of both a humanist and multi-disciplinary nature.
In 2001, the governing body of the Foundation decided to create the Prix de la Fondation Hugot du Collège de France. This prize consists of the appointment to a post of lecturer at the Collège de France (for a duration of one year, renewable once only), and the sum of 4 000 euros, donated by the Hugot Fondation. This prize is allocated within a different discipline each year.

Prize winners:
2003-2004: Ricardo Uribe Vargas, mathematician (Mexico)
2004-2006: Hee-Jin Han, philosopher (South Korea)
2006-2007: Wouter Henkelman, archeologist (Netherlands).

PUBLICATIONS – 2005-2006

The Collège de France has a partnership with the Éditions Fayard and the Éditions Odile Jacob for publishing the inaugural lectures of the professors, lectures of certain invited professors and some of the College's colloquiums.

Éditions Fayard

Collection "Leçons inaugurales"

- Pierre-Louis LIONS, *Equations aux dérivées partielles et applications*, mai 2006, n° 173.

- Christian de PORTZAMPARC, *Architecture: figures du monde, figures du temps*, mai 2006, n° 183.

- Maurice BLOCH, *L'anthropologie cognitive à l'épreuve du terrain. L'exemple de la théorie de l'esprit*, mai 2006, n° 184.

- Thomas PAVEL, *Comment écouter la littérature*, mai 2006, n° 185.

- Stanislas DEHAENE, *Psychologie cognitive expérimentale: vers une science de la vie mentale*, octobre 2006, n° 186.

- Jon ELSTER, *Rationalité et sciences sociales*, Fayard, octobre 2006, n° 187.

Others publications

- André TUILIER (dir.), *L'Histoire du Collège de France*, tome 1, Paris, Fayard 2006.

- Yves COPPENS, *Histoire de l'homme et changements climatiques* (leçon de clôture prononcée au Collège de France le 21 juin 2005), Paris, Fayard 2006.

Éditions Odile Jacob

- Edouard BARD, *L'Homme face au climat* (Colloque de rentrée 2004), Paris, Ed. O. Jacob, 2005.

- Haïm BURSTIN, L'*Invention des sans-culotte*, Paris, Ed. O. Jacob, 2005.

- Robert PIPPIN, *Nietsche, moraliste français,* Paris, Ed. O. Jacob, 2005.

- Gérard FUSSMAN, *Croyance, raison et déraison* (Colloque de rentrée 2005), Paris, Ed. O. Jacob, 2006.

Yearbook

- Les cours et travaux du Collège de France. Résumés 2004-05. Annuaire 105e année.

(More informations available on the website of the Collège de France: www.college-de-france.fr)

Collège de France Colloquiums – 2006-2007

Collège de France Autumn Symposium

ARTIFICIAL MAN at the Service of Society

PARIS - 12th-13th October 2006

The Symposium will begin by taking up ancient myths, in which Hephaestus constructed servants' bodies and where perfect slaves were trained. By fashioning their own bodies through physical and intellectual exercise, the aristocrats and Greek education in general aimed to have perfectly fulfilled bodies. In the same vein, constructors and scholars pursued the dream of attaining perfection through techniques: Daedalus made the gods present through animated statues (these automatons were to continue to exist in the temples) and as for Pygmalion, he tried in his own way to create a perfect being. If, today, the synthesis of life remains a major issue in molecular biology, research is being directed towards remedying the imperfections of nature and the attacks to which it is subjected (which is the aim of medicine since the time of Hippocrates), aiding it through an "artificial being" designed and created by man. Artificial man is no longer a myth but an effective means of combating handicap through the restoration of altered or lost functions.

Programme

Thursday, 12th October 2006

- "*On Hephaestus' Golden Servants" the Ancient Myth of Artificial Man*, John Scheid, Professor at the Collège de France, Jesper Svendro, Director of Research at CNRS (National Centre for Scientific Research)

THE FIGHT AGAINST GENETIC HANDICAP

- *Stem Cells and Therapeutic Cloning,* Nicole Le Douarin, Honorary Professor at the Collège de France
- *The Theory of Genes?* Alain Fischer, Professor at the Necker Hospital for Sick Children

THE ANTHROPOLOGY OF ARTIFICIAL MAN

- *Dreams, Ingenuity and Imagination,* Françoise Héritier, Honorary Professor at the Collège de France
- *Automata and Mechanical Men: from Renaissance to the present,* Bruno Jacomy, Chief Curator of the Musée des Confluences in Lyon
- *From Symplectic Biology to Synthetic Biology: Would we know how to build a living organism?* Antoine Danchin, Professor at the Institut Pasteur
- *The Artificial Hand,* Maria Chiara Carrozza, Sant'Anna Institute of Higher Education, Pisa (Italy)
- *The blood: replacing or copying nature?* Luc Douay, Professor at the Hôpital Armand-Trousseau
- *The Artificial Kidney in France,* Pierre Corvol, Professor at the Collège de France
- *The Electronic Doctor,* Patrice Degoulet, Professor at the Hôpital européen Georges-Pompidou

Friday, 13th October 2006

THE ARTIFICIAL BRAIN

- *Mental tools and objects of thought: Mathematics,* Jean-Pierre Kahane, Professor at the Paris-Sud University
- *Is the human brain a Turing machine?* Stanislas Dehaene, Professor at the Collège de France

RESTORING THE SENSORY AND MOTOR FUNCTIONS

- *From artificial captors to auditory perception,* Christine Petit, Professor at the Collège de France
- *Artificial Vision: Between Myth and Reality,* José-Alain Sahel, Professor at the Hôpital des Quinze-Vingts
- *Neuronal Control of Artificial Limbs,* Miguel Nicolelis, Professor at Duke University, Durham, United States

- *Digital Simulation and Medicine,* Pierre-Louis Lions, Professor at the Collège de France
- *Virtual Man,* Alain Berthoz, Professor at the Collège de France

LIVING WITH THE VIRTUAL AND THE ARTIFICIAL

- *Children and Electronic Virtual Reality,* Aldo Naouri, Paediatrician
- *Is there a (non-electronic) "trader" in the room?* Jean-Michel Lasry, Scientific Advisor to the Managing Director of Calyon
- *Living with Handicap and Artificial Limbs,* Anne Fagot-Largeault, Professor at the Collège de France
- *Justice between the Robot and the Reed,* Mireille Delmas-Marty, Professor at the Collège de France
- *Machines and Men,* Erich Spitz, Advisor to the Thales Group
- *The Man of the Future and the Rights of Man,* Jean-Pierre Changeux, Professor at the Collège de France

Collège de France Colloquium Abroad

THE NEW WORLD OF PUBLIC HEALTH AND PREVENTION

BERLIN (Germany) - 10th-12th May 2007

Friday, 11th may 2007

- The Lessons of History
  - The Human Race and its Health: A long history
  - The population, subjected to public action from the XVIIth Century onwards
  - The age of Hygienism, XIXth Century-First Half of the XXth Century
  - The role of Colonial control

- Revolutions and Contemporary Issues: Case History
  - An analysis of the issues and problems of public health based on two issues (AIDS and Obesity), and an investigation of what has changed (the place of patients, the role of the media, innovations in terms of medical techniques, economic understanding, and the formalization of knowledge).

Saturday, 12th may 2007

- Public Health Management Institutions: A Comparative Approach
  - The Different Models – Comparative Report
  - The Debate in the areas of Ethics, Economy, Politics: at the heart of the relationship of the individual to society

- Health, Public Property Worldwide?
  - The facts: Inequalities and Problems
  - The Institutions: WHO and others
  - The ideals to be promoted
  - The management of human public health as lever for a new international order?

AGENDA

COLLÈGE DE FRANCE 1530

Academic Year 2006-2007

New Chairs Created

- Mesoscopic Physics
- Morphogenetic Processes
- Writings and Cultures in Modern Europe
- Technological Innovation - Liliane Bettencourt

New Professors

- Pascal DUSAPIN, holder of the Chair of Artistic Creation 2006-2007
- Guy ORBAN, holder of the European Chair 2006-2007
- Daniele VITALI, holder of the International Chair 2006-2007
- Antoine COMPAGNON, holder of the Chair of Modern and Contemporary French Literature: History, Criticism, Theory

The Inaugural Lectures will take place at 6 pm in the Marguerite de Navarre Lecture Hall.

- 30th November 2006: Antoine COMPAGNON
- 14th December 2006: Daniele VITALI
- 18th January 2007: Holder of the Chair of Technological Innovation - Liliane Bettencourt
- 1st February 2007: Pascal DUSAPIN
- 22nd March 2007: Guy ORBAN

Guest Conference Speakers

- Fabrizio DORICCHI, professor of Neuropsychology, La Sapienza University, Roma (Italy)
- Kathinka EVERS, professor of Bioethics, University of Uppsala (Sweden)
- Michael FRIEDMAN, professor of Philosophy, Stanford University (United States)
- Hartmut KÜHNE, professor, Free University of Berlin (Germany)
- Pierfrancesco CALLIERI, professor, University of Bologna (Italy)
- Anne PORTER, professor, University of Southern California (United States)
- Ahmad BEYDOUN, professor, Lebanese University, Beirut (Lebanon)
- Marc TESSIER-LAVIGNE, professor, Stanford University (United States)
- Michael SHERINGHAM, professor, Oxford University (United Kingdom)
- Ali Hani CHAMSEDDINE, professor of Theoretical Physics, American University of Beirut (Lebanon)
- Jean-Jacques SLOTINE, professor of Robotics, Massachusetts Institute of Technology (United States)
- John ROGISTER, professor of Eighteenth-Century History, University of Durham (United Kingdom)
- François OST, professor of the Theory and Philosophy of Law, University St Louis of Brussels (Belgium)
- Jérémie SZEFTEL, Department of Mathematics, Princeton University (United States)
- Erwan ROUSSEAU, Department of Mathematics, University of Quebec at Montreal (Canada)

WWW.COLLEGE-DE-FRANCE.FR

The Letter of the Collège de France
Directeurs de la publication : Pierre CORVOL, Administrateur du Collège de France et Florence TERRASSE-RIOU, Directrice des Affaires culturelles et des relations extérieures
Direction éditoriale : Marc KIRSCH - Patricia LLEGOU
Conception graphique : Patricia LLEGOU
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ISSN 1628-2329 - Impression : CAPNORD&AUGUSTIN

11 place Marcelin-Berthelot – 75231 Paris cedex 05

Prix : 5 €