



Elizabeth S. Spelke

Elizabeth S. Spelke occupe la Chaire Marshall L. Berkman de Psychologie à l'Université de Harvard. Son laboratoire de recherche est dédié à l'étude des sources des capacités cognitives spécifiquement humaines : les dispositions pour les mathématiques formelles, mais aussi l'aptitude à construire et utiliser des représentations symboliques telles que les cartes topographiques, classer les objets au sein de taxonomies exhaustives, ou encore faire des raisonnements au sujet des autres êtres humains et des groupes sociaux auxquels ils appartiennent. Le Professeur Spelke étudie ces capacités en se penchant sur leurs origines et leur développement chez les nouveaux-nés et les enfants, en envisageant la cognition humaine en relation avec celle des primates, et en comparant les performances d'êtres humains issus de différentes cultures. Ses projets en cours explorent les thèmes suivants chez les nouveaux-nés et les enfants : (1) la reconnaissance des objets, l'extrapolation de leurs mouvements, et leur regroupement sous des catégories fonctionnelles telles que les aliments et les outils ; (2) la reconnaissance des agents humains, les raisonnements relatifs aux actions intentionnelles d'autrui et aux états mentaux afférents, et l'utilisation des autres individus comme sources d'information au sujet des objets ; (3) l'identification des partenaires potentiels pour l'interaction sociale, le partage et la coopération ; (4) le développement de la connaissance des nombres naturels et de l'arithmétique ; et enfin, (5) la représentation de l'espace et le raisonnement géométrique.

### Sélection bibliographique

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# Conférences Jean-Nicod 2009

## Sources of Human Knowledge

Conférence du 9 juin  
*Toward a Cognitive Science of Human Thinking: Why so Slow?*

Since Plato's time, scientists have revolutionized our understanding of physical and biological phenomena, as well as our understanding of human perception and action. In contrast, our understanding of higher human cognition has advanced so little that current investigators can cite ancient sources with a straight face. In this lecture, I consider why the most important aspects of the human mind have been so resistant to scientific analysis, and I describe a strategy for overcoming this resistance. The strategy centers on two proposals. First, human cognition builds on a small set of core knowledge systems: systems that are as amenable to study as our systems for perceiving depth or reaching for objects. Second, new cognitive capacities and systems of knowledge develop through the productive combination of these core systems: a combinatorial process that depends on humans' species-specific faculty for natural language. I illustrate the strategy by describing research on two core systems for representing inanimate, manipulable objects and animate, goal-directed actions. Moreover, I consider one uniquely human capacity that arises when these systems are combined: the capacity to represent artifacts as structured objects with dedicated functions.

Conférence du 10 juin  
*Natural Number*

The system of natural number concepts has two striking characteristics: it is extremely simple, and it is extremely rare in the living world. Although all living creatures must be sensitive to quantity in order to forage, budget their time, and navigate the social world, only humans represent exact cardinal values and both determine and operate on those values through an iterative counting process. Studies of non-human animals, human infants, and human adults in diverse cultures provide evidence that this ability depends on two core systems that humans share with other animals: a system for representing individuals in parallel, and a system for representing approximate numerical magnitudes. These systems are unrelated to one another in animals and infants, but they are productively combined as children learn number words and counting. Studies of adults in remote cultures, and of adults lacking conventional language input, provide evidence that language plays a central role in the construction of natural number concepts. Further studies of children and adults provide evidence that both language and core number systems remain at the foundations of our mature natural number concepts. I consider how natural language might play this integrative role.

Conférence du 16 juin  
*Natural Geometry*

Philosophers from Socrates to Kant have viewed Euclidean geometry as a parade case of an innate system of knowledge. Contrary to this view, studies of animals from ants to humans suggest that biological organisms have multiple systems for representing the shape of the surrounding world, each with a restricted range of application and none with the full power of Euclidean geometry. Humans, however, go beyond the limits of these systems and forge more abstract and general geometric representations. These representations are reflected in our pictures, models, and especially in geometric maps. By using and mastering maps and other spatial symbols, children may construct natural geometry through processes not unlike those that give rise to natural number. But how do children come to understand these symbols? Recent research suggests that map understanding itself depends on the acquisition of language.

Conférence du 17 juin  
*What Makes Humans Smart? Social Cognition, Natural Language, and Human Uniqueness*

Humans are primates, whose perceptual and action systems strikingly resemble those of other animals, but humans alone develop new systems of knowledge that solve problems unlike any faced by our ancestors. What innate differences between humans and other animals account for the flexibility and productivity of human cognition? According to a recent proposal by Tomasello, the primary characteristic that sets humans on a distinctive developmental path is not cognitive but motivational: humans have an innate propensity to share information, tasks, goals, and emotional states. All humans' cognitive accomplishments, including the acquisition of natural language, develop from this propensity. I consider Tomasello's proposal in relation to a rival proposal that inverts it. Like natural number and natural geometry, I suggest, shared intentionality builds on core systems shared by diverse animals: in this case, two distinct systems for representing goal-directed actors and social partners. Uniquely human forms of communication and cooperation arise from our unique capacity to combine these core representations productively. Language, once again, may be the source of this capacity.

## SOURCES DE LA CONNAISSANCE HUMAINE (SOURCES OF HUMAN KNOWLEDGE) ELIZABETH S. SPELKE

Mardi 9 juin de 16h à 18h

**TOWARD A COGNITIVE SCIENCE OF HUMAN THINKING:**

**WHY SO SLOW?**

École Normale Supérieure, Amphithéâtre Jules Ferry  
29, rue d'Ulm, 75005 Paris

Remise du Prix Jean-Nicod et cocktail après la conférence.

Mercredi 10 juin de 14h à 16h

**NATURAL NUMBER**

École Normale Supérieure, Salle des Actes  
45, rue d'Ulm, 75005 Paris

Mardi 16 juin de 14h à 16h

**NATURAL GEOMETRY**

École Normale Supérieure, Salle Paul Lapie  
29, rue d'Ulm, 75005 Paris

Mercredi 17 juin de 14h à 16h

**WHAT MAKES HUMANS SMART? SOCIAL COGNITION,  
NATURAL LANGUAGE, AND HUMAN UNIQUENESS**

École Normale Supérieure, Salle Paul Lapie  
29, rue d'Ulm, 75005 Paris

### RENSEIGNEMENTS

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## philosophie cognitive

Conférences Jean-Nicod de

L'esprit humain, son organisation, sa nature, ses relations avec le corps et avec le monde sont depuis toujours parmi les thèmes centraux de la philosophie. La psychologie contemporaine elle-même a pris naissance au sein de la philosophie. Elle s'est émancipée, mais l'émergence des sciences cognitives consacre d'une certaine façon le retour de la philosophie dans ce champ de recherche. Les développements de l'informatique et des neurosciences, en jetant une nouvelle lumière sur les phénomènes mentaux, ont eu pour effet de relancer le débat philosophique. La « philosophie de l'esprit » est ainsi plus florissante que jamais. Ce retour n'a rien d'une régression, car la philosophie dont il est question est en phase avec la recherche scientifique, informée par elle et en constante interaction avec elle.

Les Conférences Jean-Nicod visent à promouvoir les recherches philosophiques se rapportant à la cognition et à faire connaître en France les travaux réalisés à l'étranger dans ce domaine. Le conférencier, sélectionné par le comité Jean-Nicod, présente ses recherches au cours d'un cycle de conférences qu'il rassemble ensuite en un livre.

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### COLLECTION JEAN-NICOD

(MIT Press et CNRS Editions)

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philosophie  
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SOURCES OF HUMAN KNOWLEDGE

