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Prizes**



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## **2016 C.L. de Carvalho-Heineken Prize for Cognitive Sciences, awarded to Elizabeth Spelke**

*Presentation speech by Peter Hagoort, Chairperson of the 2016 C.L. de Carvalho-Heineken Prize for Cognitive Sciences Jury*

Ladies and gentlemen,

Understanding the development of the human brain, the most complex organ in the universe, is one of the greatest challenges for science today.

After a child is born, its brain sets off for a life full of learning; learning that enables it to adapt to an utterly complex and ever-changing world.

How was that baby brain prepared for its journey?

When and how does it begin to interact with the world?

It is questions like these that Elisabeth Spelke found many new and surprising answers to.

Ladies and gentlemen,

We cannot ask a baby what it knows or how it is learning.

So early in her career, Spelke pioneered in making creative use of methods that had been used to answer much simpler questions before.

She found that we really can learn a lot from what babies will look at and how long they focus their attention.

How do babies differentiate social beings like parents from toys and teddy bears?

How soon do they have any notion of numbers and quantities?

And when and how does it begin to understand things like space and time?

What Spelke discovered broke new ground.

It changed our views of brain development in early infancy.

It showed babies to have unsuspected capabilities very early on.

Spelke introduced the concept of 'core knowledge': universal knowledge that any baby is born with.

Core knowledge helps it explore its surroundings and learn about objects, basic mathematics and other human beings.

Spelke showed, for example, that a 4-month-old baby already understands that objects are still there even when they are partly obscured.

She showed that 6-month-old babies can distinguish 'large' from 'small' and 'many' from 'few'.

She found evidence that babies track their geographical location in much the same way as laboratory rats do.

And she learned which cues babies use to decide which other social beings they want to be friendly to.

One day such work may tell us about biological origins of war, conflict and discrimination.

Taken together, the work of Elisabeth Spelke suggests that humans are born with brain modules very similar to those of other mammals.

What sets us apart, is the development of language.

Language enables us, humans, to combine the core modules, where in other species they remain apart.

That is a groundbreaking and powerful theory.

It lets us understand why human brains look so much like those of our evolutionary ancestors but can learn so much more nevertheless.

Ladies and gentlemen,

The jury sees Elisabeth Spelke as one of the most innovative and impactful cognitive scientists of this day;

Her experiments and concepts have cut across many disciplines and have revolutionized what we know about the origins of the human mind;

Her work has greatly advanced our insight into what children know, what they must learn, and when and how they will learn it.

So please join us in congratulating Elisabeth Spelke, winner of the 2016 Heineken Prize for Cognitive Sciences!