Do you see what I'm thinking about? How adults' eye-movements are influenced by representations of mental states.

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Description of the research project and deliverables of the meeting

Following recent eye-tracking research on perspective-taking and false-belief reasoning in adults (Keysar, Lin & Barr, 2003; Ferguson, Scheepers & Sanford, 2010; Rubio-Fernandez & Glucksberg, *under review*), we propose to investigate the processes and representations that underlie eye-movements in Theory of Mind tasks. Focusing on those patterns of eye-movements that have been interpreted as evidence of an 'egocentric bias' in adult false-belief reasoning, our primary aim is to test hypotheses about which representations control eye-movements during comprehension of narratives involving false beliefs. Our collaborative research should thereby contribute to controversies concerning the nature and development of Theory of Mind cognition.

As planned, in this meeting we took the opportunity to discuss the results of an eye-tracking experiment that I had run in Princeton a few months before. This was a false-belief task for adults that tried to separate object location from action anticipation. In previous eye-tracking studies we had observed that when adult participants are asked to predict where Sally will look for her doll, they often first fixate on the box that contains the toy. The question we tried to investigate in our follow-up study was whether those 'egocentric' eye movements were driven by a low-level object bias, or whether participants were making the wrong prediction about the protagonist's behavior.

In the new version of the task, participants could see two doors and two containers in the four corners of the screen. While we replicated the original findings, with more than half the participants first fixating on the egocentric side of the screen (the one where the participants knew the object was), their first fixations were almost perfectly split between the door (action prediction) and the box (object location) on that side of the screen.

When I ran this experiment in Princeton, I had tested a total of 42 participants, half in a condition that included a central fixation point before the false-belief question and another one without a fixation point. Unfortunately, having a fixation point made no difference, and participants' first fixations on the egocentric locations where split between the action and object targets in both experimental conditions.

During our meeting we discussed at length the data and looked at the various analyses that I had done previous to my visit. Unfortunately, none of the results revealed significant results and so we decided to put the study 'in the drawer', as it unfortunately happens, sometimes.

We also took the opportunity to discuss a new study in which we want to investigate whether spatial indexing occurs in ordinary conversation. We designed a task in which participants watch a video in which three characters interact. At some point in the conversation, one of the characters makes reference to three places (corresponding with three job offers that he has received) and points at the three glasses on the table as he names them (e.g., 'I have to choose between Warwick, UCL and Amsterdam'). The first point of this study is to see whether participants' eye movements reveal spatial indexing when they have to respond to various follow-up questions (e.g., whether they fixate on the 'Amsterdam glass' when they have to respond 'Amsterdam'). The second aim of the study is to see whether visual perspective taking interacts with spatial indexing. For example, if one of the characters couldn't see one of the glasses on the table (because her view was occluded by a menu card, for example), would this have an effect on participants' eye movements when responding to questions from that character's perspective?

Even though Steve Butterfill will be in Budapest until early next year, we have agreed that Daniel Richardson and I will meet in London this term to set up and pilot this new task in Daniel's lab.

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EDUCATION AND RESEARCH

Post-Doctoral Research Project
University College London / Princeton University (2005 – 2010)
Inferential processes in language interpretation.

Ph.D.
University of Cambridge (2001– 2005)
Pragmatic processes and cognitive mechanisms in lexical interpretation.
Ph.D. Thesis approved *without corrections*

M.Phil. in English and Applied Linguistics
University of Cambridge (2000 – 2001)
Distinction with Honours

Research Stay
University College London (2000)

M.A. in Theoretical Linguistics
University of Reading (1998 – 1999)
Distinction with Merit

Certificate in English Studies
Coventry University (1996 – 1997)
Erasmus Programme

First Degree in Spanish Language and Literature
Universidad de Oviedo, Spain (1994 – 1999)

RECENT AWARDS

Economic and Social Research Council (ESRC) International Training and Networking
Opportunities for Early-Career Researchers (2010-2012)

Marie Curie Outgoing International Fellowship (2006-2010)

British Academy Post-Doctoral Fellowship (2005-2008)

INVITED TALKS AND CONFERENCE PRESENTATIONS SINCE 2004

June 2009. ''A third theory of pretense', invited talk given at the workshop on *Metarepresentation and Non-Literal Language Use*, CSMN, Oslo.

July 2008. 'Eye-tracking the classic Sally-Ann task: An investigation of on-line adult Theory of Mind', poster presented at the *XXIX International Congress of Psychology*, Berlin.

May 2008. 'What can Sally and Ann tell us about adult theory of mind?' poster presented at the *20th Annual Convention of the Association for Psychological Science*, Chicago (USA).

May 2008. 'Does communication depend on our ability to take the speaker's perspective?' paper presented at a meeting of the RoLaP group (*Research on Language at Princeton*).

April 2008. 'What can Sally and Ann tell us about adult theory of mind?' poster presented at the *Workshop on Pragmatics and Social Cognition*, UCL (London).

April 2008. 'How egocentric are we? Or rather, how good are we at taking other people's perspectives?' paper presented at the *2008 British Academy Post-Doctoral Symposium*, London.

Aug 2007. 'Do ducks lay eggs? How people interpret generic assertions', paper presented in collaboration with Sangeet Khemlani, Sarah-Jane Leslie and Sam Glucksberg at the *2007 Meeting of the Cognitive Science Society* (CogSci07), Nashville (USA).

April 2007. 'Associative and inferential processes in lexical interpretation', paper presented at the *Cognitive Research Seminar* of the Psychology Department, Princeton University (USA).

RECENT PUBLICATIONS

Under review (with Sam Glucksberg). Reasoning about other people's beliefs: Bilinguals have an advantage. *Journal of Experimental Psychology: Learning, Memory and Cognition.*

Under review. 'On the Intentional theory of early pretense: Object substitution and sound effects'. *Language and Cognition.*

Under review. 'Associative and inferential processes in lexical interpretation: One or two pragmatic systems?' *Language and Cognitive Processes*.

2008. 'On the automaticity of egocentricity: A review of the Egocentric Anchoring and Adjustment model of perspective taking'. *UCL Working Papers in Linguistics* 20, 247-274.

2008. 'Concept narrowing: The role of context-independent information in concepts'. *Journal of Semantics* 25(4):381-409.

2007 (with Sangeet Khemlani, Sarah-Jane Leslie and Sam Glucksberg). 'Do ducks lay eggs? How people interpret generic assertions'. *Proceedings of the 2007 Meeting of the Cognitive Science Society* (CogSci07).

2007. 'Suppression in metaphor interpretation: Differences between meaning selection and meaning construction'. *Journal of Semantics*, 24 (4), 345-371.

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