

# Distributed Decisions: New Insights from Radio-tagged Ants



## ELVA ROBINSON

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4pm Wednesday 30<sup>th</sup>  
January

Ben Pimlott Lecture  
Theatre, Ben Pimlott  
Building, Goldsmiths  
College, New Cross,  
London.

All Welcome

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**Ant colonies are model systems for the study of self-organisation and viewing ants as identical agents following simple rules has led to many insights into the emergence of complex behaviours.** However, real biological ants are far from identical in behaviour. New advances in radio-frequency identification (RFID) technology now allow the exploration of ant behaviour at the individual level, providing unprecedented insights into distributed decision-making. The use of RFID tags on worker ants allows simultaneous monitoring of a range of factors which could affect decision-making, including age, experience, spatial

location, social interactions and fat reserves. My results demonstrate that individual ants base some task decisions on their own physiological state, but also utilise social cues. For non-specialist tasks, self-organisation also contributes, as movement patterns can cause emergent task allocation. The combination of these simple mechanisms provides the colony as a whole with a responsive work-force, appropriately allocated across tasks, but flexible in response to changing environmental conditions.

*Dr. Elva Robinson studies the organisation of social insect societies, combining empirical and modelling work to identify the simple rules*

*followed by individual members of a colony, and to determine how they interact to produce adaptive group-level behaviours. Key research areas include: The organisation of a flexible foraging strategy; Division of labour and flexible task allocation; Collective decisions and pattern formation via self-organised processes. Elva began working in this area with a PhD at the University of Sheffield. After post-doctoral work at the University of Bristol, she moved to the University of York on a Royal Society Dorothy Hodgkin Fellowship. She is currently based between the York Centre for Complex Systems Analysis and the Department of Biology, where she holds a proleptic lectureship appointment.*