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# THE NAPOLI SOCIAL LEARNING CONFERENCE

*June 30 - July 5, 1998, Naples, ITALY*

## INTRODUCTION

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In 1898, exactly 100 years prior to the Napoli Social Learning Conference, Edward Thorndike published the first experiments investigating whether nonhuman animals are capable of learning by imitation. The results of these experiments, using cats, dogs and chickens as subjects and apparatus of Thorndike's own, somewhat ramshackle construction, housed in Thorndike's own living quarters (Boakes 1984), led him to a strong negative conclusion that was to have a profound effect on the future of comparative psychology. Thorndike inferred from his data that animals, with the possible exception of primates, could not "from an act witnessed, learn to do the act" (Thorndike 1898).

In striking contrast with this image of the young Thorndike as a struggling, isolated, sceptical scholar, the Napoli conference confirmed that, a century later, social learning is a thriving, progressive, international field of enquiry. In the course of five days, researchers from 13 countries, and at least five disciplines (comparative psychology, behavioural ecology, neurobiology, ethology, primatology) gave talks and presented posters indicating that, after a long gestation period, research on social learning has become not only methodologically sophisticated, but also theoretically integrated with a

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number of domains of enquiry concerned with the evolution of both mind and behaviour. The field is formulating important questions, many quite distinct from Thorndike's preoccupations, and arriving at answers that are both clear and of interest to researchers and scholars working in a variety of disciplines.

Two Thorndikean legacies conspicuously apparent at the meeting were the predominance of experimental and comparative methodologies. Indeed, the official title of the conference, "Social learning and cultural transmission: from invertebrates to great apes and humans. Towards a biological synthesis", emphasised its comparative focus. The proceedings included studies from every major class of vertebrates as well as several invertebrate classes. Such comparative emphasis is historically appropriate, as it was Romanes, another turn of the century scholar interested in social learning, who coined the term 'comparative psychology'.

Printed on the following pages are the abstracts of each oral presentation at the Napoli Social Learning Conference. The abstracts appear under four headings: Cognitive mechanisms of social learning; Functional interplay between individual and social learning; Communication; and Roles of social learning in behavioural adaptation.

The papers on cognitive mechanisms, including studies of chimpanzees, rats, marmosets, starlings, capuchins and pigeons, reflected the growing consensus that "two-action" tests are the most effective means of demonstrating and analysing imitation learning in nonhuman animals. At their strongest, these procedures control for non-imitative varieties of social learning (e.g. stimulus/local enhancement, social facilitation, emulation, observational conditioning) by contrasting the performance of 'observers' that have seen single objects manipulated by a 'demonstrator' (conspecific or human) using different appendages and/or response topographies. Work with this method has indicated that a range of species can imitate.

Current research investigates the degree to which imitative performance reflects cognitive complexity by examining whether animals can acquire by observation information about 'novel' behaviour, and the serial order of actions (Heyes, Huber, Whiten, Zentall). Other contributors in this section argued compellingly that the distinction between individual and social learning has been over-emphasised (Visalberghi, Frigaszy & Galloway), and that associative learning theory has substantial heuristic potential in the investigation of both psychological and neurobiological mechanisms of social learning (Fragaszy, Ray & Heyes).

Consistent with the idea that common mechanisms underlie individual and social learning, papers in the second section reported evidence of social learning in every invertebrate class (Fiorito & Webster; Traniello) and data showing that capacities for individual and social learning are highly correlated within and across a range of bird species (Lefebvre). However, the papers in this section were primarily concerned, not with mechanism, but with the functional interplay between individual and social learning and the ecological variables favouring each. Giraldeau proposes a general framework for research in this area, incorporating a taxonomy of levels of social learning, experimental methods and mathematical modelling techniques. Other contributors, using such modelling techniques (Best) combined with experiments on replicate populations of guppies (Laland, Reader & Laland), provided evidence that the benefits of social learning depend on reproductive strategies, the individual's potential to innovate, and, more generally, the degree to which a species' adaptive landscape permits 'deviation' from the socially-transmitted norm.

Oral presentations concerning communication were as varied as is the topic itself. Both Freeberg, King and West and Gajdon and Stauffacher focussed on the role of social interaction between naive and knowledgeable animals in determining what is communicated. While Gajdon emphasised the importance of understanding the behaviour of the tutor and possible insights that study of 'coaching' might play in understanding animal imitation, Freeberg focussed on the necessity of examining the structure of social interactions to determine where, when and how social learning occurs. Gardner described parallels in the spontaneous acquisition of models' behaviour by infant humans and chimpanzees, while Schuster described studies of cooperative behaviour in animals and their potential contribution to the field. Last, but certainly not least, Susswein reviewed an elegant series of studies of the effect of chemicals released by conspecifics on feeding behaviour and learning and memory processes in *Aplysia*.

Papers on the functional significance of social learning were equally varied. Ribes-Inesta introduced a Wittgensteinian conceptualisation of cultural learning in humans. The role of social learning in feeding and nest material choice by rabbits (Altbacker & Bilko), in choice of a sexual partner by Japanese quail (Galef & White), and selection of medicinally active plants by African great apes responding to illness (Huffman) each received attention. Perhaps most striking was Huffman's report of painstakingly collected field data indicating local and regional traditions in chimpanzees in the plants

they select for ingestion when ill.

The Napoli Social Learning Conference was sponsored by the Stazione Zoological 'A. Dohrn' di Napoli, Istituto Italiano Studi Filosofici, Association for the Study of Animal Behaviour, CNR, and Eppendorf s.r.l. (Milano). All those who attended are grateful to Graziano Fiorito and his organising committee: Louis Lefebvre; PierGiorgio Montarolo; Emanuela Prato-Previde; Paola Valsecchi; Elisabetta Visalberghi; and Andrew Whiten.

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