Experiments in Empirical Methodology

Co-Investigators
Professor Tom Ormerod and Dr. Linden Ball from the Lancaster-Warwick-Sterling node collaborated with Dr. Nicholas Bardsley from the Hub. The Lancaster university team provided input to the theory backing the designs, drawing on economic-psychology models of decision making, in particular 'Third Generation Prospect Theory' which is tested in Experiment 1. In addition Professor Charlie Lewis at the Lancaster-Warwick-Sterling node provided advice on the data analysis for the experiments. Dr. Bardsley conducted most of the experimental design whilst the experiments were operationalised and carried out at Lancaster with the help of a Research Assistant. Dr. Bardsley provided the methodological focus for the project drawing on work in his forthcoming volume on this topic.

Summary of Activities
Two novel experiments were conducted within this project, covering Preference Reversals, Allais Paradox tasks and Dictator Games. In each case the aim was to see whether classic results from designs run in classical experimental economics mode generalise to more realistic (but still incentivised) tasks with more psychological content. In classical mode, experiments are run in a socially-sterile environment with transparent and full information about payoffs and probabilities. The Preference Reversals design introduced tasks *without* clear information about either the probabilities or consequences in the gambles. It also introduced a test of a new interdisciplinary model of decision-making known as *Third Generation Prospect Theory*, which incorporates insights from psychology into a rationalistic economic model. The data analysis for Experiment 1 also goes beyond what is normal in this literature. We apply McNemar's test of marginal homogeneity to the experimental data to distinguish (as the literature generally does not) between purely stochastic preference reversals and systematic asymmetry between choice and valuation data. The Allais Paradox tasks introduced simulated outcomes of a lottery to convey the probability and payoff information, and the Dictator Game tasks introduced social information about others' behaviour. This is to test whether Dictator Game giving is really unconditional or if social learning makes a difference, as evolutionary game theorists have claimed. Experimental sessions took place at Lancaster University's Department of Psychology.

The experimental procedures are summarised below:
Pilot: 26 subjects. The pilot was used to try to optimise parameters for the experiments proper.

Experiment 1: Preference Reversals with vague gambles.
104 subjects in two treatments.

Experiment 2: Allais Paradox (AP) tasks and Dictator Games (DG) tasks.
200 subjects in two treatments per task set (AP and DG tasks).

Outputs
A working paper has been prepared for Experiment 1 which will be made available on the NCRM website, entitled "Preference Reversals: Alive and Well Despite Radically Uncertain Prospects". The experiment finds some evidence that transparency enhances the incidence of preference reversals, though vague lotteries *do still produce* the preference reversal phenomenon. So preference reversal is not an artefact of unrealistically transparent decision problems, though it may be accentuated by them. The paper also tested 'third generation prospect theory' but did not find (contrary to the

theory) that holding the reference point constant between choice and valuation tasks reduced the incidence of preference reversal. The evidence collected therefore contributes to the ongoing controversy over whether a more psychologically sophisticated decision theory or brute psychological processes explain the phenomenon, on the side of the latter. A second working paper will be prepared for Experiment 2 as soon as the data have been entered and analysed and made available on the NCRM website.