

# INTERVIEW WITH CHARLES PLOTT ABOUT EXPERIMENTAL ECONOMICS



Vivienne Groves and Charles Plott

## VIVIENNE GROVES

Charles Plott is Edward S. Harkness Professor of Economics and Political Science at the California Institute of Technology. He is a frequent visitor to Melbourne University. Vivienne Groves, an honours student in economics, interviewed him during his most recent visit in April. This is an edited version of the interview.

### You are one of the founders of experimental economics. How did you first come to conduct experiments in economics?

Vernon Smith [who won a Nobel prize in 2002 for his work in experimental economics] and I used to fish together. As we fished, he used to talk about the experiments he did, drawing pictures in the sand on the beach. He was no longer doing experimental research but remained puzzled about some of the things he had seen.

As I reflected on the conversations, I concluded that his interpretation of what he had done earlier was quite foolish. I thought I could design an experiment to show that the principles that he thought were working, really weren't working, and that what he had observed at work was something very different. So, with a student I conducted what I thought to be appropriately designed experiments and discovered that Vernon was absolutely right. For me that discovery was amazing because it was the first time that data like this had changed my mind so dramatically. It was very profound. Not long after that I realized that I could take what he had done earlier, and generalise it in rather dramatic ways and use it to conduct experiments in areas in which no one had ever tried and for which only theory existed – political processes and public choice processes for instance. Because political processes are very sensitive to the institutional structure, and the theory is very complex, almost no one believed it. I didn't believe the theory either, even though I was one of the inventors! The experiments were an attempt to begin exploring it and in this case the theory turned out to be substantially correct. The skeptics were wrong and a new methodology for using experiments was born.

### What insight can experimental economics give us that cannot be obtained from theoretical economics or econometrics alone?

Econometrics is very useful because it's very easy to fool yourself about data. You must have a formal way of making sure that someone else sees the same thing in the data that you see. Teasing apart competing theories that are intertwined with randomness is tricky business. That is exactly what econometrics does. It is crucial. But it doesn't solve the problem. There is no such thing as understanding a complex world without theory. Historical facts of an event that took place at a particular place and circumstance – just the data – are not that useful in the absence of an understanding of why events took place. That understanding is theory and we want theories that are robust, that tell us about wide ranging phenomena. When we study experiments, we are seeking theories that can be moved from the very special circumstances of an experiment to places that are more complex. We create experiments that do not mirror the world around us because it is too complex. That is, the activity around us is typically consistent with many theories some of which contradict each other. Instead, we design very simple experiments that allow us to see the theory clearly, separating the accurate from the inaccurate, and then the question is: does that theory that we have seen clearly in a simple case actually help us understand a more complex case?

### Economics is often criticised as being too abstract and being based on assumptions that are unrealistic. Is there truth in this criticism? Would you say that experimental economics is more directly applicable to the real world?

I think that this question reflects a misunderstanding about how one understands the world. If an explanation is not abstract, you are not going to be able to understand it. Abstractness really means that it applies broadly, is precisely stated and simple and that is what we're trying to find. Simplicity and abstractness help us cut through the complexity of everyday life. It is only when you can see the essence of something



that you really begin to understand it in a useful way, and seeing the essence of something is an abstraction. So the nature of this criticism, for me, reveals a fundamental misunderstanding about how it is you learn about the real world. We are all interested in the real world. Experiments are part of the real world. The subjects in this lab in the room next to us are real people, earning real money, in real circumstances. The only question is, whether the principle that evolves from the data produced here, is it robust – does it apply broadly? When I take myself out of this lab and into a more complex place, do the things I see being developed in the lab help me understand what I see in the more complex world. Is there truth in the criticism that economics is too abstract? I don't think it's a criticism. I think it's a compliment - an indicator of the type of success science attempts to achieve!

### Your many years of research in theoretical and experimental auction theory lead you to design the Intellimarket™ online exchange system. How is this being used to help shape government policy and business decision-making?

We were among the first to actually do experiments with what we call combinatorial auctions. That concept has grown – we use this idea in housing markets and we've used it inside Ford for selling fleets of cars. We used it for the aquaculture auction here in Victoria. Right now, we are trying to shape economic development that otherwise tends to destroy the environment and the task would be

impossible to do using ordinary market institutions. What experimental economics has taught us is that the way in which markets work is very sensitive to the way that markets are organized. It's easy to demonstrate that you can produce disastrous consequences by simply imposing institutions that might have been successful in other circumstances. The solutions must fit the problem. Often solutions require new forms of institutions and if the institutions have never existed before, we have no experience with them. In the case at hand, theory and previous experiments tell us that they might be successful, but we really don't know until we start testing them in simple cases. As the new institutions become tested in simple cases, the test experiments can grow and grow in complexity and before long the experiment becomes the real thing. It just grows in complexity – new people, new problems and new features of the institutions.

### What research are you working on during your stay at Melbourne University?

At Melbourne University we are primarily working on environmental problems but applied motivations inevitably lead to basic research questions as well. The feeling is that the Kyoto climate convention is part of a signal that we are going to see a major revolution in the way we live. If that is so, this particular revolution isn't so good. It's also unavoidable. People who get in early, who work out how to roll with the punches and who prepare themselves with the infrastructure, are going to be better off. Victoria is leading the way. It's those types of challenges that I find quite exciting, and working with people who can actually implement proposed solutions to them makes it very exciting.

### What do you enjoy doing in your spare time while in Melbourne?

We have explored much of rural Victoria, which is beautiful. There are many places to go that we haven't been to so we are still exploring. Also, the wine is outstanding!