

# 49<sup>th</sup> Gregynog Statistical Conference Programme

*The talks will take place in Seminar Room 1 (2<sup>nd</sup> Floor, far end).*

<b>Friday</b> <b>12<sup>th</sup> April</b>	16.00	<i>Tea</i>	
	17.15	Prof Simon French	Warwick
		<i>Cynefin, Modelling and Statistics</i>	
		Session 1: The Context of Statistical Inference	
	19.00	<i>Dinner</i>	
	20.15	<i>Workshop – group discussions</i>	
<b>Saturday</b> <b>13<sup>th</sup> April</b>	08.00	<i>Breakfast</i>	
	09.30	Prof Simon French	Warwick
		<i>Cynefin, Modelling and Statistics</i>	
		Session 2: Exploratory Data Analysis and Problem Formulation	
	11.00	<i>Coffee</i>	
	11.30	Prof Alan Hawkes	Swansea
		<i>Hawkes Processes, Finance and Crime</i>	
	13.00	<i>Lunch</i>	
		<i>Afternoon free</i>	
	16.00	<i>Tea</i>	
	17.30	Dr Sofia Massa	Oxford
		<i>Graphical models: an overview and some interesting applications</i>	
	19.00	<i>Dinner</i>	
	20.15	Dr Eilir Jones	Head of Audiences, BBC Wales
		<i>What were you watching last night? How media audiences are estimated.</i>	
<b>Sunday</b> <b>14<sup>th</sup> April</b>	08.00	<i>Breakfast</i>	
	9.15	Prof Tony O’Hagan	Sheffield
		<i>Prior distributions and posterior inference when the model is wrong</i>	
	10.45	<i>Coffee</i>	
	11.15	Prof Simon French	Warwick
	<i>Cynefin, Modelling and Statistics</i>		
	Session 3: Small worlds, States of nature and Scenarios		
	12.30	<i>Lunch and finish</i>	

## **Speakers**

Prof Simon French  
Prof Tony O'Hagan  
Dr Sofia Massa  
Dr Eilir Jones  
Prof Alan Hawkes

Warwick  
Sheffield  
Oxford  
Head of Audiences, BBC Wales  
Swansea

## **Staff**

### **Aberystwyth**

John Lane  
Alan Jones  
Diane Jones

### **Bangor**

Chris Whitaker  
Yvonne Sylvestre  
Yongzhong Sun  
Lu Zou

### **Open University**

Paul Garthwaite

### **Southampton**

Russell Cheng

### **Swansea**

Alan Mayer  
Jing Chen  
Alan Watkins

### **Warwick**

Jane Hutton  
John Copas  
Tony Lawrance  
Ashley Ford  
Anjali Mazumder  
John Fenlon

Apostolos Gkatzionis  
Catalina Vallejos  
Dejan Siraj  
Dialid Santiago  
Javier Rubio  
Helen Ogden  
Homesh Sayal  
Lorna Barclay  
Matija Vidmar  
Murray Pollock  
Nathaniel Shiers

## **Students**

Maldwyn Francis  
Martin Hathaway  
Cerys Rand  
Lee Garratt

Stephanie Hawkes  
Amy Hodgkins  
Kirsten Williams

Du Shijia

Panayiota Touloupou  
Silvia Calderazzo  
Thomas Honnor  
Kirsty Hey  
Amogh Deshpande  
Boryana Kolkovska  
Pantelis Samartsidis  
Kasia Wolny  
Axel Finke  
Simone Tiberi

# Gregynog Statistical Conference

12<sup>th</sup> – 14<sup>th</sup> April 2013

## Abstracts

Prof Simon French

Warwick

*Cynefin, Modelling and Statistics*

### **Session 1: The Context of Statistical Inference**

Cynefin is a framework for thinking about statistical inference, risk and decision analysis, and related topics. The talk will also connect statistical methods and knowledge management.

### **Session 2: Exploratory Data Analysis and Problem Formulation**

This talk will discuss method of exploratory data analysis and 'soft' operational research. It will have a practical focus discussing methods that help the analyst move from a mess of issues through to a model or family of models that may be analysed and thus inform the analyst's client.

### **Session 3: Small worlds, states of nature and Scenarios**

Savage wrote a lot about 'small worlds' and statistics. In this somewhat speculative discussion, I will explore how his thinking on small worlds and states therein relates to current developments in scenario thinking in decision analysis. The discussion will reflect on different forms of uncertainty and how these are addressed in an analysis.

Dr Eilir Jones

Head of Audiences, BBC Wales

*What were you watching last night? How media audiences are estimated*

The media industry needs accurate measurement of TV and radio consumption in order to ensure that the public are served with programmes that they want to watch and hear, as well as providing ratings on which millions of pounds of advertising airtime are traded each day.

Obtaining good estimates pose a range of competing methodological challenges, with seemingly reasonable expectations often in conflict with each other. The result is a set of measurement systems that are among the most complex in survey research but which yield reported consumption levels that are widely accepted and used, if not always understood.

Some of the practical and methodological challenges in media audience measurement will be illustrated, from the initial sampling through to the final weighting and reporting.

Prof Tony O'Hagan

Sheffield

*Prior distributions and posterior inference when the model is wrong*

All inferences are conditional on the assumed model, but it is often said that all models are wrong. So what use is an inference that is conditional on an assumption that we know to be false? If I said to you, "Assuming that the moon is made of cheese, there is a 0.6 probability that the Democrats will win the next US presidential election", have I told you anything useful at all?

What does a parameter mean in a model that we know to be wrong? Suppose that I assume a linear regression model, with no particular physical reason for the relationship being exactly linear. Then I know that it will not be exactly linear; the true relationship will be something else. So what is the definition of the slope parameter in this model? Parameters have meaning conditional on the model being true, but what help is that meaning when it is conditional on an assumption that we know to be false?

And if the parameter has no meaning except in a fictional sense, what use are inferences about that parameter? And how can I specify prior information about a parameter that has no meaning in the real world?

One answer is to use nonparametric models which make no assumptions that we know will be false with probability one. But parametric models are often used with the intention to learn about parameters. If a relationship is nearly linear then doesn't the slope parameter say something?

I will discuss these questions using the notion of model discrepancy - defined as the difference between the assumed model and reality. In particular, I will ask whether, by expressing prior information about model discrepancy, we can recover something meaningful.