Current Issues in Measurement – Programme and Abstracts

21st July 2025

The aim of the workshop is to explore contemporary issues in measurement—its conceptual foundations, its role in and reliance on theory, and the philosophical issues it raises. With this broad scope we hope to bring together different people working on measurement who are based in England and encourage more collaboration between them. In this sense, topics of interest include (but are not limited to) measurement in quantum mechanics, pragmatist and perspectival approaches to measurement, or the practical design of measurement instruments.

Arrival: 10 – 10.15am

10.15 – 10.30am – Brief Introduction

10.30 - 11.35am - Ruediger Schack - TBC

11.40 – 12.45am - Chris Timpson – Metrology and Metaphysical Realism

12.45 – 1.45pm - Lunch

1.45 – 2.50pm - Hasok Chang: Measurement as Action: A Pragmatist View

2.50 – 3.15pm - Break

3.15 – 4.20pm - Alistair Isaac: Measurement between Legitimacy and Success

4.25 – 5.35 - Nancy Cartwright: In Defence of Ambiguity

Abstracts:

Ruediger Schack: TBC

Chris Timpson: Metrology and Metaphysical Realism

‘Third-Person Perspective’, ‘God’s Eye View’, ‘View from Nowhere’, ‘One True Theory’. These are phrases which articulate a metaphysical vision many find rebarbative. A more formal name for the vision is Metaphysical Realism. There are reasons to doubt some aspects of the Metaphysical Realist picture. But these reasons do not extend to a suitably sensitive, or sensible, scientific realism. I shall suggest that ‘Third-Person Perspective’ and ‘View from Nowhere’ can be resuscitated; ‘God’s Eye View’ and ‘One True Theory’ remain more problematic. I shall explore how the metrological idea of ‘Non-contextual True Values’ fits into this discussion, and sketch cases in which Non-Contextual True Values would be natural in a sensible scientific reason, and cases in which they would not.

Hasok Chang: Measurement as Action: A Pragmatist View

What can we say about measurement from a pragmatist point of view? Following Bridgman’s general advice, we should analyze measurement in terms of doings, not just in terms of objects or propositions. Actions do not appear in most traditional philosophical frameworks for the analysis and evaluation of measurements: the representational theory of measurement, the classification of scale-types, errors and their probabilities, model-based inference, comparability, validity, etc. I propose to re-think measurements as epistemic activities, as conceived in my recent work *Realism for Realistic People* (2022). This pragmatist perspective immediately highlights the question of operational coherence, defined with respect to specific aims. Why do we measure something, and what does it mean to do it well? There are two kinds of operational coherence to consider. (1) Is the measurement-

activity under consideration operationally coherent within itself? This depends on what kind of quantity we want to produce as a measurement outcome, and whether the material and conceptual means that we employ and the circumstances in which we employ them are suitable for producing the desired kind of outcome. (2) In what kind of coherent activities can we use the measurement outcome in question? Could the aims of these activities be served without any measurements? Are there any generic virtues of measurement outcomes to be recommended because they can serve a broad range of activities?

Alistair Isaacs: Measurement between Legitimacy and Success

In previous work, I have defended two different norms for evaluating the epistemic status of a putative measurement. A measurement procedure and the outcomes it produces are "legitimate" when qualitative characteristics needed to prove a representation theorem into a ratio or interval scale are both (i) contingent and (ii) invariant over manipulations to conventional features of the procedure. A set of measurement procedures that target the same quantity and which converge on a value for that quantity at increasing levels of precision over time are "successful." These norms are meant to do different work. "Legitimacy" is meant as a criterion for assessing whether quantitative representations of a target are scientifically permissible, an issue hotly debated in the human sciences. "Success" is meant to serve as a criterion in realism debates, where successfully measured values have some claim to represent facts about the world that obtain independent of human interests or theory.

What is the significance of measurements that are legitimate, but not successful? For instance, if there is a measurement procedure that delivers stable outcomes, invariant with respect to quantitative character, yet for which there are no alternative procedures which converge on the same outcomes. Plausibly this is a widespread phenomenon across the human sciences. Measures of intelligence, well-being, personality, human development, freedom, economic growth, etc. are often tied to particular testing procedures. I survey a range of responses to legitimate but unsuccessful measures, from skeptical to optimistic, and suggest criteria for assessing their instrumental value.

Nancy Cartwright: In Defence of Ambiguity

Essential to the design and validation of any scientific measure is a good argument that the measure is up to the job – that it yields the right values for the quantity that it is supposed to be a measure for. It is difficult to see how you could provide such a defence without as a very first step providing a clear characterisation of the concept that is to be measured. Here already we confront a problem. Many of the concepts we want to measure in both the natural and the human sciences, from hardness in materials science to poverty in development economics, are vague, abstract, equivocal or open-ended: what they amount to is different in different contexts or for different purposes, without clear rules that dictate their application. A natural response is to ban such concepts from science – either remove them altogether or precissify them: science after all should be exact. This is just what Ian Hacking has urged for the scientific evaluative concept objective. Here I shall argue just the reverse. One reason on offer for retaining open-ended concepts contra Hacking-style injunctions is that their very openness can provide a heuristic for scientific discovery. My concerns in this talk are not with discovery but at the opposite end of science, with putting our discoveries to use. The point of science is not just to understand the world but to change it. I shall provide three arguments from the pragmatics of measurement showing how the use of vague, open-ended concepts in science plays a key role in helping us do this.