

## **Hacking Hacking: was there a concept of 'Kinds' before John Stuart Mill?**

**Dr. G. A. Cook**

In this paper I argue that J.S. Mill's notion of 'Kinds' (not 'natural kinds') did not spring full grown from the head of Zeus; rather, Mill stood on the shoulders of giants who provided inspiration for this concept. Following recent work on the subject (e.g. Magnus 2013), we have become aware of some of the problems associated with the ready association of more recent concepts of 'natural kind' with Mill's 'Kinds.' In this spirit I propose that Mill's notion of a kind that is natural needs to be contextualized further as part of the process of grasping this contested concept and assessing its value.

## **How to turn a scope into a meter: Temperature as one example.**

**Malcolm Forster**

There are many physical phenomena that are believed to take place at a fixed temperature. Calibration does not consist in choosing two of these phenomena, assigning temperature numbers to them, and then using some standard thermoscope readout to interpolate and extrapolate on a linear scale. The problem is that the ideal gas law is false, so thermoscopes do not respond linearly to temperature. So, how have physicists actually solved this problem? The answer sheds light on what it means for independent measurements to agree, and supports the view that temperature is a real property of things.

## **When are Perceptual Qualities Psychological Kinds?**

**A.M.C. Isaac**

Psychophysics purports to measure and quantify variable qualities of our perceptual experience (color, heat, pitch, odor, etc.). In the early days of psychophysics, primitive perceptual qualities were determined by phenomenological analysis (e.g. hue, saturation, and lightness may introspectively be assessed as distinct qualities of color experience). Later, qualities were determined abductively as the best explanation for consistent behavior on psychophysical tasks (for instance "loudness" and "volume" were judged to be distinct qualities of auditory experience because subjects could consistently assign them independent values). Most recently, primitive perceptual qualities are determined by the mathematical transformation (via principle components analysis) or large data-sets of similarity judgments. These three criteria often diverge; furthermore, there is no guarantee that any of the three systematically track qualities of the physical stimuli used in psychophysical experiments. This talk will assess the different assumptions these methods make about the realism of perceptual qualities and, in particular, when we should treat a proposed set of perceptual qualities as legitimate psychological kinds.

## **Metaphysical Structure and Resemblance**

**Dan Marshall**

This talk discusses what it is for something to be a natural kind and what relationship natural kindhood has to resemblance and fundamentality.

## **Title: A defense of grounding in the philosophy of mind**

**Alyssa Ney**

One of the main trends in metaphysics in recent years has been the development and defense of novel conceptual frameworks for representing facts about ontological priority and fundamentality. Of particular interest have been the concept of *grounding* (proposed by Paul Audi, Kit Fine, Gideon Rosen, and Jonathan Schaffer among others), the concept of *the real* (proposed by Fine), and that of *metaphysical structure* (proposed by Ted Sider). These suggestions have been met with mixed reactions in philosophical circles. Some of those working on first-order metaphysical problems were quick to see the utility of these notions. However, in philosophy of mind, these proposals have been met with skepticism. A commonly voiced complaint (see e.g. Wilson (2014)) is that these metaphysical concepts are philosophically superfluous; they add nothing to the concepts philosophers of mind have already had in their toolboxes for years. I will argue that by deploying a grounding framework, it is possible to offer compelling, conciliatory positions about the status of psychological and other special science predicates.

## **Quantitative Properties and their Ratios**

**John T. Roberts**

Absolutists about physical quantities (length, mass, etc.) hold that the fundamental features of the world include the values of these quantities that particular objects have; comparativists deny this and hold that the fundamental physical facts include only ratios (or perhaps other relations) among the values of these quantities for different objects. In defense of comparativism, one can point out that when we measure the values of quantitative properties, it seems that we are always really measuring ratios: For example, to measure the mass of an object in kilograms, we measure its mass-ratio to some body assumed to have a mass of 1 kilogram; to measure the length of a field in meters, we measure the ratio between its length and that of a meter stick; etc. The absolute values of mass, length, and so forth thus seem to show up for us in experience only by virtue of the differences they make to mass ratios, length ratios and so forth. Moreover, Dasgupta (2011) has argued that absolute values, over and above relations among values, would be “surplus structure” in a theory that posited them, so that Ockham’s Razor directs us to reject them and embrace comparatives. However, Eddon (2013) has argued that comparativism is subject to metaphysical objections, and Baker (unpublished) has argued that there are reasons internal to physics to doubt whether the comparativist metaphysics is adequate for our world. In this paper, I present a new way of formulating comparativism, and I argue that thus formulated the view gets around the objections of Eddon and Baker. I am skeptical of Dasgupta’s Ockhamist argument for comparativism, but I think a similar argument succeeds; its upshot is that if even if absolutism were the right metaphysical view, we would be unable to refer to the absolute quantities. Hence, as spoken by us, an absolutist version of a physical theory can never be true.

## **'On Component Forces in Physics: A Pragmatic View'.**

**Darrell Rowbottom**

The abstract is 'Do component forces exist? I argue that the answer lies in the affirmative, on historical and operational grounds.'

## **The Clade of Quantities**

**Peter Simons**

The many applications of mathematics work because there are mathematical structures formally apt to model families of certain attributes: quantities. These are the worldly features that make such application possible and profitable. The unbridled variety of quantities renders their essentialistic characterization and classification hopeless. However, help is on hand from biological taxonomy. Clades are classes of organisms comprising all descendants of a common ancestor species, but they are diagnosed as such by examining extant shared and unshared attributes – apomorphic characters. Our proposal is that quantities form a formal clade whose root is magnitude and whose descendants form a multidimensional family. Lack of a uniform delimitation to quantity is a feature, not a bug. The ultimate goal is a comprehensive family tree of quantities with their principal synapomorphic characters.

## **Determinables as a metaphysical model for quantities**

**Johanna Wolff**

The determinables/determinate model is widely held to be a good model for understanding the metaphysics of quantities. In this talk I argue that the model has restricted our thinking about the metaphysics of quantities, and suggest some alternatives.