The Abstracts of Plenary Lectures
Multitude and Heterogeneity: A New Reconstruction of Anaxagoras’ Cosmology

I argue that Anaxagoras’ teaching concerning the structure of the universe considered from a topologico-mereological point of view is independent of the questions concerning homogeneity and heterogeneity, and can be taken as a framework that gives guidelines to and imposes restrictions on the teaching on cosmic heterogeneity and cosmogony. Contrary to Zeno, Anaxagoras claims that there can be a multitude without χρώματα, so that every part has a proper part and is a proper part of some other proper part. All parts of the universe are alike (πάντα σα ίε) with respect to quantity and largeness, as every part contains infinitely many proper parts and is a proper part of infinitely many proper parts. Consequently, by itself everything is both small and large (πρὶς αὐτὶ δικαστόν στὶ καὶ μεγὰ καὶ μικρὸν).

Now, contrary to many interpretations, it can be proved that, if there were no part that throughout contains parts apart from each other (ἀποκρινόµενα) of the same warmth intensity, the universe would be in the state of complete warmth entropy, since the overall equinumerosity of parts precludes the possibility that the difference be based on the Empedoclean predominance in quantity (πικρατεῖν πλήθει). The same holds for all other qualitative differences. In the original state of complete entropy, no colour was manifest in the universe (οὐδὲ χρωμῆ ἔνδηλος ἢν οὐδέμιά), not because of the absence of the opposites — as in the ἀόριστον-state of Anaximander’s ἀπειρον — but because each part contained infinitely many parts differing in colour. Only through the activity of νοῦς some parts apart from each other start to appear differently, insofar as they become throughout of the same colour within themselves. Finally, the same holds, mutatis mutandis, for σπέρµατα, which differ amongst themselves through specific combinations of various kinds of qualities.
Relational and Distributive Equality: The Significance of Egalitarian Relations

Until about twenty years ago the main debates within egalitarian theories of justice tended to take it for granted that a central feature of a just society is that it achieves an egalitarian distribution of certain goods. The focus of the debates therefore tended to be on questions such as the following: what are the goods that should be distributed equally? And so on. About twenty years ago, an influential challenge to this consensus has emerged. This challenge holds that the focus on the distribution of goods is misguided: equality should be understood as a broader social value concerned with equality in social and political relationships. This family of views is called relational egalitarianism.

In my talk, I have three goals. First I will talk about the structure of the disagreement between distributive and relational equality, and to elaborate some ways in which the two views may be seen to be related to one another.

Second, I attempt to provide some reasons to think that the core insights of the two views are compatible with each other and can be seen as different dimensions of an overarching ideal of equality.

Third, I intend to explore different ways in which one may think about the moral significance of egalitarian relationships. Despite the prominence that relational egalitarianism has enjoyed in recent years, this issue has received surprisingly little direct attention, thus my goal is to contribute to a better understanding of this problem.
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**Why Did It Happen the Way It Did? Using Agent-Based Models to Explain Past Scientific Episodes**

In this talk, based on joint work with Daniel Frey, I examine whether and under which conditions highly idealized agent-based models (ABMs) of scientific inquiry can be useful in providing evidence for historical and philosophical hypotheses about past scientific episodes. We start by arguing that previous attempts at such applications of ABMs were useful only from an exploratory perspective, but they have not provided reliable information that would be of explanatory or evidential value. In particular, we challenge the suggestion that highly idealized ABMs should currently be considered explanatory by virtue of providing so-called ‘how-possibly’ explanations. Next, we suggest that if ABMs of science underwent two types of robustness analysis—robustness under parameter changes and robustness under changes in idealizing assumptions—they could serve a variety of evidential and explanatory roles.

We illustrate our point with an example of a model of scientific interaction, first presented in (Frey and Šešelja, 2018), which we apply to a concrete historical case study: the research on peptic ulcer disease (PUD). This case was previously discussed by Zollman, 2010 who uses his model to explain the development of this historical episode. The case study is an example of a premature abandonment of a fruitful hypothesis: while in the first half of the 20th century the research on PUD proceeded in view of two rivaling hypotheses, in the 1950s one of them was abandoned, only to be revived 30 years later, leading to the Nobel Prize winning discovery of the major cause of the disease. Zollman suggests that a culprit of the premature abandonment of the correct hypothesis might have been too high information flow among scientists, or the lack of bias towards their respective hypotheses, which allowed for misleading results to influence the entire community.
Using an enhanced version of Zollman’s ABM, we investigate the plausibility of this explanation, focusing on a high degree of information sharing as a possible cause of the PUD dynamics. In this way we offer both types of robustness analysis mentioned above: first, by examining the extent to which Zollman’s results hold under different assumptions about scientific inquiry, and second, by examining which scenario is most likely to be representative of the PUD case in view of empirical information we have about this episode.
Special Science Laws and Higher-Level Kinds

What is the ontological status of special science laws and higher-level kinds? Are the special sciences autonomous in virtue of featuring genuine laws and natural kinds? Jerry Fodor once wrote that if we disagree about what is a natural kind, then, for the same reason, we will probably also disagree about what is a (genuine) law. For the ontological anti-reductionist, it’s important to demonstrate that at least some special science laws and higher-level kinds are “really there” – that they are something over and above the lower-level kinds that they depend on. A traditional argument suggests that the multiple realizability of higher-level kinds does just this: if there is one higher-level kind that can be realized by several lower-level kinds, then a straightforward reduction does not seem possible, except perhaps to a “wildly disjunctive” set of lower-level kinds. But this argument needs to be supported by a theory of realization that does not already assume the existence of genuine special science laws or higher-level kinds.

Most of us are familiar with this debate from the classic papers by Jerry Fodor (1974, 1997) and Jaegwon Kim (e.g., 1992), where Fodor represents the ontological anti-reductionist (or non-reductionist) and Kim represents the reductionist approach. Much of the debate has taken place in the context of philosophy of mind and hence psychological kinds, but most of the proponents of anti-reductionism believe that the lesson generalises: there are genuine higher-level kinds also in, e.g., biology and chemistry, over and above the (fundamental) level of physics. Indeed, Kim uses the famous case of jade, which he claims to be analogous to the case of psychological kinds: ‘we are told that jade, as it turns out, is not a mineral kind, contrary to what was once believed; rather, jade is comprised of two distinct minerals with dissimilar
molecular structures, jadeite and nephrite’ (1992: 11). So, jade looks to be multiply realizable. But Kim, favouring reductionism, thinks that the special science laws concerning jade are genuine laws, despite having the basic form of a law and being able to support counterfactuals. This is because such laws are not projectible – they do not have ‘the ability to be confirmed by observation of positive instances’ (ibid.). Fodor challenged this result and denied that the case of jade is analogous to the case of psychological kinds. However, this raises questions about the role of multiple realizability in the anti-reductionist argument.

I will analyse the case of jade and suggest that there is still some mileage in this classic debate between Kim and Fodor. There are some problematic assumptions in this debate that may have influenced much of the literature on multiple realization.