**Résumés des interventions**

**Paul Hoyningen-Huene** (Leibniz Universität Hannover and Universität Zürich)

***Pluralism, Monism, and Hasok Chang: On* Realism for Realistic People**

I fully share Chang’s objections to the traditional correspondence theory of truth with all the consequences this theory has for philosophy (of science). However, I propose a therapy different from his. I propose one should disentangle the two heterogenous elements in the traditional framing of the correspondence theory in analytic philosophy: the correspondence idea on the one hand and metaphysical realism on the other. Instead, the correspondence idea can be used in conjunction with many different ontologies. Given the operationality of this rejuvenated correspondence theory, the main need for an alternative theory of truth disappears. In addition, the pragmatist theory of truth seems not convincing in some areas of its intended application. Finally, I question Chang’s monism on the metaphilosophical level which is manifest by his defense of pragmatism. Why should we not extend the intellectually liberating pluralism that Chang defends on the object level concerning truth, reality, progress, etc. to the metaphilosophical level with the same liberating effect?

**Catherine Kendig** (Department of Philosophy, Michigan State University;
Visiting Researcher, Centre for Ethics and Law in the Life Sciences (CELLS), Leibniz Universität Hannover)

***Metaphysical presuppositions realistic people use to be realists and why they matter for assessing knowledge as meaningful***

In *Realism for Realistic People*, Hasok Chang provides a guide for how we might be better realists. The standard realist’s reliance on a reality that exists out there in the noumenal world, is swapped for a reality that is always and only phenomenal. No more theories of truth that rely on correspondence with a reality that is inaccessible to us. Instead, reality and truth are obtained through operational coherence. I agree with Chang that operational coherence provides a useful means to evaluate the quality of knowledge. However, my concern is that it does not furnish a way to adjudicate between operationally coherent systems that should be valued, those that systematically omit some types of information which are deemed unnecessary, or those based on entrenched problematic beliefs. After a brief critique of Chang’s reliance on operational coherence, I offer a few friendly suggestions which, I hope, will allow us to adjudicate between operationally coherent systems that should be valued and those that should be discarded.

I illustrate my concern with reference to metaphysical presuppositions about species, (including species stability and cohesion), the reliance on which secures operational coherence. My suggestion is that we need to attend to the metaphysical commitments practitioners hold, as well as the methods they use, and the aims they rely upon to pursue coherent systems. In the case of species, accurate attributions of species-hood ultimately depend on accurate metaphysical presuppositions, which are themselves tacit in the putative explanations of stability that are adopted. But, as I will show, stability is liable to be misattributed if the mechanisms of stability are erroneously determined. Stability cannot be used to determine whether or not the clusters themselves are natural. This is because any kind attribution that relies on these clusters is anchored to a particular metaphysical picture of the world that it takes to be natural without being able to arbitrate between different candidate pictures of the world.

**Ilkka Niiniluoto** (Professor emeritus of Theoretical Philosophy, University of Helsinki, Finland)

***Reality, truth, and pluralism: scientific realism vs. pragmatism***

Hasok Chang’s new book *Realism for Realistic People* (2022) is arich and sophisticated improvement of neopragmatist accounts of philosophy of science. His references to my *Critical Scientific Realism* (CSR, 1999) give an opportunity for dialogue and fruitful confrontation. I will raise several questions and potential objections to his operational definition of reality and truth. First, Chang follows pragmatists in arguing that Kantian things-in-themselves are not needed. But how can he explain that realities are both mind-framed and mind-uncontrolled without assuming something ontological about the noumenal mind-independent WORLD? In CSR, the WORLD is a lawlike flux of causal processes, where physical objects and their kinds and other entities (fields) are identifiable by their physical properties and spatio-temporal continuity, and the conceptualized world-versions WL (for various languages L) are mind-framed by L and mind-uncontrolled (grounded) by the WORLD. Secondly, is Chang’s operational definition too positive?:We often stumble on hard realities which *prevent* our activities or make them *less* successful. Thirdly, for Chang realness and truth have degrees, but the notion of approximate truth is a ”watering-down move”. In CSR, truthlikeness is a tool of critical realism against absolute and naive realism. Fourthly, is Chang’s account too restrictive? Some past objects (e.g. dinosaurs) are abductively accessible to us by the causal effects or traces that they have left; yet many of them were real but left no traces. What present coherent operational epistemic activities could rely on the past existence of dinosaurs? Perhaps classification of dinosaur fossils, but what about the classification of pictures of unicorns? Fifthly, could all particular grains of sand, raindrops, mosquitos, stars, black holes and unobservable objects in distant galaxies be relevant to human practices? Sixthly, is Chang’s pluralist account too permissive? Many human tribes have led harmonious and successful lives with animistic beliefs in angels, fairies, brownies, witches, and evil spirits. In science, phlogiston had some successful applications, but as a description of the process of combustion it cannot be accepted in our world view. Seventhly, CSR defends conceptual pluralism which is compatible with the correspondence theory of truth: world-versions WL are L-structures, and truth in WL is defined by Tarski’s model theory. But as conceptualizations of the same reality these world-versions cannot contradict each other (even though beliefs in different languages can); and truth about WL is also truth about the WORLD. There is no single ideal language L (Sellars’s “Peirceish”) which captures all of the WORLD. Eightly, pragmatism is interested in the human world constituted by our practices, but human existence is only a tiny fragment of the long history of the universe. The conception of the WORLD expresses this humility with respect to the mind-independent reality. We can investigate it by introducing conceptual schemes as mediating steps in our search for objective knowledge. And we are also responsible for the (often unintended and non-conceptualized) causal effects of our actions on nature (pollution, climate change, loss of biodiversity). Ninthly, pragmatism seems to be most appropriate as a philosophy of human practical action, including applied science, technology in the broad sense, and engineering. Epistemic conceptions (e.g. credibility, confirmation, assertibility, operational coherence), which do not satisfy Tarski’s T-equivalence, may be highly valuable as *criteria of reality and truth* but they should not be called by the name “truth”. Tenthly, perhaps scientific realism and pragmatism can live in peaceful co-existence, if the revitalized Jamesian activity-oriented coherence conceptions are understood to express notions that are different from the classical realist’s reality and truth - such as *tools* and their *effectiveness* in Dewey’s instrumentalism. This would give a motivation for pluralism: tool-like realities deserve to be conserved if they help us to do important things in certain contexts.

**Jamie Shaw** (Institut für Philosophie, Leibniz Universität Hannover)

***How Unrestricted Should Inquiry Be? Chang and the Limits of Pluralism***

In Hasok Chang’s new book, *Realism for Realistic People*, he outlines a theory of inquiry. This theory contains the same core as those of his pragmatist ancestors, most notably C.S. Peirce and John Dewey, where inquiry is stimulated by the presence of a problem and resolved when the problem appears to be solved. The goal of this paper is to critically investigate Chang’s theory of inquiry. After showing how Chang’s conception of inquiry is ambiguous, as it does not clearly define restrictions upon inquiry, I contend that there exists a tension between his view of inquiry and his activist realism. Erasing this tension, I claim, requires lifting the restrictions Chang places upon inquiry thus distancing himself from his pragmatist forefathers.

**Léna Soler** (Université de Lorraine, Archives Henri-Poincaré - Philosophie et Recherches sur les Sciences et les Technologies, Nancy)

***Incompatible judgments about the operational coherence and success of competing epistemic systems of practice: What should we do to be faithful to the pragmatist, realistic and pluralist spirit of Chang’s philosophy of science?***

Operational coherence is *the* pivotal notion, and plays essential constitutive roles, in the inspiring and sophisticated pragmatist philosophy of science designed by Hasok Chang in *Realism for Realistic People* (RRP). In the “realistic” or “operationalist” spirit of Chang’s framework, any judgment about whether or not, or to what extent, a given ingredient of a given inquiry counts as knowledge, can be considered as real, is legitimately taken as true, or should be viewed as a progress, is based on judgments of operational coherence, and thus presupposes such judgments.

My aim, in this talk, is to start from the refined characterization of operational coherence offered by Chang in RRP, and to discuss some possible difficulties of its application to particular tokens of epistemic practices. These difficulties concern two related kinds of judgments: assessments of the (degree of) operational coherence, and evaluations of the success, of a system of practice or an activity involved in an ongoing epistemic inquiry considered in a dynamical perspective. I want to explore the possibility of conflicts, if not of irreconcilable disagreements, at the level of such judgments. To address this possibility is crucial regarding what matters to Chang’s activist and realist philosophy of science. For an activist realism à la Chang intends to help epistemic actors to maximize active knowledge, and to maximize active knowledge means to maximize the operational coherence of epistemic practices and the actual success of designed-for-success activities. Accordingly, as far as judgments of operational coherence and success are unproblematic and consensual, what the activist realist prescribes to do is not problematic. But what if the corresponding judgments were problematic and not consensual? What would the realistic pluralist recommend to do?

To substantiate the philosophical points, I will rely on quantum mechanics as an illustration, mobilizing a case that I take to be especially interesting as a means to investigate crucial aspects of Chang’s pragmatist philosophy of science. This case involves two presently alive, predictively equivalent but mutually incompatible theoretical frameworks (or paradigms) and systems of practice. One is the orthodox quantum physics that became hegemonic at the turn of the 1930s. The other is an alternative, fringe quantum physics introduced by David Bohm in 1952 and subsequently developed by Bohmians until today. I refer to the latter physics or paradigm or system of practice as “BQP”, and to the former as “NQP” – where the “N” stands for “Neurakian”, a term forged from the names of John von Neumann and Paul Dirac, coined in order to have a qualifier symmetric to “Bohmian”. Once reconceptualized by means of Chang’s categories, this “N/B-QP case” can claim to exemplify irreconcilable disagreements between Neurakian and Bohmian epistemic agents about (at least some) judgments of operational coherence and empirical success. This case is especially interesting in two respects. First, given that NQP and BQP are predictively indistinguishable, we have a configuration that is potentially instructive regarding the aim of investigating and specifying Chang’s idea of what pragmatism and empiricism mean and amount to in practice, beyond the uncontroversial but restricted classical requirement of empirical adequacy (corroboration of predicted observations). What would be the additional requirements for assessing the quality of the non-predictive activities constitutive of NQP and BQP in a way that could pretend to be faithful to the empiricist stance as understood by Chang? Second, the N/B-QP case provides an interesting setting in order to discuss the intrinsic difficulties, and the concrete implementation in practice, of any resolutely pluralist philosophy of science of the type advocated by Chang. In the N/B-QP case, the two semantically and normatively incommensurable systems of practice under scrutiny involve two mutually contradictory descriptions of the same targeted object and convey two partially different but ultimately irreconcilable normative conceptions of physics, including partly irreconcilable conceptions of what is empirical knowledge in physics and what are the legitimate aims of physics. How is a realistic pluralist à la Chang going to cope with such kinds of semantic and normative incompatibilities?

**Sophie Veigl** (University of Vienna, Department of Philosophy)

***Active knowledge and activist knowledge: where realistic realism and feminist epistemology meet***

How realism and plurality can be accommodated is a question that sits at the core of the scientific pluralism debate. How do different, contradictory approaches make contact with what is “out there?” Another school of thought that has been dealing with this question within the philosophy of science is feminist philosophy of science. Proponents reject “capital R reality” and argue for a pluralization of research practices and theorizing to accommodate marginalized practices within the sciences. A rejection of “capital R reality” is also central to Hasok Chang’s most recent contribution to the scientific pluralism literature, Realism for Realistic People. So far (and maybe because these positions have much in common), the relation of both has not been extensively explored. Does feminist philosophy of science necessarily require Changian scientific pluralism? Does scientific pluralism a la Chang necessarily invoke the pluralization feminist philosophers have in mind? In this article, I aim at further exploring this relation, particularly explaining these positions’ relation when it comes to triangulating scientific pluralism, realism, and contingency within science.

**Jack Wright** (University of Cambridge and University of Gothenburg).

***What does a realistic realist philosophy of science policy look like?***

In his closing remarks Chang asks:

“How do we advance an improved theory of action fully incorporating values and judgements? How can my pragmatist philosophy of science be connected more convincingly with social epistemology and the sociology of knowledge?” (254)

My comment will partly address these questions by asking what realistic realism means for (i) how we use the outputs of science in political and social decisions, and (ii) how we should organise our sciences.

To (i), I will argue that although realistic realism does a good job of describing what happens within science, it makes the utilisation of scientific knowledge in deliberations about social action more complicated. The traditional realist picture that Chang argues against (truth is correspondence, knowledge is true propositions, science provides knowledge) has a simple story to tell: deliberation about social action can draw on and be bounded by the true propositions given by science. How do conceptions of knowledge centred on operationally coherent activities and of truth based around facilitating such activities fit into deliberation about group action? I will offer two potential answers, but suggest that neither are particularly satisfactory. To (ii), I will utilise the debate about pluralism in economics to argue that tolerant, conservationist, and interactive pluralisms have less normative bite than they seem.

**Sjoerd Zwart** (TPM, Delft, University of Technology, Netherlands)

***Activist Realism and Engineering Project Design***

On first sight Hasok Chang’s *Realism for Realistic People* (RRP) fits well the research practices in engineering and the other practical sciences. Being immersed in the design of academic engineering research and methodology for the last twenty years, I came to at least seven *types* of *atomic* engineering research projects, which are determined by the type of end-product (or deliverables) *and* the accompanying types of methods. Perhaps they are similar to what Chang calls “activity” because they have one end goal. The types of deliverables are: Descriptive knowledge, artefact design, Means-End knowledge, Optimizations, Models, Mathematical results, and Conceptual frameworks. Larger *molecular* engineering research project should have one main final deliverable, which is the root of and means-end hierarchy of subprojects the products of which are all necessary ingredients in chosen method to produce the final outcome. I will illustrate this *operational coherence* by explaining one or two examples from the practice of PhD research projects at Delft university of technology. So far it seems that Chang’s picture of science fits engineering research well.

However, the means-end methodology just described is partly based on “correspondence realism” (without supposing the strong Fallacy of Pre-Figuration), criticized in RRP for its reliance on the “correspondence between statements and [things in] reality.” (p.69) The main purpose of this contribution is to find out how the seven types methodology will look like from the RRP perspective, and therefore to assess the real fit between the RRP picture of science and the practices of designing PhD research projects engineering and the practical sciences. I will do so by taking stock of the support and difficulties RRP provides for distinguishing the seven types and by elaborating an example engineering research project. In this way I try to assess the operational coherence between RRP and the design of engineering PhD projects.