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## Ten queries about Hasok Chang's pragmatic realism

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### Scientific Realism vs. Pragmatism

Hasok Chang works as Professor at the Department of History and Philosophy of Science at the University of Cambridge. In his earlier works he has studied the measurement of temperature (*Inventing Temperature*, 2004) and progress in the history of chemistry (*Is Water H<sub>2</sub>O?*, 2012). Chang's new philosophical book *Realism for Realistic People: A New Pragmatist Philosophy of Science* (2022) is a rich and impressive improvement of neopragmatist accounts of science. With inspiration from William James, it presents a coherence theory of reality and truth as a basis of pluralism. Friendly but critical references to my *Critical Scientific Realism* (CSR, 1999) give an opportunity for dialogue and fruitful confrontation.<sup>1</sup>

The debate between realists and pragmatists started already as a divide between Charles S. Peirce and his “kidnappers” (cf. Haack, 2024) and has grown to one of the most important themes in contemporary philosophy. Several philosophers have developed systems which combine elements from realism and pragmatism—among

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<sup>1</sup> The first version of this paper was presented in a workshop “Can Realism Allow Pluralism and Contingency?”, Université Lorraine, Archives Henri-Poincaré – Philosophie et Recherches sur les Sciences et les Technologies, Nancy, France, October 10, 2022. I am grateful to Hasok Chang for an instructive and lively discussion. A later version was presented in the XXV World Congress of Philosophy, Rome, August 6, 2024.

them Hilary Putnam's (1981) internal realism, Sami Pihlström's (1996) pragmatic realism, Philip Kitcher's modest or real realism (cf. Gonzalez, 2011), Hasok Chang's (2018) pluralist realism, and Rein Vihalemm's practical realism (cf. Mets et al. 2024).<sup>2</sup> With my own sympathies in realism, I have always thought that pragmatism is more interesting than naive realism (Niiniluoto, 1986, 67). Critical realism is shared by Panu Raatikainen (2004a, 2014), to whom it is a pleasure to dedicate the thoughts of this article.

## Chang on reality

According to Chang's operational conception, an entity is *real* if it has "the capacity to support coherent activities" (p. 122), "to the extent that there are operationally coherent activities that can be performed by relying significantly on its existence and its properties" (p. 121), where the "various parts of an activity come together in harmonious way towards the achievement of its aims" (p. 24).

Chang's ontology is directed against "standard" or metaphysical realism with the fallacy of prefigured or ready-made Kantian things-in-themselves: realities are *mind-framed* yet *mind-uncontrolled* entities. "We can make concepts as we like, but whether the entities they specify turn out to be *real* is not up to us" (p. 125); it is "best to have no word to call the noumenal Being independent of our conceptions" (p. 77).

## Chang on truth

Chang's pragmatism is not interested in propositional knowledge-as-information but rather in knowledge-as-ability to do something. He defines primary truth-by-operational coherence: "a statement is *true* to the extent that there are operationally coherent activities that can be performed by relying on its content" (p. 167). Inspired by James, this is indeed intended as a *definition* of truth, even though some neopragmatists (Putnam and Pihlström) have suggested that when James asked about "the truth's cash-value in experiential terms" he did not try to define truth at all. Thus, for Chang coherence is not a *criterion* of truth as the Marxists state about practice.<sup>3</sup> It follows that for Chang truth does not *explain* success. This excludes the abductive no miracle argument for scientific realism, which claims that realism is the best (or even the only) explanation of the success of science (p. 109).

Chang also defines a secondary concept of truth as a derivation of a statement from other truths (p. 165). But it is clear that Chang's primary and secondary notions

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<sup>2</sup> For comments, see Niiniluoto (2019).

<sup>3</sup> Rein Vihalemm's practical realism, which is inspired by Marxism, uses a deflationary notion of truth (see Mets et al., 2024, p. 3).

of truth differ from the classical correspondence theory of truth as a relation between language and reality.

I will present ten queries and potential objections to Chang's operational definition of reality and truth.

### First query: noumena

Immanuel Kant argued that human knowledge has subjective and objective elements: the world of *phenomena* or things-for-us is constituted by the transcendental subject (the mind supplies time and space as forms of sensible intuition as well as categories of understanding like causality), but it is also caused by the *noumenal* world of things-in-themselves. This was a contradiction by Kant's own standards, since causality should apply only to phenomena. The idealists reacted by rejecting the things-in-themselves, and the phenomenologists eliminated the transcendental subject as well. Kant combined his transcendental idealism with empirical realism but allowed no knowledge about things-in-themselves. The critical realists reacted by arguing that we have knowledge about the noumena by science. Kant also approved universalism by assuming that we are bound to only one conceptual scheme. The pragmatists reacted by allowing a plurality of alternative conceptual frameworks. James's radical empiricism was close to phenomenism.

But does the mind-independent noumenal WORLD exist? A negative reply has been given in three different forms:

- (a) false metaphysical assumption (idealism)
- (b) presupposition not needed, left open (Husserl's *epoché*)
- (c) meaningless metaphysical claim (young Carnap's logical positivism).

The position of many classical and neopragmatists is ambiguous between alternatives (a) – (c) (e.g. Putnam, Rescher, Rorty, Margolis, Pihlström, Vihalemm) (cf. Niiniluoto, 2019). When Chang does not assume Kantian things-in-themselves in his ontology, is his position (a), (b), or (c)?

### Second query: grounding

Chang's notion of "mind-framing" has a Kantian flavor. He gives a fine emphasis on the lack of mind-control of real entities, but how can he explain this without assuming something *ontological* about the 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; the conceptualized world-versions or L-worlds  $W_L$  (for various languages L) are mind-framed by L and mind-uncontrolled by the

WORLD,<sup>4</sup> i.e. the WORLD determines which sentences of a language L are true or false in  $W_L$ . In modern analytical metaphysics, this non-causal dependence relation between a L-world  $W_L$  and the WORLD is called *grounding* (cf. Niiniluoto, 2024).

### Third query: too positive

Is Chang's operational definition *too positive*? We often stumble on hard realities which *prevent* our activities or make them *less* successful. Peirce called this "brutal" ability of reality to resist us and our will "factuality" or "secondness". Such hard realities may belong to the natural world: stone walls, heavy rains, heat waves, earthquakes, and other calamities. They may also show the reality of other people: prejudice, hostility, aggression, and cheating.

### Fourth query: approximate truth

For Chang realness and truth have degrees ("true enough"), but the notion of *approximate truth* is a "watering-down move" for him (p. 250). One may wonder why? In CSR, truthlikeness is a tool of critical realism against absolute and naive realism. It presupposes objective truth as the target to be approached, but some philosophers have defined epistemic truthlikeness without objective truth.

### Fifth query: too restrictive

Chang is sensitive to traditional objections to pragmatism, but is his account *too restrictive*?

The argument from the past (p. 73) points out that dinosaurs existed on the earth long before they were identified as dinosaurs. For Chang such pre-human or "past entities must be framed by our current conceptions if we are to consider them at all", but one may wonder whether such talk about past entities is allowed at all, if "all entities are mind-framed" (p. 77, 133). To apply Chang's operational definition, what present coherent operational epistemic activities could rely on the past existence of dinosaurs? Perhaps the classification of dinosaur fossils (p. 123), but then there is the danger of losing the distinction between fact and fiction, since also pictures of unicorns can be classified coherently.

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<sup>4</sup> A similar construction of "ontic domains" from categorical-conceptual frameworks and the independent noumenal reality is given by Lombardi (2024). Like my L-worlds, her ontic domains serve as objective truth-makers of linguistic statements.

The inaccessibility argument (p. 123) acknowledges that past objects and events are abductively accessible to us by the causal effects or traces that they have left. But most of them were real but left no traces.<sup>5</sup>

One may add here the argument from irrelevance: could all particular grains of sand, raindrops, mosquitos, stars, black holes, atoms and unobservable objects in distant galaxies be relevant to human practices?

### Sixth query: too permissive

The objection from effective false beliefs (p. 189) asks: Is the coherence theory of reality *too permissive*?

As belief in God's existence may have effects in a person's actions, does it follow that a supernatural Being exists? This was a traditional debate about James's "will to believe" doctrine.

Similarly, many cultures have led harmonious and successful lives with animistic beliefs in angels, fairies, brownies, witches, and evil spirits. These queer entities have been discussed by cultural relativists, but do they really exist?

Examples of effects without realities might also include witchcraft and placebo in medicine.

According to Chang, "pluralist ontology becomes easily acceptable when we move away from the fallacy of pre-figuration"; it is beneficial to encourage multiple ontologies, each of which can facilitate coherent epistemic activities (p. 148). In science, phlogiston had some successful applications, and thus it is real for Chang, but as a description of the process of combustion it cannot be accepted in our world view. The pluralist ontology with conflicting postulated objects (e.g. phlogiston and oxygen) leads to a too cumulative *conservationist* model of scientific change: as most historical theories in science were to some extent successful, Chang's advice to the scientists is not to discard them – even though they were later surpassed by more powerful and truthlike theories. This view resembles Paul Feyerabend's anarchism without Popperian falsification: knowledge is "an ever-increasing ocean of mutually incompatible (and perhaps even incommensurable) alternatives", where "nothing is ever settled, no view can ever be omitted from a comprehensive account" (Feyerabend, 1975, p. 30).

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<sup>5</sup> This is a variant of Bertrand Russell's famous argument (the unknown but true number of Churchill's sneezes in 1940) against John Dewey's notion of truth as warranted assertability.

## Seventh query: conceptual pluralism with correspondence truth

Chang notes my *conceptual pluralism* in CSR: the WORLD can be approached and described by alternative conceptual systems L. But does conceptual pluralism really require the operational notion of truth?

CSR defends conceptual pluralism which is compatible with the correspondence theory of truth, against Hilary Putnam's (1981) internal realism which combined conceptual pluralism with an epistemic notion of truth as ideal acceptability.<sup>6</sup> The main point is that world-versions  $W_L$  are L-structures, and truth in  $W_L$  is defined by Tarski's model theory (cf. p. 79). But as conceptualizations of the same reality these world-versions cannot contradict each other (even though beliefs in different languages can); and truth about  $W_L$  is also truth about the WORLD.

When scientific realists argued against Kant that *Dinge an sich* are knowable, they are claimed to be inexhaustible rather than inaccessible. For CSR it is important that there is no single ideal language L (Wilfrid Sellars's "Peirceish") which captures all of the WORLD. A similar formulation can be found in James's pluralism: "There is no where extant a complete gathering up of the universe in one focus".<sup>7</sup>

## Eight query: humility

Does Chang's coherence account overlook important aspects of the world? Pragmatism is interested in the human world constituted by our practices, and we bear responsibility for this world-for-us (Pihlström, 2022). But human existence is only a tiny fragment of the long history of the universe. Cosmologists study the first seconds after the Big Bang, and it took almost 15 billion years before the human period began. 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).

## Ninth query: human action

Does Chang's coherence account overemphasize the role of human action? He suggests that his account gives "a positive view that you can use for your own purposes" (p. 9). In my view, however, pragmatism is limited as a philosophy of natural science or basic research, but it is more promising as a philosophy of human

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<sup>6</sup> For Kitcher's similar position, see Gonzalez (2011), p. 178. However, Kitcher thinks that James did not reject the idea of correspondence truth but rather demystified it (p. 176).

<sup>7</sup> In a letter to Minot Judson Savage in 1910.

practical action, including applied science, technology in the broad sense, and engineering.<sup>8</sup> If human action includes Aristotle's *praxis*, in addition to *poiesis* and *techne*,<sup>9</sup> pragmatism can be developed also as a philosophy of the humanities (see Pihlström, 2022).<sup>10</sup>

## Tenth query: tools and pluralism

Should Chang acknowledge the difference between truthful statements and tools? I agree with Alfred Tarski that alternative epistemic conceptions (e.g. credibility, confirmation, assertability, operational coherence), which do not satisfy the T-equivalence ('p' is true iff p),<sup>11</sup> may be highly valuable as *criteria of reality and truth* but they should not be called by the name "truth" (CSR, 100).<sup>12</sup> So 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 intellectual *tools* and their *effectiveness* in Dewey's instrumentalism. As material artefacts, tools are mind-framed and controlled by mind-independent laws of nature.

Based on such reading, we can learn a lot from Hasok Chang's magnificent book. For example, we have a clear motivation for pluralism: Newton's mechanics is still used by engineers; we ride bikes despite cars and trains; chalkboards and printed books can be used in classrooms despite computer technologies and the internet; tool-like realities deserve to be conserved if they help us to do important things in certain contexts.

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<sup>8</sup> See Chang's (2024) recent work on battery science, which is based on the interaction between the theory of electricity and new technologies.

<sup>9</sup> Dewey's instrumentalism was interested in useful problem-solving. Even though he had difficulties with the notion of intrinsic value, he had a place for future-oriented "ends-in-view" or "plans", with discussion of topics like democracy, education, and the fine arts.

<sup>10</sup> On the other hand, as Raatikainen (2004a), 83, acutely observes, critical realism can give an account of the human sciences by treating "ideal entities" like beliefs, values, meanings, and conceptual frameworks as unobservable theoretical concepts. They are not independent of the human mind in general, but of the mind of the researcher.

<sup>11</sup> Cf. the fifth and sixth queries.

<sup>12</sup> Chang disagrees when he states that Dewey's move to talk about "warranted assertability" instead of truth was "unwise" (p. 206). Raatikainen (2004b, 2014) gives good reasons to reject Michael Dummett's verificationist notion of truth as provability or assertability, which had a profound influence in Putnam's (1981) conversion from classical realism to internal realism. For Raatikainen's comments on Tarski's semantic concept of truth, see Raatikainen (2023).

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