HARRÉ NEEDS NO REALISM

MAURICIO SUÁREZ[1]

It is a pleasure and an honour to comment on this paper by Rom Harré. I remember distinctly my first meeting with Rom, in May 1995, during an interview for a one-year position at Oxford. We were asked for a short presentation as part of the process, and mine was a defence of Reichenbach's views on explaining correlations by common causes. During the discussion it was objected that the logical positivists had no grounds on which to hang the distinction between accidental and law-like correlation. Rom intervened to answer the objection on my behalf: To the extent that the logical positivists had a notion of scientific law, however un-metaphysical or deflationary, they had grounds for the distinction. I was offered the position, and that was a wonderful start to my philosophical career – and a very good year for me indeed. I remember that Rom and I had lunch at Linacre several times during the year but I don't remember the issue of laws of nature coming up again – instead we talked a lot about the differences between model-theoretic and scientific models. I learnt a lot from those discussions (as from discussions with others at Oxford), but what was even more memorable and long-lasting was the optimistic feeling they aroused that my research had a definite house within Oxford "boundaries".

Rom's brief paper characteristically brings together many of the issues that have figured most prominently in his career. Three theses at least stand out, as they can be distilled from the paper, and I am in a fortunate position to comment on all of them with interest since I have defended similar theses in my recent work. First, Rom claims that ontological plausibility is an appropriate criterion to select among empirically equivalent theories; and that this criterion is indeed employed successfully by scientists. Second, Rom argues in favour of an understanding of scientific models as iconic representations. He distinguishes iconic models (i.e., the type of models one finds in science) from logicist models (i.e., the models provided by model theory). This is a distinction that we certainly discussed during my time at Oxford, and I too have defended a version in my subsequent published work. Finally, Rom has some intriguing things to say about bringing dispositional notions to bear on some of the paradoxical issues surrounding quantum theory. He claims that employing these

[1] The writing of this paper has been supported by the Spanish Ministry of Education and Science research project number HUM2005–07187-C03–01. I thank an anonymous referee for helpful comments.

L. Soler, H. Sankey and P. Hoyningen-Huene, (eds.), Rethinking Scientific Change and Theory Comparison: Stabilities, Ruptures, Incommensurabilities, 237–241.

notions can provide a satisfactory account of quantum mechanics in Bohr's Copenhagen interpretation. I too have defended a propensity interpretation of quantum mechanics in recent writings, and I agree wholeheartedly with the spirit of Rom's proposal – even though both the details and the overall philosophical framework of our respective proposals differ.

Each of these three theses is in turn employed in the paper in support of a traditional form of scientific realism, according to which mature scientific theories refer and are at least approximately true. (And indeed a defence of scientific realism has been a central focus and target of Rom's research over the years – his best known attempt is probably his joint work with Aronson and Way.) [2] Thus for instance, ontological plausibility is claimed to resolve the thesis of the under-determination of theory by the data in favour of the realist position and against positivistic and instrumentalist views: "[…] In the end the strongest reasons for a realist reading of a theory are ontological. Theories are judged for plausibility according to the kinds of beings that realist readings of alternative theories seem to presuppose". A realist reading of theories also provides heuristic guidance in the application of models: "ontological plausibility is tied in with the idea that it is good policy to take the model of a theory seriously, and to use it to guide a search for beings of the relevant type". In other words, ontological plausibility is a norm of scientific research, which both guides specific inquiries and provides an abstract rule for theory-choice.

Rom's second thesis is also put to a realist use, as follows. In the iconic model of scientific representation we can distinguish between source, model and subject. (In my work I have been adopting a slightly different terminology, namely: source, model and target.) The source is some "empirically accessible and known system" which the model relates with the object of scientific research (the model's "subject") – "an inaccessible and unknown system". Some of the traditional properties of the semantic conception are then adopted to explain the relations between theories, models and real world systems, as follows.[3] The model relates to its subject non-linguistically via the holding of certain similarity relations; the theory in turn relates to the model linguistically via a description of those similarity relations in the terms of the theory within some logically structured language. Then the locution "nearer to the truth" can be explicated as a description in the language of the theory of a property of the model. (Harré defines this statement as a "necessary truth" about the model, although the notion of truth-in-the-model that seems relevant is in my view closer to that of "analytic truth".) A model is then "true" only in the sense that it is or can be (maximally) similar to its subject. The choice between models on account of their degrees of similarity to their target systems then turns into a choice between alternative theories on account of their truth content. Realism can be defended in this guise, for judgements of relevant similarity between sources and subjects are putatively easier than the much more ineffable judgements regarding the truth value of theoretical statements.

[2] Aronson et al. (1994).

[Au1] [3] For the details of the semantic view see, for instance, Van Fraassen (1989, Chap. 9), and Giere (1988).

Finally Rom argues that a dispositional reading of quantum mechanics enables us to interpret the theory realistically, even though the quantum domain is one where iconic modes of representation seem to falter. Of course Rom was among the very first people to think seriously about the properties described by our best science as irreducible dispositions.[4] We can apply dispositions to a Bohr-like account of quantum mechanics if we take whole complexes of quantum systems plus measurement devices to possess relational "affordances" or "capacities". This allows a scientific realist to interpret quantum mechanics coherently while insisting that it describes an independent reality – even though this is a reality at least in part made up of relational dispositional properties.

These are all intriguing theses, and I find myself in agreement with their spirit if not always their letter. But unlike Rom I am not tempted to derive the realist commitments he does from these theses. On the contrary, my response to Rom would invoke the spirit of his comment during that presentation at Oxford back in 1995. Just as the logical positivists could do fine with their notion of scientific law, however unmetaphysical or deflationary, so can we employ deflationary accounts of ontological plausibility, models, and dispositions. I have here only enough space to present a bare sketch of the relevant arguments, but in all cases the basic template of the response would be the same: to adopt the thesis, yet to then go on to insist on a deflationary or non-metaphysical reading of the concepts involved, so that the realist conclusion will not follow. In other words I would argue that Rom's three theses are not harmful to an instrumentalist provided a deflationary or non-metaphysical reading of the main entities and notions involved.

Take the first thesis. There is a reading of ontological plausibility that does not force a realist epistemology onto us; on this reading scientists choose to accept those theories that presuppose a very similar ontology to the one that we commonly uphold – or at least one that is coherent with the ontology of our ordinary life. But the fundamental reason why they will use this criterion for theory-choice has little to do with any presumed aim to capture truth in their theories. Rather it has to do with the convenience and economy afforded by the employment of a familiar system of concepts. Plausibility is always measured against a background of widely accepted beliefs – we find plausible that which exhibits reasonable connections with what we already accept.

Ontological plausibility thus refers to those existential claims that are plausible in light of other background existential assumptions. So the criterion of ontological plausibility for theory choice simply asserts that we ought to prefer theories with ontological commitments that are close to our own at present. And it seems very dubious that this can be exclusively a realist criterion for theory choice – since it would be a bizarre form of instrumentalism that requires a violation or even a reversal of ontological plausibility. For instance, an instrumentalism that requires scientists to choose those theories with as different ontological commitments as possible from our present ones seems highly implausible by instrumentalist standards themselves – for it could hardly maximise the utility of our conceptual tools to always choose theories with

[4] Harré and Madden (1975).

unfamiliar concepts and unusual existential commitments that have not been tested in the past. Similarly an instrumentalism that holds that ontological plausibility as a norm is always irrelevant to theory choice runs the risk of ignoring a basic instrumentalist insight, namely that what is relevant in each case of theory choice is determined by the purposes and peculiarities of the case itself. The instrumentalist would instead advise us to keep an open mind over whether ontological plausibility is an effective criterion for theory choice in some cases while not always being so.

What this seems to me to show is that the criterion of ontological plausibility really is neutral between realist and instrumentalist epistemologies. Both the realist and the instrumentalist can help themselves to it, and it would seem unreasonable for either to oppose the criterion as a matter of principle. Hence Rom's first thesis can be upheld without any commitment to scientific realism.

Mutatis mutandis for the second thesis: it is possible to accept that the relation between theories and the world is mediated by models and yet remain resolutely an instrumentalist about the cognitive role that theories play in enquiry.[5] I have argued that many forms of mediation by models are in fact best understood from an instrumentalist point of view, as advancing the aim of instrumental reliability rather than truth or empirical adequacy.[6] In any case nothing can prevent an instrumentalist from making all the relevant distinctions, and accepting whatever similarity orderings, without necessarily accepting the associated theories' truth – other than the truths-in-the-model that describe the properties of the model itself, including the similarity orderings. Any commitment to the ontology of the models with the higher position in the ordering seems to be an additional commitment to the source-model-subject picture, which would be naturally accepted by the realist, yet disputed by the instrumentalist.

Let us now finally turn to Rom's third thesis. I find the claim that dispositions can resolve the paradoxes of quantum mechanics both interesting and fundamentally along the right track. But I disagree with some of the details. For instance, I have argued in a different context that relational dispositional properties will not serve to solve the quantum paradoxes.[7] It is precisely here that one can find the fundamental difficulty with Popper's account.[8] Instead one needs to employ monadic propensities with relational manifestations, where the manifestations take the form of probability distributions over the values of the relevant observable. The resulting interpretation of quantum mechanics is certainly not iconic, but neither does it seem to preclude a realist reading of these dispositional properties or propensities. So I agree with Rom that this is a very promising way of understanding the theory; I also agree that it *allows* for a good dose of realism. But it does not follow that realism is thereby forced

[5] The mediating models literature springs from (Morgan and Morrison, 1999).

[6] The key distinction is between the theory that is applied via the mediating model and the set of often diverse and even contradictory theories that are employed in extracting the commitments from the model. Since the latter theories do not always include the former one, it follows that the confirmation of the model does not necessarily constitute confirmation for the theory that the model serves to apply (See Suárez, 1999, 2005).

[7] Suárez (2004).

[8] For instance Popper (1957).

upon us: realism can be allowed without being compelled. Certainly, an instrumentalist understanding of propensities and dispositional properties in general still needs to be developed. However I believe that it remains possible – and I am unconvinced by arguments that to the contrary try to exclude such an understanding on the basis of the deficiencies of the conditional statement approach to dispositions.[9]

BIBLIOGRAPHY

Aronson, J. R., Harré, R., and Way, E. (1994) *Realism Rescued*. London: Duckworth.
Bird, A. (2004) Antidotes All the Way Down. In Suárez and Bird (eds.) *Dispositions, Causes and Propensities in Science*, special issue of *Theoria*, 51, 259–269.
Giere, R. (1988) *Explaining Science*. Chicago, IL: University of Chicago Press.
Harré, R. and Madden, E. (1975) *Causal Powers*. Oxford: Blackwell.
Martin, C. (1994) Dispositions and Conditionals. *Philosophical Quarterly*, 44, 1–8.
Morgan, M. and Morrison, M. (1999) *Models as Mediators*. Cambridge: Cambridge University Press.
Popper, K. (1957) The Propensity Interpretation of the Calculus of Probability, and the Quantum Theory. In S. Körner (ed.) *Observation and Interpretation in the Philosophy of Physics*, pp. 65–70.
Suárez, M. (1999) The Role of Models in the Application of Theories: Epistemological Implications. In Morgan and Morrison (eds.) pp. 169–198.
Suárez, M. (2004) On Quantum Propensities: Two Arguments Revisited. *Erkenntnis*, 61, (1), 1–13.
Suárez, M. (2005) The Semantic View, Empirical Adequacy and Application. *Crítica*, 37, 109, 29–63.
[Au2] Van Fraassen, B. (1988) *Laws and Symmetry*. Oxford.

[9] Martin (1994) is the standard source of critiques of conditional analyses. See also Bird (2004).