Discussion

Response to Barnes's critique of Scerri and Worrall

Eric R. Scerri

Department of Chemistry & Biochemistry, UCLA, Los Angeles, CA 90095, USA

In a recent response to an article which I authored with John Worrall (Scerri and Worrall, 2001), Eric Barnes raises various criticisms, some of which are directed primarily at Worrall's views on predictivism that have been published in other articles.[1]

In my own response to Barnes I will confine myself to the comments which pertain particularly to the Scerri–Worrall paper, especially as I understand that John Worrall is preparing his own response to Barnes. What I wish to concentrate upon is Barnes's belief that Worrall and I were arguing in favor of predictivism over accommodation. In fact nothing could be further from the truth. The Scerri–Worrall paper is an attempt to carry out a historically informed examination of the role of prediction and accommodation of chemical facts in the case of the acceptance of Mendeleev's periodic system. As we went to great pains to explain, we do not simply favor either predictivism or accommodation but aim to argue that, contrary to popular opinion among a number of philosophers, accommodation in a non ad hoc sense that we call accommodation$_2$ is every bit as significant as prediction.

Of course it would have been foolhardy of us to deny the importance of prediction in the acceptance of new theories and we attempted to make several statements to qualify our more nuanced view. However Barnes appears to take these statements at face value and wrongly concludes that we simply favor prediction over the accommodation of facts. For example Barnes claims that:

> They [Scerri & Worrall] argue that, despite the considerable complexity of the historical facts, and despite the fact that attempts of others to vindicate predictivism in this case have problems, predictivism does hold in this episode. (Barnes, this issue)

This is a true report of what we state but what Barnes fails to note is that our comments regarding predictivism are part of a prelude to the main thrust of our article. Our main aim was to provide several lines of evidence that suggest that although predictivism had an

E-mail address: scerri@chem.ucla.edu (E. Scerri).

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important role to play, accommodation played an equally, if not more, important role in this case.

Barnes writes:

> In my judgement S & W have provided no philosophical justification for the claim that predictivism held in the case of Mendeleev's predictions regarding the periodic table. (Ibid.)

Once again this is strictly true but should not be taken as a criticism of our paper. To repeat, our aim was to provide justification for the approximately equal importance of accommodation rather than to argue the case for predictivism in such a classic example as that of Mendeleev's periodic table.

Although we do indeed set forth the predictivist thesis with references to the writing of Asimov, Maher and Lipton among others, we do so to cast doubt on the overwhelming superiority of predictivism. For example we write:

> However, any philosophical conclusions from this case must be based on a fuller and more accurate understanding of the history than anything cited by Maher or Lipton. We seek to supply this here. We argue that there are features of the history which, to say the least, do not sit well with the Maher–Lipton view. Of course, no one could sensibly deny that the successful prediction of the new elements played *an* important role in the reception of Mendeleev's work; nor can it be denied, perhaps, that successful (temporal) predictions have a special psychological effect and that their impact can easily be felt by a wider audience than just specialists in the field. We shall argue however that the real evidential situation, so far as the experts were concerned, was altogether more cumulative and multi-faceted. (Scerri and Worrall, 2001, p. 410)

On the following page we *disagree* with Brush who concludes in favor of predictivism in the case of the periodic table when we write:

> But he [Brush] feels forced by the evidence in the case of Mendeleev to conclude that there—perhaps uniquely—special weight was indeed given to predictions. We will argue that the historical evidence that Brush himself alludes to in fact, on careful analysis, fails to support this conclusion. (Ibid., p. 411)

and:

> We argue in particular that certain 'accommodations' within Mendeleev's table were at least as significant as any predictive success... (Ibid.)

We cast doubt on Maher and Lipton's two-stage account according to which Mendeleev's early paper contained no predictions while his later one did. Whereas Maher and Lipton use this notion to support their view that only the later Mendeleev paper made predictions and garnered much attention, we argue that the historical evidence does not support this account.

Throughout the next few pages we cite Lipton and Maher in order to dispute their view of the overwhelming virtue of predictivism. We do not analyze these episodes in order to support predictivism but rather to undermine its role it in the historical case in question. For example, we note the 'implausibility of Maher's story about the impact of the predictive success' in the case of Mendeleev's periodic table.

Let me now turn to another of Barnes's points. Barnes claims that:

> ...according to S & W there are two types of predictions a theory can make. I will refer to these two types of predictions as 'core-predictions' and 'conjunction-predictions'. (Barnes, this issue)

However, nowhere in our paper do Worrall and I claim that there are two kinds of predictions, nor do we characterize them in this Lakatosian manner that Barnes attributes to us. What we do claim is that predictions are made from the periodic law rather than from the periodic table. This is not the same as making a distinction between core and auxiliary hypotheses. If we had tried to characterize the core–auxiliary distinction in the case of the periodic table I suspect that we would have suggested something along the following lines:

> *Core hypothesis*: The elements repeat approximately after particular sequences in their natural order.
>
> *Auxiliary hypothesis*: Each element is characterized by its atomic weight.

The distinction we *did* draw in the article was that between predictions made from the periodic law as opposed to any made from the periodic table. This is an altogether different issue, which has little to do with Barnes's distinction between core and auxiliary hypotheses. The passage in question that I believe Barnes has mis-characterized occurs on page 416 where we wrote:

> ...'the' periodic table is not itself a theory and therefore directly underwrites no prediction. (Scerri & Worrall, 2001, p. 416)

Before discussing this notion in greater depth in the paper we return to our main task of undermining, and not upholding, predictivism in this historical case. We suggest that if scientists of the time had indeed been predominantly impressed by predictive success of Mendeleev's table, then it is a little puzzling that they failed to even mention this aspect in the citation for the Davy award. And as we pointed out, this was in addition to the fact that the prize was jointly awarded to Mendeleev and his contemporary Lothar Meyer who made no significant predictions whatsoever and yet seemed to be equally recognized at least in terms of this award.

In the course of pp. 420–421 Worrall and I engaged in a survey of the several predictive failures that befell Mendeleev. Once again we carried this out with a view to emphasizing that if so much depended on successful predictions then far less credit should have been accorded to Mendeleev. The only alternative might be if one were prepared to consider only predictive *success* while condoning predictive failures.

On a later page we wrote:

> Having clarified, and attempted to counter misunderstandings of, some particular aspects of the history, we need also to clarify the general methodological view of the evidential impact of prediction that we endorse—a view that, again, could easily be misunderstood. (lbid., p. 423)

Could it be that this passage is what led Barnes to conclude that we endorse predictivism *tout court*? It is a little ironic that this should have occurred from a sentence where we specifically anticipated possible misunderstanding although apparently to no avail.

Reference

Scerri, E., & Worrall, J. (2001). Prediction and the periodic table. *Studies in History and Philosophy of Science*, *32A*, 407–452.