

## Notes on the normative and the descriptive in Kuhn<sup>\*†</sup>

1. The question before us is whether Kuhn's theory of science is a description of what scientists do or a normative-prescriptive theory that tells scientists what they should do.
2. Before looking at Kuhn, it is important to introduce two distinctions to frame the discussion.
3. First distinction: in addition to the distinction between the descriptive and the normative, it is worth distinguishing the normative from the prescriptive. This distinction comes out in relation to Lakatos's refusal to give scientists advice based on the methodology of scientific research programmes. The latter is a normative theory of scientific rationality. But Lakatos refrains from giving scientists advice to adopt a progressive and abandon a regressive research programme. Lakatos's methodology is normative but non-prescriptive. In "Method or Madness", Musgrave asks whether this makes sense. Doesn't a normative theory entail prescriptions? Well, it does seem that we can make the distinction between a normative theory and a theory which provides prescriptive advice. Following Goldman, Lycan makes a distinction between a normative theory of epistemic justification and a doxastic decision procedure. The idea is that one can have a theory about the nature of epistemic justification that doesn't provide the epistemic subject with rules that they can effectively follow in working out which beliefs to adopt.
4. Second distinction: distinction between methodology and meta-methodology. A methodology provides a set of methodological rules, standards, values or procedures. A meta-methodology provides the justification for the rules, etc., listed in the methodology. An example of a meta-methodology is Laudan's normative naturalism, in which Laudan outlines the way in which methodological rules may be evaluated on an empirical basis, thereby providing a naturalistic account of the warrant or lack of warrant of methodological rules. Another example of a meta-methodological theory is Karl Popper's claim in *The Logic of Scientific Discovery* that the rules of scientific method have the status of conventions. This suggests that the rules of scientific method are unable to be evaluated empirically and that they do not have a truth-value.
5. In *Structure*, Kuhn talks about rules that are used to judge the adequacy of puzzle-solutions. Puzzles arise within paradigms. The rules of puzzle-solving adequacy come from the paradigms. The puzzles and the rules vary with paradigms. I take the rules of puzzle-solving adequacy to be methodological rules which are employed in the appraisal of hypotheses, explanations, etc., that are proposed in the context of a paradigm. As such, the rules have normative force. Specifically, the rules are

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† Some of what follows is discussed in Nola and Sankey, pp. 285-98.

employed to evaluate puzzle solutions, hence are employed to determine whether a proposed puzzle solution is good or bad.

6. In *Structure*, Kuhn provides no detailed analysis of extra-paradigmatic rules. There is brief mention of commitments “without which no man is a scientist” (p. 42). Kuhn mentions concern to “understand the world”, precision, scope, “scrutiny” of nature in “great empirical detail”. Kuhn’s discussion of these commitments is so limited that it is not surprising that most commentators took him to think that methodological rules are limited to the rules of puzzle-solving adequacy that are internal to paradigm.
7. Puzzle-solving rules are at the level of methodology. What about meta-methodology? Does Kuhn have any account of the justification of methodological rules? At one point in *Structure*, Kuhn says there is no higher standard than the “assent of the relevant community” (p. 94). This appears to suggest that the justification of methodological rules consists in social acceptance. No epistemological rationale is provided for the rules. Rather, the justification of the rules consists in the fact that scientists have adopted the rules. Thus, Kuhn’s meta-methodological approach at this point appears to be a sociological one on which the status of the methodological rules is that of arbitrary social convention.
8. In *Criticism and the Growth of Knowledge*, Feyerabend says that Kuhn’s writings are ambiguous. Feyerabend asks:

... are we presented with *methodological prescriptions* which tell the scientist how to proceed; or are we given a *description*, void of any evaluative elements, of those activities which are generally called ‘scientific’? Kuhn’s writings ... are ambiguous in the sense that they are compatible with, and lend support to, both interpretations. (p. 198).

9. Kuhn replies to Feyerabend that his writings are to be “read in both ways at once”. They are both prescriptive and descriptive. He then provides this argument:

Scientists behave in the following ways: those modes of behaviour have (here theory enters) the following essential functions; in the absence of an alternative mode that would serve similar functions, scientists should behave essentially as they do if their concern is to improve scientific knowledge. (*Criticism and the Growth of Knowledge*, 1970, p. 237)

So far as I can tell, this argument does not appear in *Structure*. Nor is it clear what the argument is. Robert Nola and I have suggested that the argument is an inductive argument from what has led to scientific success in the past to what will continue to lead to scientific success in the future. The argument also appears to be naturalistic in the sense that it attempts to obtain a normative ‘ought’ from a descriptive ‘is’. In this respect, the argument has something in common with arguments one finds in epistemic naturalists such as Laudan, Quine and Kornblith.

10. In ‘Objectivity, Value Judgement and Theory Choice’, Kuhn replies to the criticism that he makes science irrational and winds up in relativism. He does so by elaborating

on the commitments “without which no man is a scientist” mentioned in *Structure*. He lists the five scientific values, of accuracy, simplicity, etc. (He mentions other values at other places: see Hoyningen-Huene, p. 149 for references.) These are values rather than rules. They guide rather than dictate theory-choice. They are by and large stable. However, they may be interpreted in various ways. Moreover, they may enter into conflict when applied to particular theories. The values are largely independent of paradigms or theories. So, they have an extra-paradigmatic status not enjoyed by the paradigm-dependent rules of puzzle-solving adequacy. (Note that by this stage, Kuhn has stopped talking about paradigms.) The sketch of the five values occurs at the level of methodology. It is a description of the values that Kuhn takes scientists to employ. The claim that scientists employ these values appears to have the status of an empirical (historical) claim that these are the values that scientists in fact employ. There is no attempt to provide a rationale for the values. It is not clear at this point how Kuhn would reply to a question about the meta-methodological rationale for the values. (In the final pages of the article, Kuhn speaks briefly of a “philosophical justification” of the values. He says that to provide a “philosophical justification” would require solution of the problem of induction (p. 335). But he offers no solution to the problem of induction.)

11. In later work, Kuhn attempts to provide a meta-level rationale for methodology (e.g. “Rationality and Theory Choice”, p. 212; “Afterwords”, p. 252). The approach is conceptual or semantic. Kuhn applies his idea of local holism, of sets of inter-defined terms, at the level of the word ‘science’. Methodological standards such as accuracy and simplicity are conceptually connected with the notion of science. Kuhn holds that the rules or values of scientific methodology, such as accuracy and simplicity, are justified in virtue of semantic considerations relating to the word ‘science’. This semantic basis for the justification of rules is similar to Strawson’s analytic justification of induction and Goldman’s attempt to base epistemic normativity in semantic considerations. There are problems with attempting to normatively ground methodological standards in semantic considerations. As an example of such problems, consider the possibility that Stich raises about cultures whose epistemic vocabulary does not share the same semantic connections as our own. It does no good to tell a member of such a culture that our epistemic norms are justified because of what it means to be epistemically justified in our language. If different epistemic norms are built into the language spoken by the other culture, facts about the epistemic norms embedded in our language will have no grip on a member of the other culture. The fact that a norm is justified in terms of what is meant by ‘justification’ in our language is not a reason for a member of a culture which does not possess the norm to agree to the norm. Kuhn’s semantic grounding of the epistemic norms of science seems powerless to address this problem.

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