How does the problem of relativity relate to Thomas Kuhn’s concept of paradigm?
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After having published *The Structure of Scientific Revolutions* in 1962, Kuhn was much criticised for the use of the term ‘paradigm’. He later tried to answer the criticism in several works, by discussing and explaining the concept, and by claiming that he had used the term ‘paradigm’ in two different senses: The first sense of the term, which Kuhn also calls the ‘sociological’ sense, sees the paradigm as a *disciplinary matrix*. It stands for the entire constellation of beliefs, values, techniques and so on shared by the members of a given community. The second sense of the term is the paradigm as *exemplars of good science*. It denotes *one sort of element* in the constellation or matrix: the concrete puzzle-solutions, models or examples which can replace explicit rules of normal science (Kuhn 1996).

Kuhn’s view is that during normal science, researchers neither test nor seek to confirm the guiding theories of their paradigm. Anomalies are ignored or explained away. But when the accumulation of anomalies poses a serious problem for the disciplinary matrix, normal science will find it difficult to continue. The paradigm undergoes a crisis, and a scientific revolution and a paradigm shift take place (Kuhn 1996, Bird 2007).

**Incommensurability and relativism**

The paradigms are incommensurable, Kuhn claims. We can distinguish three types of incommensurability in Kuhn’s remarks: (1) methodological – there is no common measure because the methods of comparison and evaluation change; (2) observational – observational evidence cannot provide a common basis for theory comparison, since perceptual experience is theory-dependent; (3) semantic – the languages of theories from different periods of normal science is not inter-translatable. This is an obstacle to the comparison of those theories.

The third type of incommensurability, known as the semantic incommensurability thesis, shows that Kuhn assumes that meaning is (locally) holistic. A change in the meaning of one part of the lexical structure will result in a change to all its parts. The meaning of terms in a paradigm are interrelated in such a way that changing the meaning of one term results in changes in the meaning of related terms. This was, of course, a challenge to the positivist conception about observational sentences describing the world. On the other hand, Kuhn did not reject the
positivist anti-realistic view that theories do not refer to the world. Thus Kuhn rejected that both observational sentences and theories refer to the world (Bird 2007, Kvernbekk 2007).

It is not strange that Kuhn’s concept of incommensurability has brought about accusations of relativism. Indeed, there is a huge philosophical literature on the problem of relativism, and the debates are confusing because people neither agree about exactly what relativism affirms, nor about whose views should be described as relativistic. Let me just state that one important objection to relativism seems to be of this kind: When Kuhn claims that neither observations nor theories refer to anything but their context, that all knowledge is dependent on the paradigm, he consequently implies that also his own concept of the incommensurable paradigms is relative to a theory or to some standpoints. It is a mystery as to how, Kuhn’s critics say, if two things in the same field are incommensurable we can understand both well enough to see that that is just what they are (Sharrock&Read 2002). If all the observational and all the theoretical terms belong to the paradigm, will not evaluation become impossible? Are you not trapped within the paradigm? (Kvernbekk 2007)

Kuhn’s incommensurability thesis presented a challenge to the realistic conception of scientific progress, which asserts that later science improves on earlier science. According to Kuhn, science is not cumulative – we cannot properly say that Einstein’s theory is an improvement on Newton’s, since the key terms (for instance ‘mass’) in the two theories differ slightly in meaning. Thus, it could be claimed that that Kuhn represents a kind of relativism with bad (practical) consequences, a relativism that undermines our commitment to improving our ways of thinking, and that it, in the end, encourages intellectual passivity (Bird 2007). Why should we bother about science at all? Truth is identified with what is believed to be true, and what is believed to be true is not determined by rational science, but by large social forces in the disciplinary matrix (Kvernbekk 2007).

Is it still possible to get Kuhn off the charge of relativism?
Here is latter-day Kuhn, in an essay from the book The Road Since Structure (2000), where he famously says: “No sense can be made of the notion of reality as it has ordinarily functioned in the philosophy of science.” But do we instantly have to disagree with this? Is it not possible to argue for a position claiming that for my (or Kuhn’s) purposes, the ‘notion of reality as it has ordinarily functioned in the philosophy of science’ is meaningless? Kuhn has obviously reservations about how the notion reality has been used in the philosophy of science, but that
should not lead us to jump to the conclusion that Kuhn is denying that there is any real world ‘out there’. The critical element in the quote is, perhaps, that Kuhn is rejecting a doctrine in the philosophy of science, and one cannot necessarily infer that the notion of ‘reality’ (or of ‘nature’) has no place whatsoever in his account of paradigms and scientific revolutions.

Incommensurability means that we cannot compare paradigms in terms of a common measure. But does this mean that we can’t compare at all? To me, it seems (as if) Kuhn does imply that scientific change involves comparison of paradigms, since a scientific revolution is nothing but a judgement that one paradigm is better than another. Which paradigm can best explain the anomalies? There are always anomalies to any theory, but there are, of course, lots of instances which fit the theory too. Hence, the question is not; does this theory fit the facts, the (more) meaningful question is; does this theory fit the facts better than the other one.

The true (realist) critic will not necessarily go away at this point. All very well, she may say, but the comparison is only between one paradigm and the other. This kind of comparison is, in the end, of no use, she says, because there is no role for nature, for the last court of appeal, in this comparison. But it is just this ambition to contrasting paradigms with each other, on the one hand, and contrasting paradigms with nature or ‘objective truth’, on the other, that Kuhn rejects. Kuhn seems to claim that the picture of two theories proposing THIS and its direct contradiction NOT-THIS each being compared against the independently established fact of WHETHER OR NOT THIS just does not occur in real science (Sharrock&Reed 2002). In this sense, Kuhn is not a relativist: You can compare theories with others, and you can evaluate them, but it is just of no relevance to compare them with objective nature.

Let us see what else Kuhn actually says about incommensurability in *The Structure of Scientific Revolutions* (1996). He remarks: “…at times of revolution, when the normal-scientific tradition changes, the scientist’s perceptions of his environment must be re-educated – in some familiar situation he must learn to see a new gestalt. After he has done so, the world of his research will seem, here and there, incommensurable with the one he had inhabited before. That is another reason why schools guided by different paradigms are always slightly at cross purposes.” (my italics). Some? Here and there? Slightly? This quote shows that Kuhn’s formulation of the idea of incommensurability was, at the time of *The Structure of Scientific Revolutions*, quite unspecific on an important point, namely, just how great are the misunderstandings between scientists? One can read the passage as claiming that there almost certainly will be times when minds do not meet,
but that these will be on particular points, either major or minor. There is, I think, much moderateness of Kuhn’s concept incommensurability, which could prevent us from judging Kuhn guilty of relativity.

It could also be claimed that Kuhn does not preclude the possibility of progress in science, but that he denies that progress in science is progress toward anything ‘objective’. Kuhn does not see science as bringing us closer and closer to objective truth, but disputing this is not the same as denying that there is any progress. Perhaps it would be right to say that Kuhn does not view science at all in the way that philosophers of science are often apt to do, which is as the fulfilment of metaphysics, providing us with the ultimate categories for the characterisation of nature. Kuhn claims that the central problem of the philosophy of science – about the relationship between scientific theory and the intrinsic properties of nature – is wrongly posed. Yes, this view has bad consequences for the science of philosophy, but maybe not for science? (Sharrock&Read 2002).

Kuhn (1977, cited in Bird 2007) identified five characteristics that provide the shared basis for a choice of theory: 1. accuracy; 2. consistency; 3. scope; 4. simplicity; 5. fruitfulness (for further research). These are, for Kuhn, constitutive of science, but they cannot determine scientific choice. The criteria are imprecise, so there is room for disagreement about the degree to which they hold. Then, does Kuhn, with his concept of the sociological matrix, imply a version of a relativistic might-makes-right in science? Yes, perhaps. But if you really believe that power is an aspect in scientific work (still not the only one) it must better to be aware of it than not. To me, the true realist dream of rational and only rational choice between theories seems naïve.

To conclude: Thomas Kuhn might be a relativist, but I do not think his ideas constitute an unacceptable or useless relativism – we are, perhaps, not really trapped within the paradigm. (And if we are, I would say it is a fruitful trap…)
References


Kvernbekk, Tone. (2007). Class notes from lectures on philosophy of science, doctoral course, Faculty of Education, University of Oslo.