

# Kuhn, Coherentism and Perception

## 1. Introduction

In the latter half of the twentieth century, foundationalist approaches to epistemology and philosophy of science were widely rejected in favour of holist and coherentist approaches. Kuhn was not oblivious to this trend. Indeed, Kuhn may be regarded as a contributor to this anti-foundationalist tendency.

In this paper, I wish to consider the extent to which Kuhn's epistemological thinking was coherentist in nature. This is a task that has already begun in the work of Jouni-Matti Kuukkanen. However, I wish to go beyond Kuukkanen by raising a number of questions that he does not address. In addition, I wish to focus specifically on epistemological questions rather than on issues relating to the theory of truth to which Kuukkanen devotes considerable attention.

The structure of the paper is as follows. In section 2, I present Kuukkanen's coherentist interpretation of Kuhn. I regard the interpretation as a promising one that is worthy of further exploration. However, in section 3, I argue that the interpretation has a crucial shortcoming. It fails to show that Kuhn rejects non-doxastic justification in favour of coherence relations among beliefs. In section 4, I present a standard objection to coherentism that any adequate formulation of the doctrine must confront, the "input objection". I then frame the objection in terms of Kuhn's model. In section 5, I argue that Kuhn's account of science is able to satisfactorily deal with the input objection. In section 6, I explore the relationship between Kuhn's treatment of perception and the anti-foundationalist tendency that contributed to the rise of coherentism. Kuhn was critical of the idea of the given. But I will argue that he did not

reject the given in a sense that entails commitment to coherentism. In section 7, I briefly summarize the outcomes of the discussion.

## 2. The coherentist reading of Kuhn

My point of departure is a paper by Jouni-Matti Kuukkanen which makes the case for a coherentist reading of Kuhn (Kuukkanen 2007). Kuukkanen argues that Kuhn mistakenly rejected the correspondence theory of truth because he wrongly understood it in epistemic terms.<sup>1</sup> He suggests that a coherentist reading of Kuhn may enable Kuhn's views to be reconciled with a convergent realist view of scientific progress.<sup>2</sup> But my primary interest here is in neither of these points. What interests me is the case that Kuukkanen makes that Kuhn's view may be understood in terms of a coherentist account of epistemic justification. Kuukkanen does not claim that Kuhn explicitly endorsed a coherentist epistemology. Rather, the coherentist reading of Kuhn is "an extension of his philosophy" which Kuukkanen believes "does not distort his thinking" (2007, p. 559).

Kuukkanen points to several factors which set the stage for his coherentist reading of Kuhn (2007, pp. 557-9). Kuhn's adoption of a historical perspective on the nature of science formed part of his rejection of foundationalist forms of empiricism such as logical positivism.<sup>3</sup>

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<sup>1</sup> Kuukkanen goes too far in agreeing with Kuhn when he writes that Kuhn "correctly maintained that it is impossible to evaluate correspondence between beliefs and reality" (2007, p. 556). We make evaluations of correspondence in an entirely routine way. For example, I may check to determine whether my belief that I am now typing on a computer keyboard corresponds with reality, and in fact it does so correspond. The interesting question is not whether we do make such evaluations, but whether we may do so with certainty or in a way that is neutral with respect to competing theories or viewpoints.

<sup>2</sup> This aspect of Kuukkanen's view has been the topic of an earlier exchange (Šešelja and Straßer 2009; Kuukkanen 2009).

<sup>3</sup> Kuukkanen names logical positivism and empiricism as the main examples of "epistemological foundationalism" against which Kuhn reacted (2007, pp. 557-8). It is important to note, however, that the contrast between foundationalism and positivism, on the

The historical perspective led Kuhn to see scientists as working with historically situated sets of beliefs that are in place at various stages in the history of science. Such historically situated sets of beliefs form the epistemic background against which specific beliefs and theories are evaluated. The focus of the evaluation of belief is not justification of an individual belief but change of belief or modification of the set of beliefs. As Kuukkanen explains:

The focus is not on the evaluation of beliefs as such, because the whole inherited system of belief is more or less just taken for granted, as if presumptively justified, making it pointless or even impossible to ask justification of individual beliefs. (2007, p. 558)

On what basis are beliefs to be evaluated? Kuukkanen takes Kuhn to deny that beliefs may be directly compared with reality to determine correspondence (2007, pp. 557-8). So, truth cannot serve as a criterion of appraisal in the evaluation of belief. Instead, beliefs are evaluated with respect to their compliance with epistemic criteria or values other than truth.

Apart from these stage-setting factors, Kuukkanen specifically bases his interpretation on two key aspects of Kuhn's view. The first aspect is an epistemic conservatism which Kuukkanen finds in Kuhn's account of belief change. The second is the role played in Kuhn's account by the idea that science is essentially a problem-solving activity.<sup>4</sup>

The conservative aspect of Kuhn's view relates to the way in which an existing body of beliefs is taken by scientists to be presumptively justified. Rather than wholesale change of belief, scientists seek to improve the belief system in a piecemeal manner.<sup>5</sup> Where a system

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one hand, and coherentism, on the other, requires qualification. Some positivists, e.g. Otto Neurath, flirted with a coherentist theory of truth (see, Hempel 1935 for discussion).

<sup>4</sup> In *Structure*, Kuhn distinguishes between two main kinds of problems. On the one hand, there are the puzzles which are the focus of ordinary research activity in normal science (e.g. 2012, p. 36). On the other hand, there are the anomalies which arise in normal science, which resist solution and may ultimately give rise to crisis and revolution (e.g. 2012, pp. 82-3).

<sup>5</sup> This is not to deny, of course, that there may be scientific revolutions. To put it in terms of Kuhn's model of scientific change, there is a tendency on the part of normal scientists to resist fundamental alteration of paradigm and to make instead piecemeal adjustments of the existing

has a high degree of coherence, there is no incentive to alter it in fundamental respects. Kuhn's focus on change of belief rather than justification of individual beliefs also has a coherentist rationale. As Kuukkanen explains:

If our beliefs are holistically justified, that is, if the beliefs, in a set, mutually justify each other, then we have to understand the whole set as given and try to improve it, rather than to try to find a justification for individual beliefs on a one-by-one basis or (even less) to start the construction of a new system from scratch. (2007, p. 559)

Scientists work with a mutually supporting set of beliefs that are "already in place" in a historical situation. In such a context, questions of the justification of belief relate to the rationality of altering beliefs in a way that may be justified with respect to the background system of belief. It is the existence of a historically given set of background beliefs, and the need to justify belief change with respect to that set of background beliefs, that gives rise to the conservative element in Kuhn's view.<sup>6</sup>

As for the role played by problem-solving in science, Kuukkanen sees this as closely connected with the criteria of theory-choice. In work subsequent to *Structure*, Kuhn sought to clarify his view of the rationality of theory-choice by characterizing a set of non-algorithmic values that inform scientists' decision-making in the context of theory-choice (e.g. Kuhn 1977). The values include accuracy, consistency, breadth, simplicity and fruitfulness. Kuukkanen understands the values employed in theory-choice as factors which contribute to judgements of the problem-solving capacity of theories. They are the standards that scientists use to determine the adequacy of a proposed solution to a problem. When a scientist employs the

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paradigm. Revolutionary displacement of paradigm only occurs once a candidate paradigm capable of resolving crisis-inducing anomalies has been developed.

<sup>6</sup> Kuhn's views are often associated with those of Paul Feyerabend. But the conservatism of Kuhn's approach may constitute a point of difference between their views. In apparent recognition of the conservative element in Kuhn's view, Feyerabend attributes to Kuhn a "principle of tenacity", which he contrasts with his own "principle of proliferation" (Feyerabend 1970, pp. 203-5).

values in the context of theory-appraisal the scientist is conducting an evaluation of the problem-solving effectiveness of the theory.

Kuukkanen sees a close fit between the problem-solving conception of science and coherentist epistemology (2007, p. 561). The existence of anomalous phenomena that are unable to be explained on the basis of a set of beliefs will reduce the coherence of the set of beliefs. Solving a problem may increase the coherence of the set of beliefs. The value of consistency promotes coherence directly since coherence requires consistency. The values of simplicity and breadth promote coherence because more powerful explanations reduce the number of sub-systems within a system of beliefs, thereby increasing overall coherence of the system. The value of accuracy serves to reduce the number of anomalies facing a system since accuracy indicates agreement between theory and observation. Fruitfulness may conduce to future increase of problem-solving capacity, leading to an increase in overall coherence. Thus, Kuukkanen suggests that “all criteria are linked either directly or indirectly via problem-solving to coherence, which makes Kuhn’s philosophy consistently coherentist” (2007, p. 560).

### 3. A shortcoming of the coherentist reading

Kuukkanen makes a suggestive case for a coherentist reading of Kuhn. While I agree that there are coherentist elements in Kuhn’s view, I do not find the case fully compelling. The reason is that there is an essential ingredient of coherentist epistemology which is lacking from Kuukkanen’s account. Without this ingredient, Kuhn’s position fails in a strict sense to be coherentist.

The key issue that separates coherentism from foundationalism in epistemology relates to the possibility of a non-doxastic source for epistemic justification.<sup>7</sup> For the foundationalist,

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<sup>7</sup> The need to avoid a non-doxastic source of justification within a coherentist epistemology is illustrated by Laurence Bonjour’s treatment of observational beliefs. For Bonjour, the justification of an observational belief is not based on the experience that produces the belief.

justified basic beliefs receive non-inferential justification from a non-doxastic source, such as sense experience. Unlike basic beliefs, non-basic beliefs receive inferential justification from a doxastic source, namely from other beliefs. By contrast with foundationalism, the coherentist denies the possibility of a non-doxastic source for epistemic justification. In effect, there are no basic beliefs for the coherentist. All justification is inferential justification. Beliefs receive justification by way of inferential relations from other beliefs within the belief system. For the coherentist, no beliefs receive justification from a non-doxastic source.<sup>8</sup>

This is the crux of the issue between coherentism and foundationalism. Kuukkanen fails to show that Kuhn rejects the possibility of a non-doxastic source for epistemic justification for basic beliefs. For this reason, he fails to show that Kuhn is in a strict sense a coherentist. Still, Kuukkanen is on safe ground when he describes his coherentist reading as an “extension” of Kuhn which “does not distort his thinking”. There are coherentist elements in Kuhn’s thought. Indeed, Kuukkanen’s case for the coherentist reading is sufficiently strong to warrant further exploration of the coherentist tendency in Kuhn’s thought. In the next section, I will commence this task by bringing Kuhn’s view into contact with a major objection to coherentism.

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Instead, the justification derives from beliefs about the circumstances in which the belief is produced (1985, p. 118). In her criticism of Bonjour’s coherentism, Susan Haack focuses on the role played by experience in the production of observational beliefs. Her foundherentism departs from coherentism precisely in granting a justificatory role to the experience that prompts such belief (e.g. 1995, p. 60).

<sup>8</sup> This may require slight qualification. For the coherentist, a belief is justified by coherence with other beliefs within a surrounding belief-system. Given that the source of justification is coherence with other beliefs, there is a doxastic source of such justification. But it is important to bear in mind that the justification is understood to be inferential. Inferential relations (e.g. deductive or inductive relations) are non-doxastic relations. This appears to suggest that the source of justification contains both doxastic and non-doxastic elements. One way for the coherentist to avoid this implication is to require that the inferential relationships be believed to obtain by the epistemic subject.

#### 4. The input objection to coherentism

Though not entirely compelling, the coherentist reading of Kuhn warrants further investigation. To initiate this task, I will first present a central problem which faces coherentism. The question that I wish to consider is whether Kuhn's position has the capacity to deal with this problem.

There are a number of problems that an adequate coherentist epistemology must address. I focus here on a problem that is of particular relevance to the epistemological aspects of Kuhn's position with which I am currently concerned. Following Laurence BonJour, I refer to the problem as the "input objection".<sup>9</sup> It is also known as the "isolation objection".

According to a coherentist account of epistemic justification, a belief is justified by a relation of coherence which obtains between the belief and surrounding beliefs within a belief-system. The problem is that a system of beliefs might be internally coherent even though the system of beliefs fails to have any contact with the world. There could be a set of beliefs which is internally coherent even though there is no input from the external world which contributes to that set of beliefs. Given that the set of beliefs is internally coherent, beliefs within the system of beliefs would be justified by way of their coherence with other beliefs in the belief-system. Yet, surely, a crucial ingredient is lacking with respect to the justification of beliefs within the coherent system. What is lacking is input from the world outside the system of belief.

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<sup>9</sup> Apart from the input objection, BonJour considers two others (1985, pp. 107-10). One is the alternative coherent systems objection: there may be mutually incompatible but internally coherent systems of belief; hence, there is no reason to hold one belief rather than its opposite, since both the belief and its opposite will be justified within some system of belief. The second objection is the problem of truth: the internal coherence of a system of beliefs provides no reason to think that a belief is true, where truth is understood in a correspondence sense.

To respond to the input objection, the coherentist must show that the external world has an impact on the system of beliefs.<sup>10</sup> The question that I wish to pursue in relation to Kuhn is whether his account of science can meet the input objection. Kuukkanen has correctly identified a coherentist tendency in Kuhn. I wish to go a step further than this. I wish to ascertain, not just whether there are coherentist elements in Kuhn's work, but whether his account of science satisfies a minimal condition of adequacy for a coherentist epistemology. If Kuhn is unable to deal effectively with the input objection, his account will fail to have what it takes for an adequate coherentist epistemology.

To set the question up, let us first frame the input objection in Kuhnian terms. According to Kuhn, in normal science scientists devote themselves to solving puzzles on the basis of a shared paradigm. On occasion, anomalies which resist solution within the paradigm give rise to a crisis. This may result in revolutionary overthrow of the paradigm, and the resumption of normal science under a new paradigm. On a coherentist reading of Kuhn, scientists maintain an internally coherent set of beliefs throughout this process. In normal science, a coherent set of beliefs is maintained because the puzzles that arise during normal scientific research are all solved using the resources of the paradigm. In the context of a revolution, scientists who adopt the new paradigm seek to restore the coherence which was undermined by the anomalies that confronted the previous paradigm.

The input objection may now be presented in terms of Kuhn's model. On the coherentist reading, scientists maintain a coherent set of beliefs throughout normal science and revolutionary transition between paradigms. Is there any scope in Kuhn's model for input from

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<sup>10</sup> I assume, of course, that the coherentist is not an outright idealist for whom the world and belief-system are one and the same thing. It is precisely because Bonjour wishes to combine a coherentist account of epistemic justification with realist commitment to a mind-independent reality that the input problem arises for his coherentist theory (e.g. 1985, p. 108). On the assumption that Kuhn is not an idealist for whom the world collapses into belief, the problem arises as well for a Kuhnian coherentist.

the world into the internally coherent belief-systems of scientists? Or are the systems of belief cut off from reality altogether? If there is no input from the external world, then Kuhn's view falls prey to the input objection.

#### 5. A Kuhnian response to the input objection

The answer that I wish to propose is that Kuhn is indeed able to deal with the input objection in terms of his model. My answer will turn on two considerations. The first relates to the role of problem-solving in Kuhn's model of scientific change. The second relates to the causal role played by the world in the production of scientists' perceptual experience.

Starting with the issue of problem-solving, we have seen that Kuukkanen takes there to be a close connection between the problem-solving account and coherentism. But, apart from that, the idea that science is a problem-solving enterprise provides a basis for a Kuhnian response to the input objection. This may be seen, in the first place, from the problems to which normal scientific research is dedicated. Normal scientific puzzles involve the precise measurement of significant facts (e.g. physical magnitudes, stellar positions), improvement of fit between prediction and observed fact (e.g. detection of the neutrino), and articulation of the paradigm (e.g. work on the value of the gravitational constant after Newton) (2012, pp. 25-8). All such normal scientific puzzles involve empirical information that stems from the world investigated by scientists, with the result that substantial scope exists for empirical input from the world into the belief-systems of scientists. The point is even more striking in the case of anomalies. For Kuhn, an anomaly is an empirical phenomenon that fails to fit with the existing paradigm, and whose existence may prove impossible to reconcile with the paradigm. As such, an anomaly introduces incoherence into the belief-system of scientists, since the anomaly is incapable of being explained within the prevailing belief-system. Given this, the anomaly constitutes an imposition of the world on the paradigm. Recognition that such an unexpected

phenomenon exists is the result of input into the belief-system from the world outside that system of belief.

The problem-solving apparatus of Kuhn's model requires that a role be played by the external world in the production of problems. This indicates that Kuhn's model has the capacity to deal with the input objection, since problems are injected into the belief-system from the world outside of the belief-system. This point may be reinforced by considerations about the causal role played by the world in the perceptual experience of scientists. For this point, I will draw upon Paul Hoyningen-Huene's discussion of this aspect of Kuhn.

In his neo-Kantian interpretation of Kuhn, Hoyningen-Huene introduces a distinction between the phenomenal world which varies with paradigm and the world-in-itself which remains stable throughout change of paradigm (1993, pp. 33-5).<sup>11</sup> On Hoyningen-Huene's analysis, Kuhn implicitly allows the world-in-itself to play a causal role in the production of scientists' perceptual experience (1993, p. 34). As evidence for this, Hoyningen-Huene cites several passages in *Structure* in which Kuhn credits the world-in-itself with partly determining a scientist's experience (e.g. Kuhn 2012, p. 112). In work published in the early 1970's, Kuhn sought to clarify his view about the relation between world and experience by employing the notion of a stimulus (Hoyningen-Huene 1993, section 2.2). The stimulus is the external cause of sensory experience. While the stimulus that a scientist receives from the world does not fully determine the content of perception, it does play a causal role in producing the sensation. Thus, both in *Structure* and in subsequent work undertaken to clarify some aspects of *Structure*, Kuhn attributes a causal role to the world in the production of experience. Given the causal

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<sup>11</sup> The contrast between the neo-Kantian view and my own scientific realism is, of course, the focus of significant disagreement between Hoyningen-Huene and myself. However, for present purposes, I set this issue to one side. As far as the input objection is concerned, both the realist and the neo-Kantian may grant a role to the world as source of input into the system of belief.

role played by the world in the production of experience, it seems clear that scientists receive input from the world. Hence, they are not, as the input objection suggests, cut off from the world with no possibility of empirical input into their belief-systems from the world around them.

The coherentist must tread carefully around the input objection. To meet the objection, a role must be granted to the world, so that the system of beliefs is not cut off from the world. At the same time, input into the belief-system from the external world must not be granted a role in the justification of belief. To allow empirical input to contribute to justification would be a departure from a coherentist account of justification on which justification must have a doxastic source. To allow empirical input to play a justificatory role would be to incorporate a foundationalist element into the theory of justification.

Nothing about the two points I have made on behalf of Kuhn in response to the input objection entails that input from the external world must contribute to epistemic justification. As for the first point, the fact that the world plays a role in the generation of problems does not entail that the input from the world contributes to the justification of scientists' beliefs. As for the second point, the coherentist may allow that the world plays a causal role in the production of sensory experience while insisting that justification consists in coherence relations between beliefs. If I am right about the two points, then I think it is safe to conclude that Kuhn's model of theory-change has the resources to meet the input objection.

## 6. Kuhn, the Cartesian Paradigm and the Myth of the Given

In the second half of the 20<sup>th</sup> century, coherentism emerged as part of a reaction against empiricist forms of foundationalism. An important part of the reaction was rejection of what Wilfrid Sellars referred to as the "myth of the given". Kuhn's work forms part of the reaction

to empiricist forms of foundationalism as well as against the notion of the given. In this section, I will explore this aspect of Kuhn's work in the context of the suggestion that his position may be interpreted as a form of coherentism.

I wish to explore two aspects of Kuhn's work under this head. The first relates to Kuhn's rejection of what he described as a "philosophical paradigm initiated by Descartes" (2012, p. 121). The question I wish to ask is whether rejection of this Cartesian paradigm entails rejection of foundationalism and an associated acceptance of coherentism. The second aspect that I wish to explore relates to the myth of the given. In Sellars' work, rejection of the myth of the given leads in a coherentist direction. The question I wish to explore on this front is whether Kuhn's rejection of the given has the same coherentist implications.

Kuhn was an advocate of the theory-dependence of observation. He did not just hold that observation is guided by or interpreted in light of theory. He held that the perceptual experience of a scientist is influenced by the theory (or paradigm) that the scientist brings to bear on the observation which gives rise to the experience. In articulating this view, Kuhn speaks of a "philosophical paradigm" (2012, p. 121) or "epistemological viewpoint" (2012, p. 125) which he believes to have held sway in the Western philosophical tradition since Descartes. According to this view, perceptual experience is fixed "by the nature of the environment and of the perceptual apparatus" (2012, p. 120). It is "fixed and neutral" (2012, p. 125). But, as Kuhn explained in the terms he employed in work after *Structure*, "we now know (as Descartes did not) that the stimulus-sensation correlation is neither one-to-one nor independent of education" (1970, p. 276). In other words, Kuhn took the traditional philosophical view since Descartes to be that the character of a perceptual experience is fixed by the circumstances of observation in such a way that two people in exactly the same situation would have exactly the same experience. Against this view, Kuhn holds that scientists' experience may vary with respect to paradigm. Hoyningen-Huene describes Kuhn's view as

the “plurality-of-phenomenal-worlds thesis” or the thesis of “the nonuniqueness of the relationship between the world-in-itself and the many phenomenal worlds” (1993, p. 37).<sup>12</sup>

I regard this as a mistaken thesis. It trades on confusion between what one perceives and what one thinks about what one perceives.<sup>13</sup> It does not follow from the fact that what one thinks about an object may vary that the object may vary. What varies with theory (or paradigm) is not the object experienced or even the experience of the object. What varies are the beliefs or theories that one holds about the object. What may also vary, possibly because of such variation, are the concepts, vocabulary and meaning of the terms that are applied to the fixed objects of which one has experience.

But this is not the point at issue here. What is at issue here is whether the thesis of the “non-uniqueness” of the relationship between external object and subjective experience has any implication with respect to the coherentist interpretation of Kuhn. Does Kuhn’s rejection of the idea that there is a one-to-one correspondence between object and experience indicate acceptance of a coherentist as opposed to a foundationalist epistemology?

I want to suggest that it does no such thing. For the sake of argument, we may suppose that Kuhn is right about the lack of one-to-one correspondence between object and experience (or “stimulus” and “sensation”). Two perceiving subjects who observe the same object in the same circumstances may have a different experience depending on background paradigm.

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<sup>12</sup> I do not propose to consider here the historical question of whether Kuhn is right to say that the philosophical tradition since Descartes held that there is a one-to-one correspondence between object and experience. As a potential counter-example to Kuhn’s claim, I will simply mention the idea of an inverted spectrum that is found in Locke’s *Essay on Human Understanding* (II, xxxii, 15). I only offer this as a potential counter-example, however, since Locke does speak of difference in the structure of organs, which might entail difference in what Kuhn calls “perceptual apparatus”.

<sup>13</sup> It seems to me that Alexander Bird’s analysis of the theory-dependence of observation in terms of intensional and extensional uses of ‘see’ both brings out the basis for this confusion and resolves it (see, e.g., Bird, 2000, p. 104).

Equally, one and the same subject who undergoes a paradigm shift may have a different experience of the same object in the same conditions before and after the paradigm shift.

What follows about the relationship between perception and the justification of a perceptual belief? On a foundationalist theory of epistemic justification, the two perceiving subjects who have different experiences in the same circumstances (or the same subject before and after a revolution) are still able to have basic beliefs justified by the experience that they have in those circumstances. One subject may have a belief that is justified by the experience that they have of the object. The other subject may have a different belief that is justified by the different experience that they have of the same object. In both cases, the subject is able to appeal to their experience of the object as the justification for the basic belief which they hold about the object on the basis of their experience. What is challenged by the lack of one-to-one correspondence is not the foundational structure of the relation between perception and basic perceptual belief. What is challenged is the invariance, neutrality or paradigm-independence of the experience. Hence, the alleged non-uniqueness of the relationship between perceived object and perceptual experience fails to provide support for the coherentist interpretation of Kuhn.

What about the second point, Kuhn's rejection of the given? Kuhn does speak somewhat critically of the given on several occasions (e.g. 2012, pp. 125-7). But it is not clear that Kuhn understood the notion of the given in the way that Sellars did when he wrote of the myth of the given. Because of this it is not clear that Kuhn's rejection of the given has the same implications with respect to coherentism as Sellars' rejection of the myth of the given.

Kuhn does not consistently employ the expression 'the given'. He also speaks *inter alia* of "immediate experience", "raw data", "brute experience" and "given data" (2012, p. 125), as well as "observation" (2012, p. 120). Because of the lack of consistency and precision in the vocabulary Kuhn employs, it is not always perfectly clear what he is talking about or

what he means. Indeed, it is not even clear whether he rejects the existence of the given rather than merely holding that the given plays a limited or negligible role in the sciences. Nevertheless, it seems clear that there is a sense of “the given”, in which Kuhn can be shown to reject it.

As we have previously seen, Kuhn takes the traditional philosophical view of perception to be one that may be traced back to Descartes. According to Kuhn, the traditional view is that there is a unique experience that corresponds to any particular set of observational circumstances. All human perceivers have qualitatively the same experience when presented with the same observational circumstances. On the traditional view, a distinction is to be made between observation and interpretation. Observation is “fixed once and for all by the nature of the environment and of the perceptual apparatus” (2012, p. 120). Observation itself is invariant between perceivers. But it may be subject to alternative interpretations by different scientists in the context of different theories or paradigms. The idea that observation is fixed, and that it is entirely independent of the interpretation placed upon it by theory (or paradigm), provides a clear sense for the notion of “the given”. In particular, “the given” is the sensory experience which a perceiving subject undergoes when they observe some state of affairs. This experience is invariant between perceivers with respect to shared observational conditions. The experience is prior to and independent of the interpretation placed upon it in the context of a theory (or paradigm).

Kuhn rejects the traditional view that there is a given in the sense just specified in favour of the view that different perceivers may have a different experience when they perceive the same thing in the same circumstances. So, in this specific sense Kuhn does reject the idea of the given. The question I will now raise is whether this is the same notion of the given that Sellars (1963) had in mind in rejecting the myth of the given. Rather than engage in Sellars scholarship, I will work with a version of Sellars’ argument that is found in the epistemological

literature. The argument is sometimes referred to as the “Sellarsian dilemma” (e.g. Lyons 2008).

To set up the dilemma, we need to bear in mind the role that the given is meant to play within the context of an empiricist epistemology with a foundationalist justificatory structure. Within the context of such an epistemological theory, a distinction is made between basic beliefs which receive non-inferential justification from experience, and non-basic beliefs which receive inferential justification from other beliefs. In this context, the role of the given is to provide basic beliefs with epistemic support. The question is how an experience may provide a belief with such support.

Here it is important to note that a belief is a propositional attitude state. As such, a belief has a propositional content. The question now becomes that of what kind of state a sensory state must be for it to stand in a justificatory relation to a belief state which has such content. There are basically two options. Either a sensory state has a propositional content or it does not. If a sensory state has a propositional content, then it will be able to stand in an appropriate relation of justification to the belief state. But the problem is that, given that the sensory state has a content, the sensory state itself stands in need of justification. In order to justify the sensory state, appeal must be made to some other state. Because the sensory state requires further justification, it cannot play a regress-terminating role in a foundationalist epistemology. The other option is that the sensory state does not have a content, and, as such, does not stand in need of justification. This might seem to be the right way to think about sensory states. But the problem now is that, if a sensory state does not have a content, then it is unable to stand in an appropriate justificatory relation to a belief state which does have a content. So, it cannot play the role that it is required to play in the justification of beliefs. Thus,

either a sensory state cannot play its foundational role because it must be justified or it does not need to be justified but cannot play its justificatory role.<sup>14</sup>

This argument against foundationalism provides support for a coherentist theory of epistemic justification. On the one hand, the argument suggests that there may be no non-doxastic source for the justification of basic beliefs. On the other hand, the argument suggests that justificatory relations may only hold among beliefs because beliefs have propositional content, and so may enter into justificatory (inferential) relations with each other. The resulting position is, in effect, a coherentist view on which there are only non-basic beliefs which receive justification via inference from a doxastic source, namely, other beliefs within a belief-system.

Now, to return to Kuhn, the question is whether Kuhn's rejection of the given leads in the way just sketched to a coherentist position. The answer, I think, is negative. The reason is that the notion of the given that Kuhn rejects does not have built into it the capacity to justify basic beliefs. The notion of the given that Kuhn rejects is the notion of perceiver-invariant experience that is independent of interpretation by paradigm. It is not the notion of a sensory state that has the capacity to provide justification for a basic belief. Thus, Kuhn's rejection of the given does not entail endorsement of a coherentist view. His rejection of the given does entail rejection of the idea that experience is neutral or invariant. But, as we saw, that is consistent with a foundationalist theory of justification.

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<sup>14</sup> In my formulation of the argument, I loosely follow Bonjour (1985, p. 69; cf. p. 78). However, Bonjour uses the expressions "cognitive" and "judgment" in speaking about sensory states, whereas I put the point explicitly in terms of propositional content. In this, I follow Sosa (1980, pp. 6-7), who formulates a similar argument in terms of propositional attitudes and content. The argument presupposes that relations of justification must be relations that are either inferential or inference-like, and that they can only obtain between states with propositional content. Sosa characterizes this as an "intellectualist model of justification" (1980, p. 8), the key feature of which is that justificatory relations are "parasitic" on logical relations. Of course, one way to avoid the dilemma is to reject the intellectualist model, for example, by adopting a reliabilist account of the warrant of basic beliefs.

## 7. Conclusion

In this paper, I have sought to further explore the suggestion originally due to Kuukkanen that Kuhn's account of science may be understood in coherentist terms. My focus has been on coherentism as a theory of epistemic justification rather than on the relationship between coherentism and the correspondence theory of truth, which is one of Kuukkanen's chief concerns. I think that Kuukkanen is right in claiming to have identified coherentist or coherentist-tending themes in Kuhn's philosophy of science. However, I think that one crucial element of coherentism is lacking from Kuhn's work, since he fails to explicitly deny the existence of basic beliefs which have a non-doxastic source of justification. Correlatively, Kuhn does not explicitly assert that epistemic justification may only derive from inferential relationships which obtain between (non-basic) beliefs.

Despite this shortcoming in the coherentist interpretation of Kuhn, I regard the interpretation as highly promising. For this reason, I have attempted to further develop the coherentist interpretation of Kuhn. In order to do this, I raised the question of whether Kuhn's account of science is able to deal with a major objection to coherentism (the "input objection"). I argued that the role played by problems in Kuhn's theory of science ensures that there is input from the external world into the belief-systems of scientists. Moreover, I followed Hoyningen-Huene in pointing to the causal role played by the external world in the determination of perceptual states. Having argued that Kuhn's account may withstand a major objection to coherentism, I turned to the question of whether Kuhn's rejection of foundationalism contains elements of coherentism. Against this, I argued that Kuhn's rejection of the one-to-one relation between object and experience is not incompatible with a foundationalist account of justification. Nor does Kuhn's rejection of a notion of the given carry with it the same coherentist implications as Sellars' critique of the myth of the given.

There is one remaining point to make. There is no doubt that Kuhn's work came to prominence during a time-period in which foundationalism was under attack and coherentism was on the rise. It is natural to read Kuhn as having views that are consonant with philosophers working at the same time who had coherentist leanings. It is not overly surprising to find that there is a coherentist tendency in Kuhn, since coherentist tendencies were widespread in the time-period during which he worked. What is surprising to me, as a philosopher of science turned epistemologist, is to find that coherentism is currently on the run and that foundationalism has made a come-back, at least within epistemology.

## References

- Bird, A. (2000), *Thomas Kuhn*, Chesham: Acumen
- BonJour, L. (1985), *The Structure of Empirical Knowledge*, Cambridge, Mass: Harvard University Press
- Feyerabend, P.K. (1970), 'Consolations for the Specialist', in I. Lakatos and A. Musgrave (eds.), *Criticism and the Growth of Knowledge*, Cambridge: Cambridge University Press, pp. 197-230
- Haack, S. (1995), *Evidence and Inquiry*, Oxford: Blackwell
- Hempel, C.G. (1935), 'On the Logical Positivists' Theory of Truth', *Analysis* 2: 4, pp. 49-59
- Hoyningen-Huene, P. (1993), *Reconstructing Scientific Revolutions: Thomas S. Kuhn's Philosophy of Science*, Chicago: University of Chicago Press
- Kuhn, T.S. (1970), 'Reflections on my Critics', in I. Lakatos and A. Musgrave (eds.), *Criticism and the Growth of Knowledge*, Cambridge: Cambridge University Press, pp. 231-278
- Kuhn, T.S. (1977), 'Objectivity, Value Judgment and Theory Choice', in *The Essential Tension*, Chicago: University of Chicago Press, pp. 320-339
- Kuhn, T.S. (2012), *The Structure of Scientific Revolutions*, 4<sup>th</sup> ed., Chicago: University of Chicago Press

- Kuukkanen, J-M. (2007), 'Kuhn, the correspondence theory of truth and coherentist epistemology', *Studies in History and Philosophy of Science* 38, pp. 555-566
- Kuukkanen, J-M. (2009), 'Closing the door to cloud-cuckoo land: a reply to Šešelja and Straßer', *Studies in History and Philosophy of Science* 40, pp. 328-331
- Lyons, J. C. (2008), 'Evidence, Experience and Externalism', *Australasian Journal of Philosophy* 86: 3, pp. 461-479
- Sellars, W. (1963), 'Empiricism and the Philosophy of Mind', in *Science, Perception and Reality*, Atascadero: Ridgeview, pp. 127-196
- Šešelja, D. and C. Straßer' (2009), 'Kuhn and coherentist epistemology', *Studies in History and Philosophy of Science* 40, pp. 322-327
- Sosa, E. (1980), 'The Raft and the Pyramid: Coherence versus Foundations in the Theory of Knowledge', in P. French, T. Uehling and H. Wettstein (eds.), *Midwest Studies in Philosophy V 1980: Studies in Epistemology*, Minneapolis: University of Minnesota Press, pp. 3-25