Review: "Kuhn, Truth, and Scientific Progress"
Paper 2

General Comments:

In general your paper is good. There are relatively few mistakes (grammatically, syntactically, etc.) and the prose is smooth. I will point out the mistakes that I did find, but I am going to spend the majority of this review explaining what may be a possible miss-read of Kuhn's contention. I think that this issue far outweighs any others in your paper, so I will address it at length, and try to offer my best arguments against the contentions you make in your paper so that perhaps you might consider slightly changing your approach upon revision. I do not think that this will require a major overhaul, but I will leave all of that for you to decide.

So your basic contention is that Kuhn says that scientific theory is never "truth" and that with direct observation we can, in fact, attain "truth." The biggest problem, as I see it, is that you somewhat misrepresent what Kuhn says about paradigm revision and shifts which substantially weakens his contentions. Then, you bring up numerous examples (which are good, by the way) where it seems clear that Kuhn was wrong. However, this is somewhat unfair due to the original misrepresentation, which makes Kuhn's theory far more vulnerable to criticism.

So what is this misrepresentation? For most of the paper you say that paradigms change through dramatic shifts. In fact, I think Kuhn would say, many paradigms experience small revisions over time. Say, for example a new piece of evidence is found that contradicts the paradigm. The entire paradigm need not be thrown out, in fact in many cases it can be easily adapted to include this newly observed phenomenon. New paradigms to not all have to be like some of the dramatic ones that Kuhn cites in his book (for example, Franklin's electricity paradigm). In fact, I would argue that the *first* paradigm in any field will be the most dramatic, and successive paradigms will be less and less dramatic, until a field is so well researched that only the smallest additions to and modifications of the paradigm are made through modern science.

So how does this relate to truth? I think this constant revision process that Kuhn would say normal science does to paradigms is brining the paradigm closer and closer to truth. You can think of this in an asymptotic sense –Kuhn believes as science progresses we will get ever closer to truth but never reach "exact truth." Now you may contend with this, but I think it bears considering the full scope of Kuhn's argument.

So could something that is "directly observed" not be truth? Kuhn would say, I think, that, especially in relation to the paradigm as a whole, to say that it is true is to say that it can no longer be modified. That not only means that all that the paradigm contends must be true, but also that no more things can be added. This would disbar even small modifications to certain areas. I think this argument is best explained in response to the Moore quote you cite on page 3. Moore says that for all intents and purposes something can be "true." But even with universality and reliability, truth would mean than no new discovery could modify the theory in the slightest. I do not think it is unimaginable that such a new discovery could mean the co-opting of an old theory with an addition as to make it a new theory. Furthermore, I would add, direct observations may not mean correct

interpretation of those observations. I could directly observe a balloon rising and say that it is because it has hot air in it. Hot air rises and so a balloon that rises could have hot air in it. In fact, this interpretation is wrong. Even though I observed the balloon rising I did not know that the cause was helium, not hot air. Consider the ramifications of such fallacious conclusions of direct observations. The whole paradigm may be wrong. Just because an explanation fits all of the data, it does not mean that another explanation cannot fit all of the same data and some other, yet undiscovered data, as well.

In light of these points I would make a few suggestions:

First, give Kuhn a lot of credit. He knows what he is talking about and it is unlikely that he is blatantly wrong on any one point (and other philosophers who disagreed with Kuhn on many things agree with him on this point about truth). If you are going to argue that he was wrong, it will most likely have to be on smaller, subtler points. And you will have to concede some points.

Second, Kuhn is not alive anymore, and thus cannot defend himself. It is therefore your job to, while simultaneously attacking him, defend him. As Professor Kaplan said on my first paper, you must pick the strongest possible argumentation that could be ascribed to him and use that. Give Kuhn the benefit of the doubt in all situations. While this may seem to make your arguments weaker, it will actually make them stronger because you are debating the strongest form of your opponent.

Third, I would define some of the terms that you are using. What does "truth" mean? How close does a theory have to be to be considered true? Depending on your definition of "truth," in fact, you and Kuhn might agree. You say, "reasonably accepted as true" at the end. Is this mean that it can be "accepted as true" or that it IS "true." Be careful to be specific with what you mean. Also, you must narrow your scope. It is unlikely that an entire, wide-ranging paradigm is all entirely true, even if founded in direct observation. Define how wide the scope of the word "paradigm" encompasses. Is it the entire theory of electricity? Or is a paradigm much smaller points and theories within that theory?

In the end, it think there is a valid argument to be made, but it must be a far more focused conclusion, and it must have limitations in certain areas. Define things and be specific, because that will protect you better against rebuttals that shoot down one aspect of a general conclusion. Also remember that you (and I and everyone) had *no idea* what the future will bring. This means that even the best theories might be undermined by a discovery in the future that we cannot even fathom. That is the danger of calling something "true, " so be careful when you do so.

With those (lengthy, I apologize) general comments, I will go through the paper a paragraph at a time and offer more subtle suggestions.

<u>Paragraph Comments:</u>

Paragraph 1 (Page 1):

1. I would shy away from using "i.e." as you do in the middle of the paragraph. It is too informal. I would rephrase to eliminate both "i.e." and the semicolon.

Paragraph 2 (Page 1 & 2):

1. The third sentence of the paragraph is long and has too many commas. Consider I would find some way to make in two sentences or rephrase it to eliminate commas, which muddle the meaning.
2. The first sentence beginning on the second page starts "Later on…" "On" should be eliminated; it is too colloquial and also unnecessary.
3. Just before the long quote you say, "…overturn the round-earth paradigm." Is "round-earth" an official name? If not, consider substituting the more technically correct "spherical-earth" term.
4. I think the long indented passage should be in quote marks if it came directly from Moore's article as you seem to indicate. You might want to look this up to confirm.
5. At the end of the paragraph you mention how direct observation has achieved the goal of "general understanding of a phenomenon." This does not conflict with what Kuhn says, as you contend. Paradigms give a general understanding of a phenomenon, though not necessarily a correct or complete version. The "continual cycle" you ascribe to Kuhn misrepresents his idea. You imply dramatic changes. Kuhn does not necessitate dramatic changes in paradigms after they have been established. Small changes may still occur which are consistent with the general understanding that direct observation has provided us and yet not entirely consistent with the current paradigm. I think the point you make here needs to be narrowed.
6. I think I should address, briefly, your example of the earth. It is true that the earth is a sphere, we have directly observed that. But I am not convinced that that is a paradigm. This is specifically where your thesis must be narrowed and defined. Is the spherical shape of the earth a fact obtained by normal science, or an entire paradigm? And what do you mean by sphere? A perfect sphere? Is a sphere just mean not a cube or flat? Consider these questions when revising.

Paragraph 3 (Page 2 & 3):

1. In the first sentence of this paragraph I would eliminate "of it" and change "convergence toward" to "converge on." In the mathematical sense, an asymptote converges on a value. In this case that "value" is reality. I would also caution you that this idea is more or less what Kuhn is arguing, though he probably would not set a "value" or "truth" towards which science strives. Rather, he might say theories get better and better, perhaps in an asymptotic manner. Be careful here, because this idea is nonetheless close to what Kuhn had in mind.
2. In the same paragraph on the middle of the next page there is a sentence beginning, "This progression…" This sentence is problematic in two respects. First, the characterization of "near-complete" revisions, as I have stated, I feel is misrepresentative. Also, "futile" is an emotionally charged word, which also tends to misrepresent. How is the progress of a new paradigm futile? If you allow for a new paradigm to mean progress, which I see is almost part of the definition of a paradigm, then it must necessarily not be futile. At this point you seem to be trying to beat Kuhn over the head. Again, be cautious because that strategy usually comes back to bite you. If Kuhn is so obviously wrong, perhaps you need to re-read. I do not mean for this to sound harsh, I simply mean to alert you to the respect you must pay to the arguments of others, especially experts. It does not mean they are right, it

just means that they at least deserve that you think and rethink your arguments to make sure you are not missing something.

3. The last sentence of this paragraph points out a distinction you must make: is truth something that it "approache[s] something that me may reasonably call reality" or is it exactly that reality. This is fundamental to your argument and your difference with Kuhn. Some might say that if it is close, it is not "truth."

Paragraph 4 (Page 3 & 4):

1. Most of this paragraph is free from substantial error, just consider the suggestions made above in specific reference to the last few sentences of this paragraph.

Paragraph 5 (Page 4 & 5):

1. Eliminate the parenthetical statement on the last page. It is unnecessary.
2. Watch your use of "yet" in the last few sentences. It is overused.
3. Your bibliography should be on a separate page. Otherwise your citations are great.
4. Add page numbers.
5. Good writing. I think you can narrow the focus of this paper and make a well founded and supported argument that is consistent with the best the Kuhn has to offer. Good job.