

On Schrödinger's Ideas about Objectivation

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1. Introduction

In his influential book *Mind and Matter*, Erwin Schrödinger put forward some thought-provoking ideas on the matter of mind. This paper focuses on his idea about objectivity in the third chapter, and attempts to apply Schrodinger's view in exploring the concepts of "knowledge", "truth" and "perspective".

2. Schrödinger's view on objectivation and its application

2.1 Schrödinger's view

Schrödinger stated that in quantum mechanics there is no distinct boundary of being "subjective" and "objective". To observe a natural object, we engage in a "real physical interaction" with the object and our observation affects the object. Thus, the subjective mind and the world are the same such that we cannot separate our mind from the world to perform "objective" observation.¹

¹ See E. Schroedinger, *What is Life? With Mind and Matter and Autobiographical Sketches* (Cambridge: Cambridge University Press, 2004), 117–127.

2.2 Application of Schrödinger's view on the concepts of "knowledge" and "truth"

Schrödinger's notion is useful in exploring the concepts of "knowledge" and "truth".

2.2.1 Karl Popper's theory of three worlds of knowledge²

The theory of three worlds of knowledge is consistent with Schrödinger's notion. Karl Popper proposed that there are three worlds of knowledge: World 1: the world of physical bodies, World 2: the world of mental states and processes, and World 3, the world of products of human mind. These three worlds interact with each other to compose the overall human's knowledge of the world.

According to Popper, the processes for human to acquire knowledge about an object are as follow: suppose there is a UFO crash.

Firstly, the UFO has to be discovered. The UFO comes to "existence" in world 1 when people discover the UFO crash site. Such existence of the UFO crash in World 1 contributes to the experience of "discovering UFO" in world 2.

In return, the experience of "discovering UFO" enables the "existence" of that UFO, because the observer has to identify that "this is a UFO", instead of identifying the UFO as other object such as an aeroplane. Such identifying process is allowed by the "known" knowledge in World 3, which is based on human's awareness of the existence of observed objects in World 1.

Finally, when the knowledge of discovery of the UFO is passed on, such as through the media into news, the perception is then transferred to

2 Sir Karl Raimund Popper (1902–1994), Austro-British philosopher. See Karl Popper, "Three Worlds". (April 7, 1978). In The University of Utah, *The Tanner Lectures on Human Values*. Retrieved 10:58, December 5, 2010, from <http://www.tannerlectures.utah.edu/lectures/documents/popper80.pdf>.

“objective virtual knowledge” in World 3.

2.2.2 Applying Schrödinger's view to Popper's theory

When Schrödinger's view is applied to Popper's theory, we can see that even our “objective knowledge is subjective”: Knowledge depends on the judgement of observers. The “discovery” (in World 1) of an object is subjective since it is based on human's senses. The “experience” (in World 2) itself is supported by other “objective knowledge”, but such other “objective knowledge” (in World 3) is derived from human's accumulated subjective observations. It renders that the three worlds of knowledge are founded on “subjectivity”, however “objective” knowledge is supposed to be.

Therefore, our common “objective” knowledge is actually human's subjective interpretation of the world that “knowledge” can be described as “human's best understanding of the world”. Such “subjectiveness” makes knowledge susceptible of “improvement”: when humans come up with a better explanation of the world by further observation, obsolete reasoning and theories about the observed object would be replaced accordingly. This is the case shown in history. Myths used to be regarded as objective knowledge since they are the ancient people's way of explaining things, before the times of scientific discovery. Even in the times when people use science to explain matters, some widely accepted theories, which had been treated as “knowledge”, were refuted or superseded by “better” or more acceptable ones. For instance, Newton's law of universal gravitation supersedes Galileo's thoughts in gravity, while the former was replaced by Einstein's general theory of relativity later in 1915.³

3 See M. Longair, "History of astronomical discoveries" (2009 February 9), In *Experimental Astronomy*, 25(1–3), 241–259. Retrieved 11:41, December 10, 2010, from <http://www.springerlink.com/easyaccess1.lib.cuhk.edu.hk/content/g78025007278h580/>.

To sum up, Schrödinger's view, when applied to knowledge, shows us that we should always have a critical and sceptical attitude towards knowledge instead of taking it for granted that knowledge is absolute and objective.

2.2.3 From the concept of knowledge to that of "truth"

Schrödinger's view and its application on the concept of knowledge also show us the nature of "truth": pursuing truth is a continuous process, and the status of truth cannot be attained, instead, we can only approach truth infinitely.

In Plato's Allegory of the Cave⁴, the prisoner who is set free realizes the truth that the shadows and echoes in the cave are not the "real" thing. Although some interpretations say that the prisoner "obtained" this truth by realizing it, it would be best described that he has "come closer" to the truth. How can the prisoner know that the sun (truth as alluded) he sees is not a delusion made by evil demon⁵ or that he is not a brain in a vat that all he "sees" are actually controlled by a computer⁶? After all, what the prisoner sees is produced by the "subjective" senses of human. Like any other things that we see, the sun is just a better explanation than what he sees inside the cave. There might be things beyond the sun which would be better suit as the "truth", yet at this stage the prisoner cannot separate his mind from this world and go beyond his to "obtain" such "better" truth.

4 Plato (427–347 B.C.), ancient Greek philosopher. See Plato, *Republic*. Translated from the new standard Greek text, with introduction by C. D. C. Reeve (Indianapolis: Hackett Publishing, 2004), Book VII 208–212.

5 A concept put forward by Rene Descartes (1596–1650). See "Evil daemon". In *Wikipedia, The Free Encyclopedia*. Retrieved 14:20, December 9, 2010, from http://en.wikipedia.org/wiki/Evil_daemon. Also see S. Gaukroger, *The Blackwell guide to Descartes' Meditations* (Massachusetts: Blackwell Publishing Ltd., 2006), 204–207.

6 A thought experiment about philosophical scepticism. See H. Putnam, *Reason, Truth, and History* (Cambridge: Cambridge University Press, 1981), 1–21.

Therefore, when the truth is an ultimate one outside the limits of the senses of human, truth-seekers would not stop at a truth that human conceived as “truth”. They would continue the discovery process, discover the unknown, acquire knowledge and enlarge their subjective and objective world so that they can come closer to the “truth” infinitely, which is the best that people can do.

2.3 Application of Schrödinger's view on the concept of “perspective”

2.3.1 Schrödinger's view

It is Schrödinger's idea that when we observe an object, the object is in some way altered by the activity of “observing” that we cannot obtain “objective” results.

2.3.2.1 On the concept of perspective

Such view can be linked to the concept of “perspective”. To explain this, the “Schrödinger's Cat” and the “Many-worlds Interpretation” is to be discussed.

2.3.2.2 “Schrödinger's Cat” and “Many-worlds Interpretation”

Schrödinger brought up a thought experiment known as “Schrödinger's Cat” to explain his notions of subjectivity and objectivity in quantum mechanics.⁷ Suppose there is a box with a cat and radioactive material and poisonous gas. The cat might be killed by the poisonous gas activated by the radioactive material. Before observers open the box, the cat might be dead or alive. The action of the observer opening the box to see the result

⁷ See A. N. Maheshwari and V. P. Srivastava, "Schrödinger's Cat States". (February 1998). In *Resonance* (Bangalore: Indian Academy of Sciences), 3(2), 79–82.

would lead to the observation that the cat is either alive or dead. According to the many-worlds interpretation, when the observer open the box to observe the result, another world which is contrary to the observed result is created, yet the observer only enter one of the world.⁸ Observing allows observers to choose a world, in which the observed object is “different” from that in the other world, according to their subjective observation (such difference is what “changed” the observed object): If they “see” a dead cat (seeing is subjective human sense), the observers “choose” the world in which the cat is dead. In other words, the “subjective” observations render results subjective.

2.3.2.3 Application

Schrödinger’s view provides an interesting view on how important “perspective” is in deciding how we see things. An example is the classic “half a glass of water” question: there is a half-filled glass of water, is the water “half-full” or “half-empty”? Even though the object of “half-filled” glass is an undeniable fact, our judgement affects how the object is presented in our mind. Thus our subjective observation, which is affected by our way of thinking, chooses the answer for us. Putting Schrödinger’s words in this, we either choose to enter the world with the “half-full” glass of water, or that with the “half empty” glass. The two worlds are no difference; it is the subjective observation, caused by the discrepancy in perspective, that determines “which world we live in”. This again echoes our main notion of the inseparability of subjectivity and objectivity.

8 See "Many-worlds interpretation". (2010 December 9). In *Wikipedia, The Free Encyclopedia*. Retrieved 18:29, December 9, 2010, from http://en.wikipedia.org/wiki/Many-worlds_interpretation.

3. Conclusion

Schrödinger's view on objectivity is not just about science: it brings an interesting light to the exploration in the concepts of "knowledge", "truth" and "perspective".

References

1. S. Gaukroger, *The Blackwell Guide to Descartes' Meditations*. Massachusetts: Blackwell Publishing Ltd., 2006.
2. A. N. Maheshwari and V. P. Srivastava, "Schrödinger's Cat States". (February 1998). In *Resonance* (Bangalore: Indian Academy of Sciences), 3(2), 79–82.
3. Plato, *Republic* / translated from the new standard Greek text, with introduction by C. D. C. Reeve. Indianapolis: Hackett Publishing, 2004.
4. K. Popper, "Three Worlds". (April 7, 1978) In The University of Utah, *The Tanner Lectures on Human Values*. Retrieved from <http://www.tannerlectures.utah.edu/lectures/documents/popper80.pdf>.
5. H. Putnam, *Reason, Truth, and History*. Cambridge: Cambridge University Press, 1981.
6. E. Schroedinger, *What is Life? With Mind and Matter and Autobiographical Sketches*. Cambridge: Cambridge University Press, 2004.

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Teacher's comments:

A reasonable discussion of how Schrodinger's idea of subjectivity poses limits on human knowledge. It is impressed that the writer brought Schrodinger's idea to explain her understanding of "truth" and "perspective". Due to the word limit, some discussions were left open but it does not harm the structure of the article. (Chan Chi Wang, Ng Wai Yin, Szeto Wai Man and Wong Wing Hung)