Reviews: #8993: Five types of anomalous perceptions created by the same mirror-reflection process)

Edited by: Akiyoshi Kitaoka, Ritsumeikan University

Review by: Susana Martinez-Conde, State University of New York Downstate Medical Center

For author and editor

This paper, by Kokichi Sugihara, proposes five types of mirror-based illusions that arise from a common optical process. Sugihara is the world's authority on the development and popularization of such illusions, which have also been recognized with multiple awards as winners and finalists in the Best Illusion of the Year Contest. The paper is well written, the illusion categories are well described and systematized, and the conclusions are solid and reasonably derived. The photographs chosen to illustrate each illusion are striking as well as aesthetically pleasing. I recommend publication of this manuscript in current form: my only minor comment would be to include the corresponding videos for each photograph, either as hyperlinks in the main text or as supplementary materials, so that the reader can extract greater understanding from watching every illusion from all possible angles, rather than from a single vantage point. Congratulations on a well-written paper and on the body of research behind it.

Recommendation: Accept Submission

Completed: 2022-12-29

Review by: Kohske Takahashi, Ritsumeikan University, Japan

For author and editor

The paper reports five types of novel optical illusion using mirror reversal of 2D visual images. I enjoyed reading the interesting paper. All phenomena are impressive and also are interesting from the literature of vision science.

The manuscript is written in clear sentences and also has some excellent demonstrations. I think, therefore, that the manuscript deserves to be published in JoI.

I have some minor comments as shown below. Please consider addressing these comments. Note that some comments may be beyond the scope of this paper, so the author need not revise the manuscript according to all comments.

- p.2, the last sentence of the 1st paragraph: "Note that when we see these ambiguous ...": I cannot understand the importance of this note here. Is this sentence necessary here?

- p.3, 2nd paragraph: (3)... : The underline appears to be unnecessary.

- p.8, "We should not that, if occlusion occurs, ...": It would be great if the demonstration of the loss of effect by occlusion. Is it possible to make an example and take a photo?

- p.8, 5. Lying-Standing Illusion, "(1) the object has a clear direction of the axis": A little more explanation would be appreciated. Does the "direction" here mean the subjectively perceived direction, or are there some rules that determine whether an object has clear direction objectively?

- p.9. I understand that the Mach book and Lying-standing illusion differ essentially. This may be beyond the scope of this paper, it would be nice if there is more explanation regarding this difference from the viewpoint of geometry. For example, in the case of Mach book, the depth reversal of 3D structure would take place. Is it possible to depict this reversal using visualization like Figure 9?

- After reading sections 3-7, I wonder if they are mutually exclusive or not. More generally, are there some thoughts regarding the relationship between these five types of effects? For example, is it possible to create a pattern wherein the left-right reversal and height reversal appear simultaneously? Perhaps this is one of the future works, but I'm happy if some discussion appears in the manuscript.

- p. 12 Figure 12: I felt that Figure 12 and Figure 1 have the same effect, i.e., left-right reversal. In Figure 12, indeed the location of the cone is inconsistent, but the way of the reversal of the staircase is the same as that in Figure 1. I may not understand the clear definition of the replacement illusion.

- p. 12, "We also placed a cone ..." p. 13 "in the case of the simple lying-standing illusion object": In these 2 paragraphs, the author discusses the effect of the mixture of 2D and 3D. While I found that this is a really interesting topic, and also it may be related to the replacement illusion, the arguments are not directly related to the main contents of the manuscript. So, my suggestion is that the author may remove these two paragraphs from the current manuscript and discuss the effect of mixing real 3D objects with 2D images as a separate paper.

Recommendation: Revisions required
Completed: 2022-09-16
