

Excerpts from chapter 6 of R.N. Hanson's (1969) book Perception and Discovery (San Francisco: Freeman).

Seeing and Seeing As

“Do the 13th Century and 20th Century astronomers see the same thing?” It is for the purpose of getting a better insight into the complications of this question that we will press our inquiry...

Let us begin with [some] variable figures: These vary... in the aspects they may present to a percipient.

Initially:



Figure 1

Some will see this as a white cross on a black ground.¹ Others will see this as a black cross on a white ground. But the difference cannot be accounted for by reference to different retinal reactions, for there need be no difference. ... Indeed if I drew for you exactly what I saw when I reported “white cross on black ground,” how would it differ from your drawing of what you see when you report “black cross on white ground”?

So too with Koehler's goblet:²

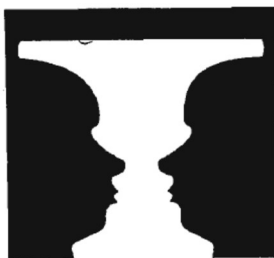


Figure 2

Again, our retinas may react normally to this. But while I see a Venetian goblet, you may see two men staring at each other. Have we seen different things? Of course we have. And yet if I draw my cup for you, you may say, “By Jove, that is exactly what I saw, two men in a staring

¹ L. Wittgenstein, *Philosophical Investigations* (New York: Macmillan, 1953), p. 207.

² See *The Mind*, eds. John Rowan Wilson and the editors of *Life* (New York: Life Science Library series, Time, Inc., 1964), p. 15.

contest.”... But how to describe the difference between seeing a duck and seeing a rabbit in *Figure 3*? Or between any two aspects of the figures we have so far brought forward?

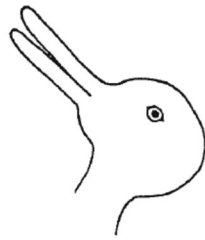


Figure 3

[These examples] seem to be clear cases in which we should wish to say that we saw different things, but where we might deny that this was due either to a difference in retinal reaction or to a difference in the features of the pictures registered in our private visual fields...

I should like now to call up another group of figures that are variable in a rather less dramatic way. They are important, however, in the way that they continue to stress the *seeing as* component that has figured in all the examples so far. It is this largely overlooked component of our ordinary observations which will help us to see something more of the complexity of *observing*, *witnessing*, and *seeing* in scientific inquiry, and which will lead to a fuller appreciation of all that is involved in the situation wherein our two astronomers are witnessing the sun at dawn.

You may remember this one:

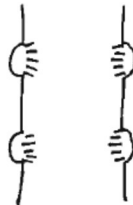


Figure 4

What is this meant to be? Your retinas and mine are similarly affected. Similar pictures of this may be assumed to be registering in our private visual fields. But do we see the same thing? I see a bear climbing up the other side of a tree. Most likely you did not see this. Did you notice, however, how the elements of this figure pulled together when you were told what I knew when drawing it? You might even say with Wittgenstein, “I see that it has not changed, and yet I see it differently.”³

And a student once suggested this one to me:

³ [Note 4 in the original:] Wittgenstein, *Philosophical Investigations*, p. 193.

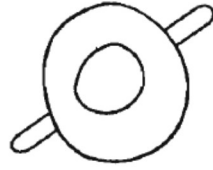


Figure 5

What do you see? [Someone wearing a sombrero] on a bicycle (seen from above)? Before I said that you might have seen just lines. But now, as Wittgenstein says, "[it] has a quite particular 'organization.'"⁴

What Wittgenstein calls here "organization" is really important... We rarely see without such "organization" being operative, and yet this organization is nothing *seen* as are the lines and colors in a drawing...

Wittgenstein also considers this triangle:

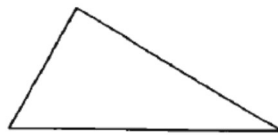


Figure 8

which he considers "...can be seen as a triangular hole, as a solid, as a geometrical drawing, as standing on its apex; as a mountain, as a wedge, as an arrow or a pointer, as an overturned object which is meant to stand on the shorter side of the right triangle, as a half parallelogram, and as various other things ... You can think now of *this*, now of *this* as you look at it, can regard it now as *this*, now as *this*, *and then you will see it now this way, now this ...*"⁵

Of course the context here is given in Wittgenstein's designations... The context that brings an appropriate aspect of a figure or an object into focus, however, need not be set out explicitly in a paragraph or in a word. Such "contexts" are very often carried around with us in our heads, having been put there by intuition, experience, and reasoning. For example, ...



Figure 10

⁴ [Note 5 in the original:] Ibid., p. 196.

⁵ [Note 8 in the original:] Ibid., p. 200.

A trained natural scientist could only see this as one thing: an x-ray tube viewed from the cathode. Would a physicist and a non-scientist see the same thing when looking at *Figure 10*? The traditional, respectable answer to this runs: “Yes, they see the same thing, only the physicist interprets it in a way that the [non-scientist] cannot.” It is this “respectable” answer to the question, of course, that I have been at pains to unsettle. The answer is no more suitable here than in any of the other cases we have considered—indeed, it is positively harmful... In the sense that I have been so far elaborating, the two do not see the same thing... [The novice] cannot see what the physicist sees in much the way that [one] may not be able to see a rabbit but only a duck in *Figure 3*...

What all this has been leading up to is the centrality of the notion of *seeing as* within our concept of *seeing*. You see it as a duck, I see it as a rabbit; the physicist sees it as an x-ray tube, the child sees it as a kind of complicated incandescent lamp bulb... And how very relevant to every case of seeing is the knowledge of [the person] who does the looking...

It is well known that babies, even those older than six months—the time when the retina has completely formed and a minimum of ocular coordination has been achieved—are capable of experiencing but very few of what we take to be the most ordinary visual experiences, like seeing a cloud in the sky. For all their delicate optical equipment, babies are not even in a position to be taken in by reversible perspectives or shifting aspects, much less galvanometers and x-ray tubes. They are in a “big, blooming, buzzing confusion,” as William James once put it...

Seeing a thing, therefore, is *seeing it as* this sort of thing, or as that sort of thing; we do not just *see* indeterminately or in general, as do infants and lunatics. And seeing a thing as *this* or *that* sort of thing presupposes a *knowledge of this* or *that* sort of thing. Our two astronomers would not say merely that they saw a brilliant yellow-white disc and leave it at that. What they see they see *as* the sun. And this presupposes a knowledge of what sort of thing the sun is... The knowledge of what the sun was in the 13th Century was very, very different from the knowledge of what the sun is now in the 20th Century. I will say no more about this now other than to suggest that the two astronomers are to the sun as you and I might be to the duck-rabbit when you see only a duck and I only a rabbit...

Here I wish to make it quite clear that I am not denying that there are a good many cases in scientific inquiry where the data before us are wonderfully confused, and about the nature of which we may not have an inkling... [Consider] the physicist who expresses a given experimental situation thus: “The needle is oscillating most erratically, I wonder what’s up; and see that faint streak near the neon parabola, it looks almost like a reflection of the main parabola, and there are scintillations at the periphery of the cathode scope that have never before been dominant.”

I certainly do not wish to say that these are not genuine cases of seeing. If I did I would be just as far off course as those who insist that these are the *only* genuine cases of seeing. What I would urge is that these observational situations have a point to them just because they contrast with our more usual cases of seeing. The language of shapes, color patches, oscillations, and pointer-readings is the language appropriate to the unsettled experimental situation, where confusion and

perhaps even conceptual muddlement dominate. And the *seeing* that figures in such situations is of the sort where the observer *does not know what he is seeing*. [The observer] will not be satisfied until [s/he] does know, until [the] observations cohere and are intelligible as against the general background of [one's] already accepted and established knowledge. And it is this latter kind of seeing that is the goal of observation...

So of course it is often an essential step in the advancement of science to account for ourselves as observers in a strictly phenomenal way. Every great scientist has had to [perform] a strict reporting of what lies in [the] visual field, of the shapes, lines, colors, and movements [s/he] sees.

But that is far from the end of the matter. Everyone who is forced by experimental difficulties and conceptual perplexities to observe [the] data [in the strictly phenomenal way] aims at coming to see [the] data in this other sense: where [one] knows what [one] is seeing...

The point is that coming to see one's data in the completely lustreless and noncommittal way... requires a highly specialized and rigorous training in science.⁶ Learning to restrict and control one's vision in this way is a scientific accomplishment of the first magnitude, and it is far from being the birthright of every[one] who decides to study natural science. All of which is to say that *phenomenal* seeing is something acquired, something unusual, something different from our ordinary ways of seeing. Using *phenomenal seeing* as the typical, paradigm case of *seeing* is unjustified and misleading. Rather than our ordinary cases of seeing being logical constructions out of the research scientists' phenomenal variety of seeing, it is the latter which is a logical destruction of our ordinary kinds of seeing. It is something done in a calculated, systematic, premeditated way. But of course if *all* our seeing were carried on in this way we would collapse from exhaustion in a fortnight.

Hence I am not denying that "phenomenal" seeing is genuine seeing. I am urging that it is...not the paradigm case of seeing, and indeed, it is only a case of seeing at all when considered against the more usual sort of seeing I have been discussing. The more usual sort of seeing is, as Goethe suggested, a seeing of what we know. It is, hence, a theory-laden operation...and hence relative in most respects to the observer's knowledge. It is this knowledge which in large measure affects what the observer will see things *as*.

⁶ [Note 15 in the original:] See M. L. Johnson, "Seeing's Believing," *New Biology*, Vol. 15 (Oct., 1953), pp. 66-79ft.