

KRASNY – An Introduction to the Philosophical Problems of Colour Perception:  
NOTES

(For an interactive puzzle related to the video, go to [www.krasny.co.uk](http://www.krasny.co.uk) )

This short guide to the video is not a technical philosophical handbook, but is a set of questions designed primarily to stimulate class discussions, and to help students think through for themselves some of the lines of argument followed in the video. The questions follow the traditional twists and turns of these arguments, however it is not necessary for either teacher or students to be familiar with academic philosophy to discuss these questions fruitfully. On the other hand, the same questions may also be considered at a more sophisticated level by dedicated philosophy students.

It is suggested that students watch the video, then work through the questions, preferably in class or group discussion, then watch the video again. The questions in Sections A , B and C may be photocopied for this use. There is a brief running order of the contents of the video at the end of the following section, before the questions.

Overview: Inverted spectrum colour-blindness

Inverted spectrum colour-blindness is a special form of colour-blindness - one where the sufferer sees the entire rainbow of colours in exact reverse. This amounts to seeing the world as if in a colour negative, except that the lightness and darkness would not be altered. Whether anyone actually suffers from this form of colour-blindness, or what it would mean if they did, is not clear; indeed it is this that generates the philosophical puzzles, because such a perfect form of colour blindness *would in principle be undetectable*.

By contrast the normal forms of colour-blindness, which may mean that the sufferer cannot distinguish certain colours or sees just some colours differently, are manifest in the behaviour of the sufferer. Consequently, tests can be devised for normal forms of colour-blindness, because they would have some effect in some circumstances on the sufferer's responses or abilities, i.e. on their outward behaviour. However, inverted spectrum colour-blindness is a kind of systematic colour-blindness, and sufferers would be able to experience all the colours that a normally sighted person can, and also all the subtleties of the relationships of colours: each colour would stand in the same relationship to the other colours, the whole spectrum would just be the other way round. If such a person had this condition from birth, they would be brought up to call the same objects by the same colour names as everybody else, and have the same general network of associations with the things that they call by these names - but their actual colour experience would be quite different. So, as a little reflection seems to show, unlike normal colour-blindness, it would be impossible to know whether another person, or oneself, has this inverted spectrum colour-blindness. (This is made clear in the video.)

This idea is relatively easy to grasp with some thought- but what is philosophically important is *what follows* from this possibility.

One particular view of ourselves and our relationship to the world we perceive seems to emerge as the natural consequence of reflecting upon the possibility of inverted spectrum colour-blindness: what we might call the “private sensory world” view. Students often embrace this view easily - too easily - and indeed it is the view that Mr Spark becomes convinced is the truth, and the view that is explored throughout the piece (It is a common strand though some traditions of modern philosophy - see Bertrand Russell *The Problems of Philosophy* (esp.Chapters 1-3) 1912 (OUP 1967) for an example ). Students who only attend superficially may think that they have understood the message of the video when they see this solution - but in fact the video aims to show that the “private sensory world” idea is an extremely problematic one, and that if it is actually true then many unsettling, if not paradoxical, consequences follow. This “private sensory world” picture is made more problematic philosophically because it is hard to say as easily what the alternative picture should be: there is not a comparably seductive and clear opposite, but thinking about how we may escape the “private sensory world” view should lead more philosophically-minded students towards some really interesting thought.

The other main philosophical consequence of this possibility of inverted spectrum colour-blindness seems to be that there is part of reality - a very familiar part - that escapes measurement and capture by physical science: and that this is true in principle and not something that can ever be changed by any scientific advancements. This possibility is also developed in the video; and it is important for the student to consider whether this is really so.

Concerning the sequences in the temple of the “Church of Subjectivity”, the visual effect is clear, and Mr Spark’s mistaken interpretations should also be relatively clear, in the context of the whole. However the viewer is left to make his or her mind own up about the meaning of the Priestess’s replies - and about the meaning of *krasny*.

Order of action, with approximate timings:

(DVD menu: Start >)

0:30 The Secretary of the Institute of Science and Metaphysics describes the aims of the Institute.

1:25 Discussion of the problem of knowing how another person perceives colour, and of how one comes to learn the names of colours.

2:45 Dr Pumpkin outlines a scientific definition of colour.

3:45 Discussion of whether this definition can be complete.

4:40 Consideration of the tests for normal colour blindness, and how the Inverted Spectrum form is different.

5:10 The Secretary introduces the idea of Inverted Spectrum colour-blindness, explains Mr Spark's mission to investigate the "Church of Subjectivity", and the design of their temple.

6:50 Mr Spark makes his first visit to temple.

(DVD menu: A Private World >)

9:20 Mr Spark returns, explains his "private sensory world" conclusions.

11:00 The Secretary points out some of the consequences of this view - the problems of the meaning of colour words, and the idea that colour escapes measurement and capture by natural science.

12:45 Mr Spark becomes convinced that colours, as states of mind, are actually brain states, and that he can come to know the brain states of the Priestess, by inducing identical brain states in himself, using a machine that he has seen in the temple of the "Church of Subjectivity". In this way he claims that he can know how another person experiences colour - and what the Priestess understands by '*krasny*'.

14:00 Mr Spark makes his second visit to the temple.

19:30 The Secretary of the Institute considers Mr Spark's mistakes, and considers some conclusions about the nature of colour.

SECTION (A): “INVERTED SPECTRUM COLOUR BLINDNESS”

1. A red door looks black in a dull street-light at night. So it looks red in one kind of light, and black in another. Which colour is it really?
2. When you look at the red door in daylight you have a certain colour experience that you call ‘red’. But how do you know that you have the same colour experience as other people do? Perhaps if you could get into someone else’s mind for a moment, and see the world as they see it, you would find that all along what you see as red, they see as some other colour; what you would call green?
3. Some colour-blind people may indeed see red as green, so the door would look green to them. It looks red to you and green to them - who is right?
4. Which colour is the door really? If there were more “colour-blind” people than “normally sighted” people would that mean that the door changes its colour?
5. Suppose there was someone who had this special “inverted spectrum colour blindness” - so that they saw the rainbow of colours exactly the other way round from the rest of us. Suppose they had had this condition from birth, and had been brought up in a normal English-speaking household: would they use colour words differently from the way we do?
6. Would the person with inverted spectrum colour-blindness be able to identify all the different colours as well as we can?
7. Would having inverted spectrum colour-blindness mean that they would have different tastes in colour, in clothes and decorations say?
8. Would having inverted spectrum colour-blindness mean that they would associate words with different experiences : would paint that they have been brought up to call ‘orange-red’ still be associated with warmth, for example?
9. If you could see a red door as such a person sees it, if you could step into his mind for a moment you would realise that he sees what you would call red as a kind of sea-green colour. But you cannot get into his mind, so can you ever know whether he sees things this way or not?  
Why would the normal tests for colour-blindness not work?
10. How do you know that *you* are not the odd one out, and that everyone else has this inverted spectrum colour blindness?

*There are two main routes the discussion might now take: we can follow through the*

*most natural-seeming philosophical conclusion (Section B), or we can consider whether the definition of colour is really beyond the reach of physical science (Section C)*

### SECTION (B): A "PRIVATE SENSORY WORLD"?

*A typical form of argument which generates this philosophical conception is sketched by Mr Spark when he returns from his first visit to the Church of Subjectivity. From the simple observation that we can only perceive the world through our senses, Mr Spark reasons as follows:*

*MR SPARK:*

*"..... I conclude that things are like this: our senses are conveyors and what we perceive is just what comes off the end of these conveyors. We do not see the world itself, only the sensory data that is delivered into our heads by our senses. Many of the features of the world that we might think are real exist only in our minds; objects themselves are not coloured, we just read colour into them: colours are just states of our minds - and this is the same for sound, taste, and the other senses.*

*"So when I look around this room and see this arrangement of coloured objects, I am actually only looking round the contents of my own sensory world - and the real world, if it exists, may be quite different. Creatures that have different sensory organs will perceive themselves to live in a different world.*

*"But if I cannot know how others experience colour, taste, sound, and so forth, I cannot know what it is like in their sensory world and they cannot understand mine: each of us is locked up in our own private sensory bubble."*

*This view sketched by Mr Spark appears in many guises in modern philosophy. One of the most important features of it is the idea that what we immediately or directly perceive - what a pre-philosophical or 'naive' person just takes to be the reality of the world around us - is actually only a sensory picture of the world - a picture that we have built up out of repeated sense experiences.*

*The term "sense data" (a somewhat old-fashioned term, but one that retains a crude clarity) is sometimes given to what we directly perceive - the flow of sensory experience - sounds, colours, tastes, etc. Earlier philosophers who held that such 'sense data' are contents of the mind, used the term "ideas" for all such contents.*

*Perhaps (but perhaps not) we may assume that the real world "out there" causes this sensory picture, but it is logically impossible for us to get outside of our immediate sensory worlds to find out if our sensory picture actually resembles reality.*

1. I find myself in a visual world, in a tactile world, and in a world of sound, flavours and smells. But this is because I perceive the world through the senses of vision, touch, hearing, taste and smell: suppose I had different senses; suppose like a bat, I perceived the world with a sonar sense - would I live in an altogether different world?
2. What features might be common for my world and the bat's world?
3. Describe how a baby might come to form an idea of an object such as milk through repeated sensory experiences - list the bundle of sensory experiences that the baby might associate to make up its concept of milk.
4. Describe your concept of milk - in what ways does it differ from the baby's?
5. Suppose we accept this idea that the baby slowly forms its picture of the world through these associations and repeated patterns of sensory data - is our own picture of the world, even though we are so used to it that it seems absolutely real and fixed, still constructed in the same way?
6. If all I can know for certain is the flow of sensory data, and if this is just makes up a picture of the real world outside of my senses - how can I know that the real world is as my sensory picture represents it to me?

*Consider the following problem for the "Private Sensory World" view, as sketched by the Secretary of the Institute.*

*SECRETARY:*

*"When you speak of 'orange' you are speaking of the colour that appears in your private sensory world, whereas by 'orange', I mean the colour that appears in my private sensory world. So we are not talking about the same thing, and we are not actually communicating at all.*

*If the word 'orange' means this private colour experience, then none of us can know what anyone else means by the word; it could mean different, contradictory things: in fact, if it has no fixed meaning, is that not to say that the word itself is quite meaningless?"*

*MR SPARK:*

*"No, such words are not meaningless, it is just that each of us fills in our own meaning. Such words just mean the subjective experience that each of us has."*

7. How did you come to learn the correct meaning of the word "orange"?
8. How did your parents know that you had understood the word?
9. How do you know if a foreigner understands the correct meaning of the English word "orange"?

10. Suppose you show someone who knows very little English two objects; one orange, one blue. He has been tested for normal colour-blindness, and is found to have normal vision. Suppose you point to the orange object and ask him to name this colour in English, and he says “Blue”. What conclusions can you draw?

11. Suppose someone says : “Sometimes I have a wonderful visual experience, that I call ‘krasny’ - do you like ‘krasny’?”

What would you answer?

12. This person now points to an object and says: “That is ‘krasny’ - do you like it?” But according to the “private sensory world” view, what he means by ‘krasny’ is his own private experience which you cannot share. What can you now say to him?

13. Consider the reply made by Mr Spark above. Can there be words that mean something different to each of us, where none of us can know what another person means by that word, and where each of us fills in our own meaning? Would such words be meaningless?

14. Would such words be of any use for communication?

15. According to the “private sensory world” view it is not just colour words that have a private meaning, but words for taste, smell, sounds, and all other sensory data. If this is so are there *any* of our experiences we can communicate with words?

*It seems that to establish what the person means by the word ‘krasny’, you both have to be able to see the same thing, so that you can fix the meaning of the word, and then you can use the word to communicate. So such words can only be used in a common language if everybody using the language can see the object that the word means, to know that they have got it right: it must be a ‘public’ object as this is sometimes put, rather than a ‘private’ one.*

*But consider questions 7-10 above: it does seem that there is a fixed meaning of “orange” in English, if the person learning it can get it right (or wrong). It also seems that this common meaning must refer to something that we can all see.*

16..So therefore the word “orange” as it is normally understood refers to an object that we can all see, and not to a private sensory experience that only each individual can know?

17. From this it seems that we must accept either that colour words, like “orange”, are all meaningless - or that they are not words for private sensory experiences. Do you think this disproves the “private sensory world” view?

*This remains a contentious and difficult issue in Philosophy. See Wittgenstein’s famous “beetle-in-the-box” argument in Philosophical Investigations Part 1, #293 translated by G.E.M. Anscombe (Basil Blackwell,1958)*

## SECTION (C) : COLOUR AND PHYSICAL SCIENCE

*First consider the physical definition of green that Dr Pumpkin puts forward:*

*DR PUMPKIN:*

*“Green light is electromagnetic radiation. Such radiation may be considered in terms of particles or waves. If considered as a waveform we may define green light as electromagnetic radiation of a certain wavelength.*

*The wavelength of light increases as we move towards the red end of the spectrum and decreases as we move towards the violet end of the spectrum.*

*Thus we may measure the colour of light by measuring the length of the waves. Light is a kind of motion, and motion can be measured over time.”*

1. How could a blind person come to understand the concept of a waveform?
2. Is it true that a blind person who had a good understanding of physics could have as complete an understanding of the physical concept of light, waveforms, etc., as anyone can?
3. Could a blind person with no sense of touch still understand this concept?
4. A waveform, as a sinewave, can be expressed in algebra - could a blind person who had no sense of touch, but who had a good understanding of maths, have this conception of a waveform?
5. Could a person with no senses at all (if one can imagine such a situation), but who had a good mathematical understanding still understand the idea of a waveform?
6. *In fact light may be considered both as particles and waves - and we cannot actually visualise something which is both a particle and a wave - so the pure mathematical understanding of light or other radiation is perhaps the best understanding.*  
Nevertheless there is still part - the crucial part - of what makes green green, that the person blind from birth can never know. So there seem to be two definitions of the colour green; as light of a certain wavelength, and as a certain experience that a blind person cannot know. Which is it that we really mean by the word “green”?
7. Is it possible that two people could be exposed to the same wavelength of light, yet still experience different colours? Does this mean that the wavelength of light does not determine the colour of light?
8. Nevertheless, if one varies the wavelength we see the colour change, so colour still has *something* to do with the wavelength of light: how may we account for this?

*One possibility is to say, as Mr Spark does at one point, that colour, (the bit that the blind person cannot know) is an effect in the mind caused by lightwaves striking the*

*eyes. Green light thus has two parts:*

- (a) there is the wavemotion of the electromagnetic radiation, which is a real or objective feature of the world, what might be termed a “primary quality”.*
- (b) there is the effect in the mind of the colour, which is what we mean by “green” which is not a feature of the world, but a some kind of subjective effect, that exists only in the mind (is “ideal” rather than “real” as this may be put.) Colours are sometimes called “secondary qualities”, to contrast with “primary qualities”, although the proper understanding of this distinction is disputed.*

- 9. Is it true that the private experience of colour is something that can never (ever) be measured?
- 10. Do we think that the primary qualities which science regards as the true underlying features of the world are more real or “objective” because they are measurable?
- 11. Does something need to be measurable (at least in principle, even if it might be difficult in fact), to be captured by science?
- 12. If the private experience of colour is not even in principle measurable - because there is no way of telling how colour appears to any person other than to oneself - then does this mean that colour is somehow logically forever out of the reach of science?

*Mr Spark, before he returns to the Church of Subjectivity thinks he may have an answer:*

*MR SPARK*

*‘... I think there may still be a way: the same frequency of light may cause different colour perceptions in each of us, but this may be because our brains may be a bit different from each other, so that the same frequency of light causes slightly different brain states. What I call “orange” is a brain state; the word does not actually mean a state of the object itself, but the state of my brain that the light reflected on the object induces when it hits my eyes.’*

- 13. Could this be a way of measuring colour, and thus capturing it scientifically: by measuring the brain state of the person experiencing the colour?
- 14. *Mr Spark concludes that if a machine could induce identical brain states in two people, then each could know exactly the experience of the other. A big question for recent philosophy is whether or not this would be so. Suppose two people were connected to such a machine, which is causing them to see colour. The brain states are measured to be identical, both subjects report that they see “green” - does this guarantee that they are having the same experience, that one of them is not having the inverted spectrum experience?*