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# CHAPTER 2

## *Doubts*

### **Introductory**

*Chapter 1 told the story of my introduction to the dogmas of Marian Bohusz-Szyszko, of my early efforts at trying them out and of how I became convinced of their power to:*

- *Train my sensitivity to colour variations in nature and in paintings.*
- *Greatly facilitate and extend the possibilities of colour mixing.*
- *Create a certain type of harmony on the picture surface.*

*I also explained that the Professor claimed his dogmas to be, “All you need to know about painting”, although it became evident later on that he also gave important roles to “feeling” and “humility”.<sup>1</sup> However, even without these additions, his rules have the power to revolutionise the practice of artists who have not come across them. Accordingly, as already suggested, my book would have been well worth writing even if it had finished with its first chapter.<sup>2</sup>*

*So why does it continue? Because, however much I felt myself to be benefiting from the fruits of the Professor’s rules, I found that my confidence in them was being undermined by a number of niggling worries. No matter how hard I tried to pretend that these were of no real importance, I failed. They bothered me particularly when I became a teacher, for I knew, inside myself, that I must be telling a half-baked story.*

*It was not until 12 years after my first meeting with the Professor that I arrived at the University of Stirling to take up a post as Cottrell Memorial Fellow. Although I has been appointed to work on a painting project, I found myself in*

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1 Feeling and humility play an important role in “*Fresh Perspectives on Creativity*”.

2 Although, as I pointed out, the colour mixing chapters would have still been a very useful bonus.

close proximity to scientists studying vision and eye/brain processes. Almost as soon as I got to know them, I was being encouraged to take the plunge into science. When I found myself lured into taking a first step,<sup>3</sup> I could not have had any intimation of the revolution in my understanding of the factors underpinning the practice of drawing and painting that would follow. My research took me far beyond what I had learnt from the Professor.

This chapter explains the worries. The remainder of the book is concerned with where the scientific investigations led, with particular reference to how they illuminated the subjects of colour relations, surface solidity, illusory pictorial space and the depiction of effects of light.

### THE FIRST THREE WORRIES

#### The first worry

As far as I was concerned the dogmas of Professor Bohusz-Szyszko worked in the sense that they opened my eyes to unfamiliar aspects of nature and enabled me to produce paintings that I found to be deeply rewarding. However, it eventually dawned on me that there is a fundamental flaw in the logic behind them. What this was can be explained with the help of *Figure 1* and *Figure 2*.



*Figure 1: A blank picture surface*

*Figure 1* illustrates a blank canvas. The Professor had cited the laws of physics when asserting that the infinitely varying nature of the light sources (both primary and secondary) that strike any picture-surface ensures that no two parts of it would ever reflect the same wave-length combination of light into the eyes of a viewer. I had always accepted this as true and, indeed, by now, I could add other contributing variables to the ones he had indicated. The most significant of these are the effects of viewing angle and viewing distance on the composition of the light array entering the eyes from any given point of the picture surface.



*Figure 2: Two identical colours on an otherwise blank canvas*

*Figure 2* represents an otherwise blank canvas on which two regions are coloured with patches of identical red paint. According to the logic just proposed, it is inevitable that each one of these must be reflecting different combinations of wavelengths of light into the eyes of any viewer from whatever angle or distance they are viewed. If so, how could they be described as being the same? And, if they were described as different, how could they spoil a painting on account of their sameness? It was all very puzzling.

#### The second worry

A second worry concerned the use of pure tube colours. Clearly, the rule of not repeating colours did not prohibit the use of these, since any single region of an unmixed tube colour, viewed within any array that otherwise consisted of regions of mixed colours, would be different from all the others. However, the rule

<sup>3</sup> A study of the development of children's drawings

that all colours on the picture surface should be mixtures containing complementaries would mean that pure tube colours could never be used. I asked myself on what theoretical grounds could the lack of complementaries be important in this case? Later our researches were to reveal the answer, but finding it involved me in going far beyond my then current knowledge of the functioning of eye/brains.

### The third worry

Maybe the theory worked for paintings made with many different colours, but what about achromatic, shaded and textured drawings or paintings? Experiments show that repetitions within these (for example, where more than one region of white paper remained untouched) have the same kind of disruptive effect as repeated regions of chromatic colours. If so, what does this say about the fifth dogma and its claims about the role of the complementary colours? Again the explanation was to be forthcoming, but it involved delving even deeper into eye brain functioning.

### FOUR MORE WORRIES

At first sight, the next four worries may seem to be of peripheral interest to those who paint from observation. In my case, it was only when I began to explore nonfigurative possibilities that their potential importance began to dawn on me. However, once brought to my notice, it was evident that at least the first of them related to an issue that is of relevance to all kinds of painting.

### A fourth worry

I have not mentioned one qualification that the Professor made to his rules. This was that they did not apply to very large paintings, such as murals. The reason he gave was that the eyes could not take them all in one go. At the time, since my interest was in making what, in this context, could only be described as small paintings, I did not bother my head any more about the issue. This explains why, for too long, I overlooked the connection between apparent size and viewing distance. Only later did I become interested in a number of interrelated questions relating to picture size.

Thus, I asked myself whether the Professor’s rules remain relevant to the experience of looking at any size of painting, if viewed from sufficiently close-up that its borders are outside the viewer’s field of vision? If so, could the viewer re-

move the disadvantages of failing to apply the dogmas, simply by moving closer to any picture surface, however small? In particular, I wondered about paintings, however small their size, containing details that can only be appreciated from a border-excluding viewing position? Would the Professor’s rules apply to these?

### A fifth worry

The four worries just mentioned relate to paintings, whether figurative or abstract, containing large arrays of colours on small, or relatively small, paintings. But what about very large paintings such as the drip paintings of Jackson Pollock or some of the pattern paintings of Michael Kidner?<sup>4</sup> In these, and in many other 20th Century productions, repeated colours were used purposefully. It was argued that they helped to create:

- A space within the picture surface (Pollock).,
- Easily readable systems (Kidner).

And, if so, in these cases, they were certainly desirable.

But are there arguments that lead to different conclusions? Is it possible that paintings of Pollock or Kidner could have been improved by following the rules of Professor Bohusz-Szyszko? And would questions of scale feature in the answer?

### A sixth worry

When at Art School I was introduced to the *Constructivist* painting tradition. My tutors faced me with making medium sized paintings with very small numbers of relatively large regions of colour. In view of my interest in the rules of Professor Bohusz-Szyszko, the question arose as to whether the admixture of the complementaries could have any useful role in these, other than that of producing a wider range of basic colours. Certainly, I could hardly imagine that some of the black stripe and primary colour paintings of Piet Mondrian could be improved in this way. And what about Op Art? Were repeated colours essential for creating the required optical effects? And, could the addition of complementary colours give any added dimension?

These questions remained intriguing and were to be factors in the gestation of an important proportion of my own work as an artist. How will be explained later in this book.<sup>5</sup>

<sup>4</sup> See the chapter on Michael’s work and ideas in “*Fresh insights into creativity*”

<sup>5</sup> In particular *Chapters 20-25*.

### **Implications**

*As explained in the Introductory to this chapter, I had no idea of how to answer any of these questions when I first asked them, and in my helplessness, I concluded that the best I could do was to put them out of my mind, at least for the time being.*

*But despite my efforts at ignoring them, they continued to rankle, remaining a source of unease until, years later, quite unexpectedly, a new situation arose that was to open up new possibilities for me and, eventually, to lead to resolutions for all the six worries listed above, and great deal else besides. The first intimations of this crucial development occurred in the first weeks of my time at the University of Stirling, when I found myself coming to know a community of scientists working in the Department of Psychology, several of whom specialised in the functioning of eyes and brains. Amongst these several showed interest in what I was doing as an artist. One way in which this revealed itself was that certain amongst them were in the habit of calling my attention to articles in scientific journals that they thought might be relevant to my work. Usually I was only mildly interested, but one day in 1979, when I entered my office/studio, I found that someone had placed a copy of the journal “Scientific American” on my desk, with a note directing my attention to a paper in it written by a certain Edwin Land. Its title was “The Retinex Theory of Color Vision”.<sup>6</sup> As I read it, I became more and more excited. How could it be otherwise for it was soon dawning upon me that what I was reading might be suggesting a key to the riddle of the repeated colours and, plausibly, to the role of the complementaries?*

*And so, in the long run, it turned out to be. But it was to be a full five years later that, thanks largely to the insights of a particular colleague, my jumbled thoughts took an crucial step towards coherence and another three years of working with him before the different strands were to come together into the scientific explanation for the power of the dogmas of Professor Bohusz-Szyszko.*

*The colleague was Dr Alistair Watson, a physicist, who at the time was working on the use of colour in the interpretation of satellite images. This book could not have been written without the work we did together.*

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6 Land, E.H., 1979, *The Retinex Theory of Color Vision*, Scientific American.