FOREWORD: TOWARDS ONE CULTURE

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SNOW'S TWO CULTURES

C.P. Snow's *The Two Cultures* [1a] stemmed from his Rede Lectures of 50 years ago at Cambridge University, a University which seems to figure rather prominently in this Introduction. 'By training I was a scientist: by vocation I was a writer…plenty of days when I have spent the working hours with scientists and then gone off at night with some literary colleagues…two groups…who had almost ceased to communicate at all'. So he experienced 'two cultures' ([1a], pp 1, 2). Despite his Cambridge being 'a university where scientists and non-scientists meet every night at dinner…there seemed to be no place where the cultures meet' (pp 15, 16). In the website review by Danny Lee [2], Snow's divide between the sciences and humanities, hindered the process of solving the world's problems. Now a dictionary definition of the word culture reflects something of the force of Snow's essential thesis: 'the attitudes and values which inform a society' [3]. The iconic status that this thesis achieved then (just notice the number of reprints in later versions) to some extent is perpetuated in its *Canto* edition reissue [1b]. In fact, for the modern reader an up-to-date reassessment, such as provided by Professor Stefan Collini's extensive Introduction, could be of even more value than the original book. In addition, Snow was bitterly opposed at the time by the literary critic F.R. Leavis. As part of the website – actually a Daily Telegraph article [4] – Robert Whelan tells the story of Leavis's 'astonishingly vitriolic counter-lecture' to Snow. Whelan is an interesting witness, as he 'was an undergraduate at Cambridge 10 years later'.

Whelan's authority is as Deputy Director of the think-tank Civitas, and if Snow's message explained the problem rather than the solution, Whelan's message is plain bleak. He uses Snow's view of the English educational system a half-century ago as a catalyst for his own current analysis. It should be noted here that the Scottish system is independent of the English one. Whereas Snow criticised the scientists who couldn't 'manage' a novel by Dickens on the one hand, with the humanities professors ignorant of the Second Law of Thermodynamics on the other, Whelan sees an educational system, not just incapable of delivering a C.P. Snow to a Cambridge Fellowship at the age of 25, but capable of delivering history students to the same university ignorant of both the Reformation and Renaissance. For Whelan it is no longer 'whether children should be taught to translate Horace or to solve algebraic equations: it is a question of whether they are to be taught anything at all'. So he would see present-day Snows and Leavises 'equally appalled' and 'united in desperation'. Putting his bleakness to one side, we will briefly examine the issues themselves and will see that they have considerable relevance to this Special Issue. While the discussion is somewhat personal it is essentially on behalf of my fellow Guest Editors. Our hope is that it will resonate with you the reader, and perhaps stimulate your own reaction!

Firstly, there are the scientists and engineers of Snow's bipolar culture. The plain truth is that a scientist's effectiveness *as a scientist* militates against taking equally-balanced interests in the humanities. He or she only has a limited amount of time and effort available, and it is crucial that a dam-designing civil engineer, for example, is an *excellent* dam designer. It is hardly attractive as a relaxation or spare-time activity to describe it as a 'struggle through' a Dickens novel. By coincidence, however I have become aware of the very issues that Whelan finds are missing in his history undergraduates. Let me quote a sentence I happened to read recently: 'Perhaps it is sufficient to sa

that the Renaissance remains *a* defining moment in the history of Europe, and indeed in world history, rather than *the* defining moment which enthusiasts have sometimes claimed' ([4] p. xvi). I was entering the world of Michael Mallett and John Hale, the latter 'a teacher of Renaissance history at the Universities of Warwick and Berkeley' ([5] p. xviii). Mallett is revising Hale's *Renaissance in Europe* and the above sentence is the conclusion to his Preface. Further, if Chapter 1 of the book (entitled *Time and Space*) is at all typical of Hale's scholarship, I can understand Whelan's high regard for Renaissance studies. It is densely packed with what I find is fascinating information. Now I cannot really explain why I find this rather private occupation absorbing, as opposed to my fellow Guest Editor Clive Greated, who has been a prominent member of a well-known music group on the Edinburgh scene for a considerable time. And we are just two examples of Snow's science culture! Let us turn to the Second Law of Thermodynamics. In his 'second look' Snow actually 'regretted' using 'the Second Law of Thermodynamics' as 'my test question about scientific literacy' [1a], pp 71, 72). A present-day C.P. Snow would probably admit such regrets were wrong! These days, with the issues of global warming and energy shortages being so crucial, the awareness of thermodynamics is much more widespread. Again, currently I have the privilege of being an Editor of a Volume on Lord Kelvin and his contribution to thermodynamics, being prepared for the International Series on Design in Nature published by WIT [6]. Now we cannot expect C.P. Snow's 'humanity professors' [4] to read such papers as '*Sadi Carnot's contribution to the second law of thermodynamics'* by Don Lemmons and Margaret Penner [7] (most scientists and engineers would probably not, either), any more than I would be inclined to read *Renaissance and the drama of Western History* [8] quoted by Michael Mallet. Nonetheless, [8] is very important (William Bousma's famous presidential address to the American Historical Association in 1978, [4] p. xv) somewhat paralleling [7]'s contribution to the understanding of Carnot's genius and the Second Law. Writing for the Editors of [6] then, we should try to distil the scholarship of work such as [7], in such a way that our Volume might even attract an *alter ego* 'humanities professor'.

The message of this Editorial is to see things positively, and I don't think Whelan's bleakness is fairly justified. Recently, the Daily Telegraph [9], with its details of the 2009's national A Level results, depicts thriving levels of performance. Yes, the Lead Editorial on '*Grade inflation'* mentions a survey carried out by Civitas. But within that thriving performance there are some pretty impressive case studies, all with colour photographs. *Jess Fitzpatrick* combined training for the England Olympic rowing team with achieving high grades in Maths, History (As) and German (B). No doubt, C.P. Snow would have been proud of her cross-cultural potential. *George Weller* transferred from a school 'blighted by violence' to Brighton College in a new educational experiment, achieving four A grades in Maths and Sciences. He's going to study natural sciences at Cambridge. Most spectacular is the 'maths prodigy' *Niall Thomson*, also going to Cambridge with four As, *but at the age of 15*. So above the fog of a national educational debate, sunlight is still shining brightly. What will Fitzpatrick, Weller and Thomson be doing in ten year's time?

More satisfying for this Special Issue is Whelan's concluding vision: 'that human beings are capable of moving from barbarism to civilisation by using their intellectual and moral capacities…ought to unite scientists and literary intellectuals alike'. We now consider how the study of colour relates to Snow's main theme of the divide between the sciences and humanities, and to Whelan's vision of uniting them.

COLOUR AND CULTURE

We advance the idea – a possibility that didn't seem to occur to Snow – that the two cultures can be regarded, at least to some extent, as two sides of the same coin. We use the modulation '*to some extent'* because here we substitute 'arts' for 'humanities'. The best-selling author John Barrow, an

astronomer at the University of Sussex, UK, explores this identity elegantly and comprehensively in his *The Artful Universe* [10]. Quoting from the blurb we have: 'Why do we like certain types of art or music?'…the relationship between the pure maths of Pythagoras and the music of the Beatles…..our appreciation of landscape painting'. Barrow's approach is to explain the natural and cosmic environments, within which *Homo sapiens* must operate to produce the creative arts These environments, therefore, form the terms of reference or set of constraints, such that one culture (the arts) is inevitably closely connected with the other (the sciences). For the purposes of this Editorial Barrow concludes his Preface with the highly significant statement: *'The humanities are not manifestations of human creativity alone. Aesthetics and cultural development can find themselves constrained by a mind-cage imposed by our physical nature and by the universality of the cosmic environment in which we have our being. The arts and the sciences flow from a single source; they are informed by the same reality; and their insights are linked in ways that make them look less and less like alternatives'.*

Now the specific catalyst for this Issue was a meeting held at Edinburgh on 'Colour in Art, Design and Nature'. As Guest Editors our conviction is that colour represents a powerful movement 'towards one culture'. John Barrow, for example, addresses the issue of 'the origins and uses of colour in Nature'. Two other instances have appeared recently in the engineering professional press. Firstly, '*Science through the eyes of art'* [11] 'introduces…a new series of articles…that science can also be seen through the "eyes" of art'. Also, '*The Art of Medicine'* [12] was an exhibition held in London by the British Institute of Radiology, with the background 'Art and Medicine have been influencing each other for centuries'.

In the context of a single culture, even more telling is the reference to Colour in *The Oxford Companion to Art* ([13] pp 256–264). This book is described as a 'non-specialist introduction to the fine arts', so is perhaps in the same league of general understanding as [5] and [6]. In it Colour is one of only three quoted examples sufficiently significant 'for understanding and appreciation over a wide field of art' ([13] p. v), and is written by the Editor himself, Harold Osborne. The first paragraph of Osborn's article shows the interdisciplinary character of colour studies, and does indeed cross Snow's cultural boundaries. 'The study of colour falls within the fields of physics, physiology and psychology…. All three approaches have a bearing on the problem of colour in relation to art' ([13], p. 256). Our current Special Issue seeks not only to contribute to address colour's 'problem' per se, but also to do it in ways that will, we hope, enlighten and inspire the readers.

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The issue is ambitiously inter-disciplinary. This is apparent from the enclosed papers. In fact, our Foreword now evolves into a brief review of the various papers. The Issue may be divided into four main sections, defined in terms of the authors themselves.

Firstly, there are two papers by *biologists.* Beverley Glover surveys the whole scene of floral colouring with its hows and whys. Innes Cuthill addresses biological camouflage, pointing out in the Abstract the necessity for collaboration between 'biologists, neuroscientists, perceptual psychologists and computer scientists'. In fact, his co-author is from a Department of Experimental Psychology.

Secondly, the largest section is by practising *artists:* Franziska Schenk and Rob Kesseler (art and biology) Michael Fryer (the artistic process), Marianne Greated (panoramic art and sound) with Patsy Campbell as an art historian.

Thirdly, there are two *engineering-based* papers: John Turner & Shanying Yang, and Jacek Patorski, the latter comparing colour-based patterns from thermofluids results with biology (butterfly wing patterns).

Finally, two papers address some of the *historical proponents of colour theory and art*: Carola König & Michael Collins, and Richard Dougal. These deal respectively with the Goethe-Eastlake-Turner sequence and, as an appropriate climax with demonstration, Maxwell's genius as expressed by his colour wheel.

These eleven papers, in full colour, form a striking contribution to the commonwealth of colour studies and to a possible unification of Snow's two cultures.

Colour and inter-disciplinarity go hand in hand. This so often involves the authors leaving the comfort zone of their original speciality and striving for excellence in another. The personal story of Franziska Schenk is but one good example.

In closing, may I draw your attention to the influential figure of Charles Eastlake? First we have the story in the Goethe, Eastlake & Turner paper of his industry in translating Goethe's work into English together with annotations. This sequence emphasises psychology – Osborne's 'third leg' of colour studies. Then in Patsy Campbell's paper she describes how some artists' original green paints of spring mutated by chemical action to autumnal browns. This scientific misunderstanding, 'completely contradicting the original message', led Victorian painters to conceive of 'an ideal world', which was muted in colour. Eastlake used his great authority to aid the adoption of this rather sombre view of nature into recommended artistic practice! While an obvious conclusion is that scientific ignorance can cause the best of us to get things wrong, a rather different and more positive deduction may also be drawn. The same human psyche that inspired Titian and Lorraine to celebrate with bright greens, made an altogether duller interpretation happily acceptable to Eastlake and his contemporaries. It seems to this Editor that our perceptions of aesthetics and beauty must be very flexible indeed as to find absolute opposites equally fascinating. If so, it goes to show how wonderful are the construction and operation of the human brain. Does psychology win in the end? Does colour lead to a single culture?

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