

introduction | affecting a knowledge of antiques

Images don't move on their own. They have to be made to move – or *appear* to move – by technology, invented and developed by human beings with the purpose of tricking the human brain into thinking that it sees a continuously moving two-dimensional (or in some cases, three-dimensional) picture. No technology = no movement. The technology in question has two components: the images themselves and the processes by which they are made to appear to move. With one or two small-scale exceptions, such as stop-motion animation, the overwhelming majority of human activity in this area has used photographic images as the raw material for movies; probably because for most people photos are the most realistic-looking form of graphical illustration. They are understood to represent 'real life' in a way which no other medium can, hence the phrase 'the camera cannot lie'. Actually it can lie. It has done so throughout its history and with a vengeance, from the days when Stalin's spin doctors airbrushed out the latest functionary to be declared *persona non grata* to the digital era of the 1990s, when the verb 'Photoshop' evolved into an euphemism meaning to digitally manipulate a photographically-originated image to make it represent something it was never intended to.

But that's beside the point. The popular association of photography with realism – it is usually understood to be a medium rather than an art form – made photographs the raw material of choice for the scientists and engineers who wanted images to move, and on an industrial scale. And so we arrive at the close of the nineteenth century, at which point George Eastman, W. K. L. Dickson, the Lumières and many others besides arrive on the scene, bringing with them film, printers, projectors, large-scale financial investment, technical standards and all the other factors that would result in moving images becoming a multi-million dollar industry in today's money, within the space of around 15 years. The story of those 15 years and of the 95 or so which followed is the purpose of this book, but before embarking on it one key issue and its widespread implications need to be acknowledged.

Because moving images are primarily a medium rather than an art form in themselves, the overwhelming bulk of critical attention, by which I mean everything from a group of friends casually discussing a film they have just seen in the pub to academic monographs which apply obscure sociological theory to analyse the representation

of characters in TV soap operas, tends to focus on the 'artistic' use of that medium as distinct from the aesthetic characteristics of the medium itself. Here is an example. When I was a film archiving Master's student in the mid-1990s, we shared one film history seminar with a group of film *studies* (i.e. whose programme was purely academic and contained no significant technical or vocational element) students. In one of these sessions the lecturer showed us an excerpt from a low-budget British crime melodrama from the 1930s. In it a male detective interrogates his female suspect while leaning over the chair in which the latter is sitting, appearing to shout at her. The sequence is lit in such a way that the protagonist appears to cast a long, menacing shadow over the subject of the interrogation. After stopping the video the lecturer invited comments from his class as to why the scene had been shot and staged as it had. His request immediately elicited an impassioned analysis from one of my film studies colleagues. She was (and as far as I know, still is) an enthusiastic advocate of 'feminist film theory', a body of research which holds that economic control of the Hollywood film industry can be interpreted through the psychoanalysis as proposed by Freud to encourage representations of women which are dominated by nasty male desires, and therefore undesirable.¹ Needless to say she had a field day describing the domination metaphor as applied to the images she had just seen.

It eventually emerged that the reason for our hero towering over his petite murder suspect was somewhat more pragmatic. The microphone recording the dialogue, we were told, had been concealed in a vase of flowers behind the chair in which she was sitting. Furthermore, being a primitive 1930s microphone, its sensitivity was limited, thereby requiring the detective to position his mouth as close as he could to it (hence leaning over the occupied chair) and speaking as loudly as possible (hence the menacing voice). In this instance an understanding of the electromagnetic properties of microphone technology would have been rather more useful than the Freudian claptrap which was inflicted on us that afternoon. Sometimes a candlestick really is just a candlestick. In fact, this is quite a mild example of the ways in which humanities and social sciences academics habitually misrepresent the role of engineering and technology in our everyday lives and culture. An extreme one would be the experiment carried out by the American physicist Alan Sokal. In 1996 he submitted an essay to the editorial board of *Social Text*, a 'cultural studies' journal which enjoyed an eminent reputation among academics in that field, which consisted of a satirical parody.² He was particularly concerned that humanities academics seemed to be trying to find ways of disputing scientific phenomena which had been proven and were demonstrable through empirical research and experiments, mainly for political and ideological reasons. As Sokal wrote, 'fair enough – anyone who believes that the laws of physics are mere social conventions is invited to try transgressing those conventions from the window of my twenty-first-floor flat'. Astonishingly *Social Text* published the essay, and in doing so revealed the 'self-perpetuating academic subculture that ignores (or disdains) reasoned criticism from outside'.³

If evidence that such a subculture exists within the academic fields of research which involve attempting to understand the role of moving images in society were needed, the mere fact that those who argue for an informed understanding of the role

of technology (rather than one which is skewed to fit a dubious ideological agenda) should be central to this activity are habitually considered 'outsiders' provides it. In the introduction to what is beyond any reasonable doubt the standard history of film technology, Barry Salt refers to the continuing resistance of the academic humanities community to objective knowledge and empirical historiography in understanding film technology and other things.⁴ To borrow a line from *The Big Sleep*, his allegation is that they 'affect a knowledge of antiques, but haven't any'.

Just how crucial that knowledge is to avoiding fundamental misunderstandings can be summed up in the unique nature of moving images relative to virtually any other cultural artefact one cares to mention. A spoken narrative can be replayed and duplicated using human memory and word of mouth, music can be sung and stage performances can take place in nothing more than an open space. In order to view (analogue) still photographic images only the physical medium on which they are recorded is necessary. Recorded moving images and sound, however, require technology in order to be perceived as such to the viewer or listener.

This book is not intended and certainly will not succeed in fundamentally changing the ways in which students and academics working in the humanities think about and understand moving images. Rather, I am trying to offer an accessible and coherent way in to what the state of the various arts involved was at any given time, their opportunities, characteristics and limitations. To this end the book is divided into eight chapters, which cover what I would argue are the key forms of technological research and development which comprise the origination, manipulation, distribution, reproduction and preservation of moving images. Each chapter consists essentially of a linear narrative explaining what happened, when and why, and the wider impact of each development on other related technologies and their usage.

The use of technologically specific terminology, or 'jargon' to put it brutally, is a bullet which cannot avoid being bitten. In an attempt to minimise the extent to which it could potentially obstruct the reader, two principles have been followed throughout the book: the use of such terms sequentially, and the provision of a glossary for reference purposes. Whenever such a term is used for the first time in the main text, the process or phenomenon it describes is explained in as close as possible to plain English as I can make it. As an *aide memoir* an etymological explanation is also given in the case of terms (a surprising number, given that moving image technology is essentially a twentieth-century phenomenon) with Greek or Latin origins. Thereafter the glossary should serve as a point of reference if needed, especially for readers who are going directly to individual sections of the book rather than reading it as a whole (by chapter eight the acronyms are flowing thick and fast!).

I hope, therefore, that this book will be able to function both as a quick reference point for readers seeking answers or explanations relating to specific technical issues, and also as a broader narrative for readers looking for a historical overview of the role of technology within the economic, industrial, political and cultural roles of moving images.