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## Book Reviews

*Digital Images for the Information Professional*. By Melissa M. Terras. Pp. 258.  
England/USA: Ashgate. 2008. ISBN 978-0-7546-4860-4

*Digital Images for the Information Professional* aims to provide an overview of the changing information environment and maturing technologies underpinning digital image production and management. There is a danger that such an ambitious project will quickly become obsolete with the inevitable ebb and flow of technological change. Melissa Terras is aware of this and has focused her argument on uncovering the historical framework of the technology and discipline, rather than writing a guide to image management. This approach is significant as it opens areas for investigation and discussion previously only briefly mentioned in the plethora of publications on digital resources that have appeared over the past two decades. Terras is uniquely qualified to take this challenging approach. She draws on her background in the humanities (art history and English literature), computer science, and digital humanities to present an interdisciplinary perspective written in a highly readable style. This book asks: how do digital images function as cultural artefacts? And how have these artefacts been appropriated and managed by libraries, galleries and museums, systems Terras defines as 'memory institutions'? Important themes emerge from these questions, principally, user experiences and their relationship with the 'memory institutions' of libraries, galleries and museums; the current proliferation of digital media tools via the Internet; and the role of the information professional as educator and interface between private users and public institutions. Terras does not ignore emerging issues such as preservation and sustainability of digital media, but her text invokes the fundamental value history plays for helping to understand present and future possibilities and challenges.

For a publication devoted to images, paradoxically, images are absent from the text. Useful pointers to relevant images, websites and blogs are signposted in the text and each chapter concludes with a summary and annotated reading list, thereby, helping to generate further discussion and reflection. While the subject-matter is devoted to digital images, the discussion topics are relevant for helping to understand current issues in digital media be these associated with texts, still or moving images or sound. By identifying digital images as cultural artefacts, Terras opens the possibility of exploring them as modes of communication, conditioned by technical, historical and cultural contexts. The introductory chapters, focusing on the history of digital images and its fundamentals, set the agenda for the rest of the book. The text integrates approaches from the humanities and the sciences in such a way that her interdisciplinary approach supports and reinforces the argument. Images are adapted to human physiology and this explains why, Terras argues, humans enjoy image-making and interpretation. In a socio-cultural context, images make possible self-presentation, self-expression and assist in the construction and representation of personal and collective memory.

The history of the digital image is bound up with many diverse and overlapping strands, principally, the newspaper trade, Internet development during the Cold War in the 1960s and the development of personal computing in the 1970s. Terras roots the

history of the digital image in the late eighteenth and early nineteenth centuries, but argues that its realization has become practical only in the last decade, due to reduced costs of information technology. This factor, in particular, has expanded and democratized the means of data capture and dissemination. The recent and rapid uptake of digital imaging and online tools has meant that digital images function as new forms of media, which are changing the information environment and generating new concerns for information professionals. Digital imaging may seem to have appeared, fully formed, from analogue film, photography and personal computing technologies at the end of the twentieth century; nevertheless, technical, practical, social and theoretical issues are continuing to emerge. By understanding these cultural and technological contexts, the information professional is well placed to generate, deliver and maintain high quality images within an evolving information environment.

Information, or data, must be represented in some physical format if it is to be transmitted and stored. There are over one hundred image formats and the number continues to grow. Official standards groups for image formats emerged during the 1980s. The formats which have become popular are generally those which are well documented and make their documentation available in the public domain, thereby, allowing developers to easily integrate formats into their applications. Terras surveys many of the most common formats and file extensions, including Graphics Interchange format (GIF); Portable Network Graphics (PNG); Portable Document Format (PDF); Tagged Image File Format (TIFF) and Joint Photographic Experts Group (JPEG). Full treatment is given to both TIFF and JPEG formats. TIFF is an uncompressed image format, preserving as much information as possible. For this reason, Terras anticipates that TIFF will continue to function as the standard format for image preservation. JPEG, on the other hand, is a compressed image format, discarding information. It is the most common two-dimensional digital image format currently used by the public and institutions. Surveying the fundamentals of the JPEG file format, Terras explains that its format design is adapted to the physiology of the human eye. Discrete Cosine Transfer (DCT) encoding, the basis of JPEG's data compression, exploits the physiology of the eye-brain system. The human eye ignores high frequency changes in colour across small areas, being more concerned with light intensity. Data information which cannot be interpreted visually is omitted. This has made the compression of images in a flexible image format possible, explaining why JPEG is currently the most widely used format for digital images by private and institutional users. Development of the World Wide Web since the mid-1990s has played a pivotal communication role. 'Memory institutions' such as galleries, museums and libraries post samples of their image collections online as JPEG images, and this has enhanced awareness and accessibility.

A period of experimentation may be over, so it is now an opportune time to evaluate the roles digital artefacts play in contemporary culture. In addressing this issue, Terras argues that digital formats should be treated as enhancing, rather than replacing, analogue media. This emphasis is important as it underscores current approaches by 'memory institutions' that favour embedding digital media in order to enhance analogue environments. These developments are sometimes allied with commercial interests, as illustrated by digitization projects pioneered by Google and Microsoft (this latter project was halted in 2008), which aim to make analogue publications available online as high

quality digital image files. Google is working with several major libraries to include their collections in Google Book Search. This project aims to make it easier for the public to find relevant books, for example, those that are out of print. Making high quality resources available online is predicted to enhance browsing and researching.

Terras engages with issues currently preoccupying information professionals, principally, format obsolescence and colour management. What digital resolution will replace film? This is a difficult question to answer as digital image and analogue film have different characteristics and cannot easily replace each other. What is the appropriate bit depth or colour depth for image capturing? There is little point in capturing colour information which does not bring added information to representation. Bit depth refers to the colour of each individual pixel or picture element within a bitmapped graphic. Recommendations are contingent on the available technology, and this is liable to change. For example, 24-bit colour, referred to as 'true colour' on PC systems and 'millions of colours' on Macintosh systems, is recommended for preserving colour fidelity, nevertheless, this advice is determined by the fact that 24-bit colour display is currently the highest bit depth currently available on commercially available terminal monitors.

This past decade has witnessed a proliferation of image making without a corresponding educational awareness informing the general user. Ease of image capture has been facilitated by ubiquitous portable photographic devices, such as mobile phones, and online file sharing software has enhanced sharing without raising, in equal measure, public awareness of collections management, intellectual property rights and ethical concerns regarding image manipulation. As a result, Terras argues, preservation and sustainability of private image collections is uncertain. This will be an emerging issue as 'memory institutions' seek to integrate private collections into institutional collections. If digital images are to be trusted for teaching and research purposes, they will need to be accompanied by reliable and professionally validated image metadata.

Terras concludes by predicting that the information professional of the future will have a pivotal role disseminating professional knowledge through public education and feeding back user needs to further develop and refine institutional collections, while keeping abreast of technological and cultural shifts in society. Her vision of knowledge formation is one of partnership and collaboration between institutions and users. The social networking characteristics of Web 2.0 have broken down barriers between expert and lay knowledge. In the context of an evolving semantic web of collective information exchange, educational and cultural 'memory institutions' are no longer sole generators and disseminators of knowledge. Currently, these institutions are reflecting on how best they can contribute to a world where boundaries between public and professional knowledge continue to blur. In this new cultural landscape, institutions will have to seriously consider the requirements of the non-specialist user as much as the specialist user. Increasingly, the demands of new digitization projects will become even more user driven. By acknowledging the validity of user behaviour as a field of inquiry for the Information professional, Terras has exposed a topic fertile for future research and discussion.