

Introduction

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The technology of the modern media has produced new possibilities of interaction.... What is needed is a wider view encompassing the coming rewards in the context of the treasures left us by the past experiences, possessions and insights.

—RUDOLF ARNHEIM, SUMMER 2000

Recognizing the increasing significance of media art for our culture, this book will discuss for the first time the history of media art within the interdisciplinary and intercultural contexts of the histories of art. It explores and summarizes the mutual influences and the interactions of art, science, and technology and assesses the status of digital art within the art of our times. To do so, this collection assembles some of the most well-known researchers of this emerging field.

This book discusses questions of historiography, methodology, terminology, and the roles of institutions and inventions in media art. It contains key debates about the function of the machinic, of projection, visuality, automation, of neural networks and mental representation, as well as the prominent role of sound during the last decades, contemporary science theory, and scientific visualization. It will also emphasize themes of collaborative research and pop culture in the histories of media art.

The goal is to open up art history to include media art from recent decades and contemporary art forms. Besides photography, film, video, and the little-known media art history of the 1960s to the '80s, today media artists are

active in a wide range of digital areas (including net art, interactive, genetic, and telematic art). Even in robotics, a-life, and nanotechnology, artists design and conduct experiments.¹ This dynamic process has triggered intense discussion about images in the disciplines of art history, media, cultural studies, and the history of science. The focus will be to view and analyze media art against the backdrop of art history and reflections from neighboring disciplines. This anthology in media art histories offers a basis for attempting an evolutionary history of audiovisual media. It is an evolution with breaks and detours; however, all its stages are distinguished by a close relationship between art, science, and technology.

This is what it's about: hundreds of names of artists, thousands of artworks, art trends, theory of media art in keywords, presented in an enormous circle-diagram (fig. 1.1). Thirty-two slices are offered as a subdivision into themes, such as representation, emotion and synesthesia, the material issue in art, atmosphere, games, therapy, mission, and art as spatial experience through which we find glimpses of a history of media art.² Over the last thirty years

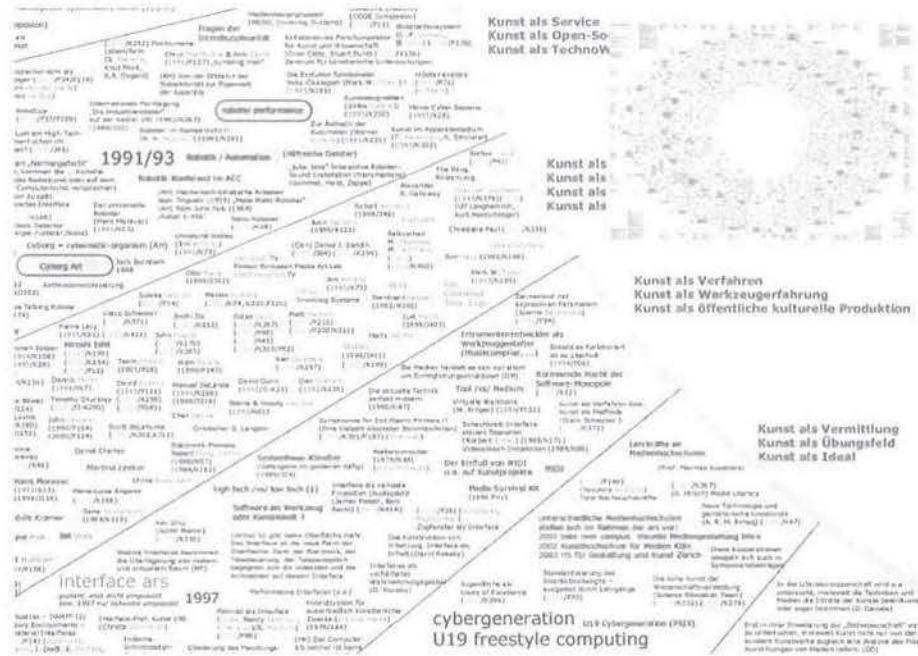


Figure 1.1 Gerhard Dirmoser, *Ars Concept Cluster*, 2004. By kind permission of the author.

media art has evolved into a vital factor of the contemporary artistic scene. Digital art has become the art of our times, yet it has not “arrived” in the cultural institutions of our societies. It is still rarely collected, it is not included or supported under the auspices of art history or other academic disciplines, and it is almost inaccessible for the non-north-Western public and their scholars. To change this is our goal! What is needed is a wider view encompassing media art in the context of the treasures left us by past experiences, possessions, and insights.

On the path leading toward installation-based virtual art, Charlotte Davies transports us with *Osmose* or *Éphémère*—already classics—into a visually powerful simulation of a lush mineral-vegetable sphere, which we can explore via an intimate interface (fig. 1.2).³ Japanese-flavored interaction is observed with Hiroo Iwata’s *Floating Eye* (2000; fig. 1.3), in which a camera on a blimp replaces one’s normal vision with a panoramic spherical screen, so that one can observe oneself from above. Operating in both the scientific and artistic arena, Karl Sims’s artificial life research can be found at the Centre Pompidou

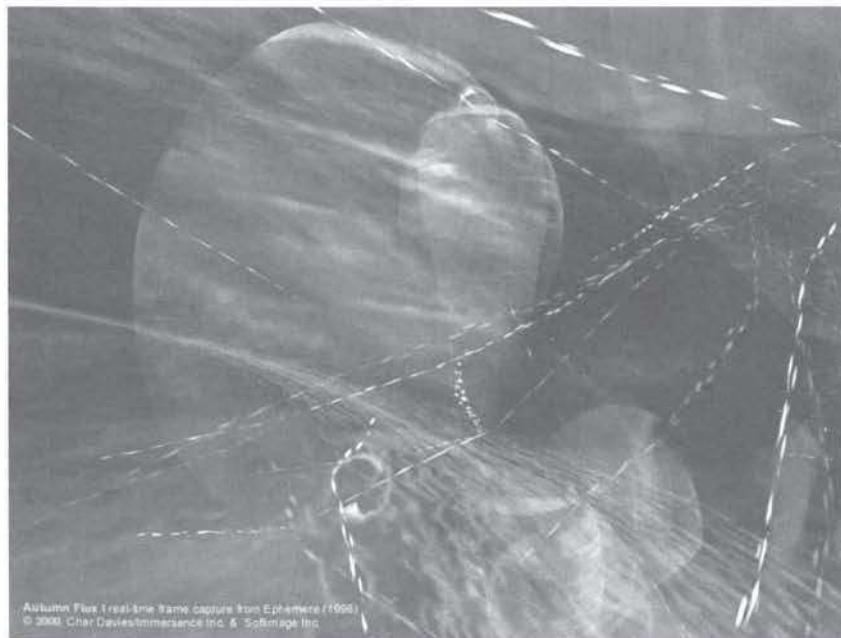


Figure 1.2 Char Davies, *Éphémère*, 1998. See plate 1. By kind permission of the artist.

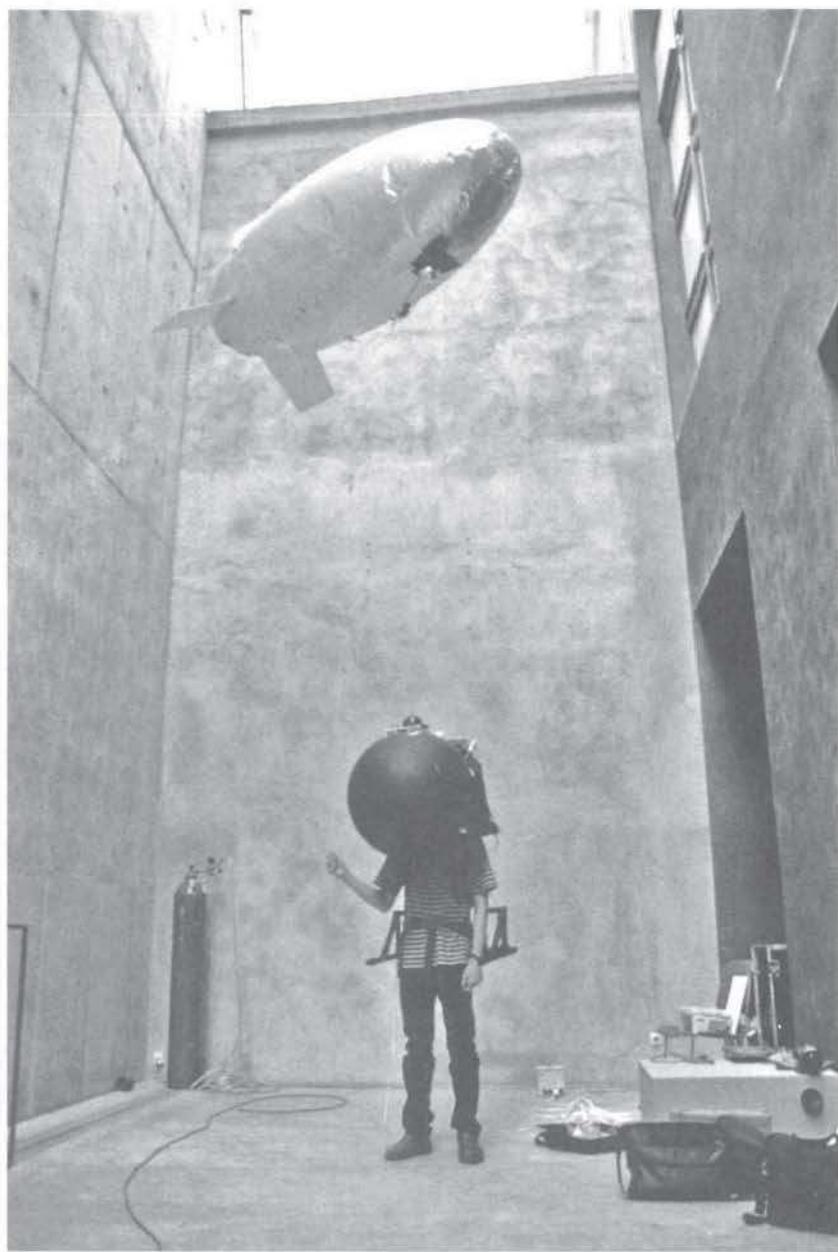


Figure 1.3 Hiroo Iwata, *Floating Eye*, 2000. By kind permission of the artist. Photo by Ars Electronica.

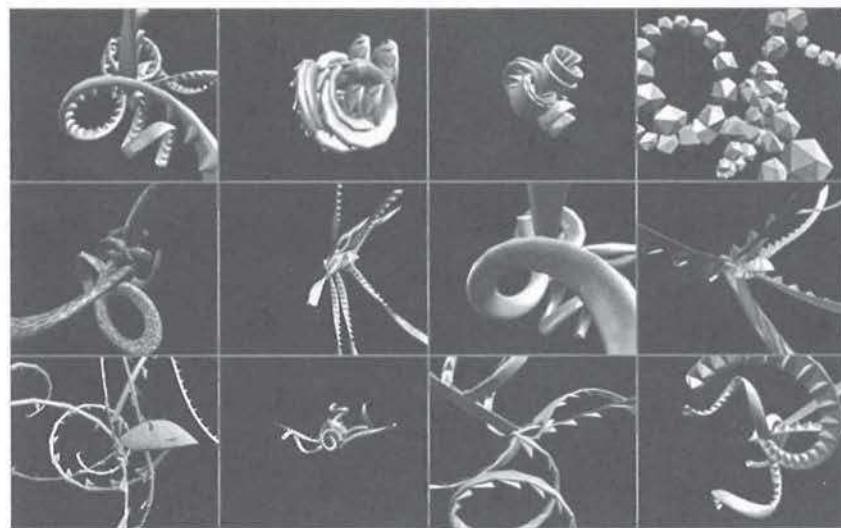


Figure 1.4 Karl Sims, *Genetic Images*, 1993. See plate 2. By kind permission of the scientist.

and in his technical journals (fig. 1.4). Constructed on a database, the interactive installation *Ultima Ratio* by Daniela Plewe offers a first glimpse of a future system for interactive theater (fig. 1.5). Intellectually challenging, her concept piece allows the spectator to solve an open conflict at a high level of abstraction using combination of different dramatic motifs. Plewe's goal is to generate a visual language for argument and debate.⁴

David Rokeby's *Very Nervous System* is a classic sound piece now twenty years old on publication of this book. Presented in galleries and public outdoor spaces and used in performances over the past two decades, this work creates a complex and resonant aural relationship between the interactor and the system (fig. 1.6).

In a finely meshed alliance between science and art, media art today explores the aesthetic potential of interactive, processual image worlds. Leading exponents of virtual image culture work in basic research and combine art and science in the service of today's most complex technology for generating images. These internationally prominent artists, who often work as scientists at research institutes, are engaged in the development of new interfaces, models for interaction, and innovative codes: they set the technical limits themselves according to their own aesthetic goals and criteria.

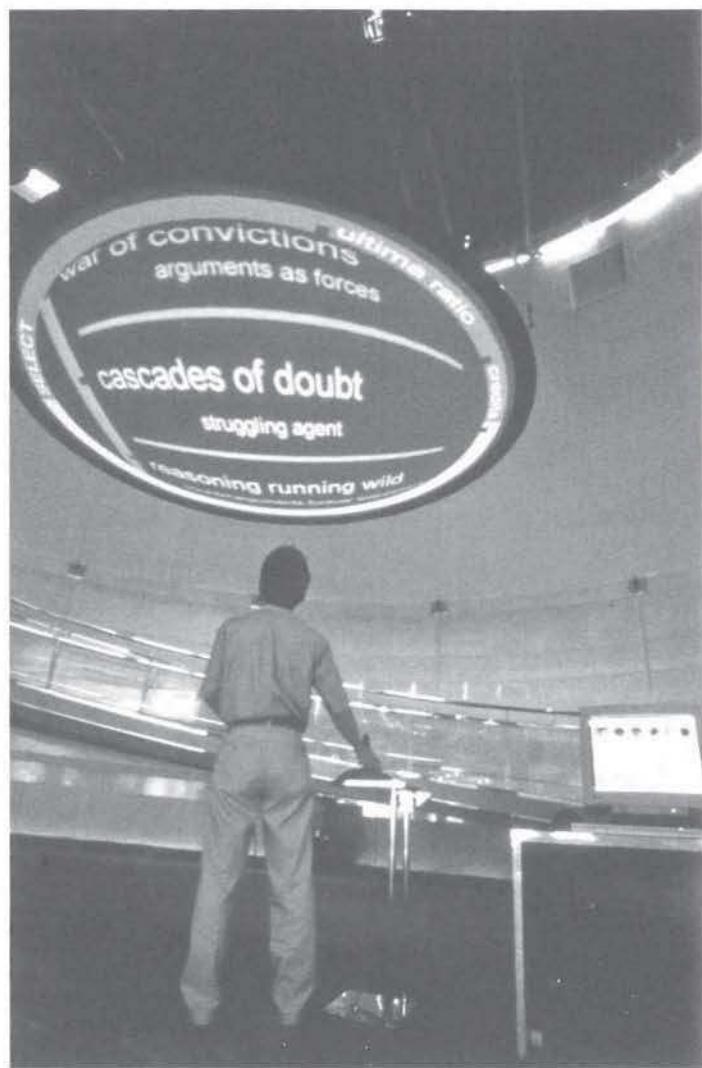


Figure 1.5 Daniela Plewe, *Ultima Ratio*, 1997. By kind permission of the artist.



Figure 1.6 David Rokeby, *Very Nervous System*, 1986. By kind permission of the artist.

The Next Five Seconds

These artworks both represent and reflect the revolutionary development that the image has undergone over the past few years. Never before has the world of images changed at such a breakneck pace as over the last few decades. Images were once exceptional and rare, reserved mainly for religious rituals; later, they were the province of art, then of museums and galleries. Today, in the age of cinema, television, and the Internet, we are caught up in a matrix of images. Images are now advancing into new domains. Television, for example, is changing into a zapping field of thousands of channels; gigantic projection screens are invading our cities; infographics permeate the print media; and cell phones transmit micromovies in real time. Currently, we are witnessing the transformation of the image into a computer-generated, virtual, and spatial entity that seemingly is capable of changing “autonomously” and representing a lifelike, visual-sensory sphere. Interactive media are changing our perception and concept of the image in the direction of a space for multisensory, interactive experience with a temporal dimension. Things that formerly

were impossible to depict can now be represented; temporal and spatial parameters can be changed at will so that virtual spheres can be used as models or simulations for making specific types of experience. Artists are making image spaces of interactive art that can be experienced polysensorially, spaces that promote processuality, narration, and performance, and thus also give new meaning to the concept of gaming. The dynamic process of change has fueled the interdisciplinary debate about the status of the image, a debate with protagonists such as Mitchell, Belting, Elkins, Stafford, and Manovich.⁵

But without exception, neither these artworks nor the last decades of digital art in general have received the appropriate attention by academic disciplines or have been added in adequate numbers to the collections of museums and galleries. We are thus in danger of erasing a significant portion of the cultural memory of our recent history. The evolution of media art has a long history and a new technological variety has now appeared.⁶

However, this art cannot be fully understood without an understanding of its history, which is why Rudolf Arnheim's recently published plea for integrating the new, interactive, and processual worlds of images into the experiences and insights that have come down to us from the art of the past begins the selected articles in this book. There are many stories yet to be told about media art, the discipline of art history, media artists, and their work. However, we are also waiting for a great deal more: studies that will aid media art to overcome its existence at the periphery of the discipline of art history. A first step, of course, will be to tell the story in numbers, places, names, and technologies, like many current international databases and archiving projects are doing.⁷ Beyond that: by focusing on recent art against the backdrop of historic developments, it is possible to better analyze which aspects are new and which aspects inherited in media art. Therefore it is important that we become familiar with our media history, with its myths and utopias. Media art history and media archaeology are a valuable aid to understanding our present and our future goals in a period where the pace appears to get faster and faster—that is the epistemological thesis. It is not about a new canon, but about the many-voiced chorus of the involved approaches. For the interests of media art it is important that we continue to take media art history into the mainstream of art history and that we cultivate a proximity to film, cultural and media studies, and computer science, but also to philosophy and other sciences dealing with images.

A central problem of the current cultural situation stems from a serious lack of knowledge about the origins of audiovisual media. This stands in complete contradistinction to current demands for more media and image competence. Considering the current upheavals and innovations in the media sector, where the societal impact and consequences cannot yet be predicted, the problem is acute. Social media competence, which goes beyond mere technical skills, is difficult to acquire if the area of historic media experience is excluded. Media exert a general influence on forms of perceiving space, objects, and time, and they are tied inextricably to humankind's evolution of sense faculties. For how people see and what they see are not simple physiological questions; they are complex cultural processes that are influenced by many and various social and media technological innovations. These processes have developed specific characteristics within different cultures and it is possible to decipher these step by step in the legacy left by historical media and literature concerned with visualization, including the history of the fields of medicine and optics. Not least, in this way light can be shed on the genesis of new media, which are frequently encountered for the first time in works of art as utopian or visionary models.

Film, cinema, and even television we already regard today as "old" media, because the image industries develop and offer new generations of media at ever-shorter intervals, with the modern and postmodern periods already in the rearview mirror. Although there is scant analysis and engagement with these media because of their continuing dominant, self-evident position in connection with creating collective "reality" and illusionary spectacles, slowly but surely their dominance is waning. This will allow the pre- and posthistory of visual mass culture in the twentieth century to surface more clearly and promote awareness that it is necessary to engage with both the past and the present of media to understand their ability to produce illusions and their formation through distribution networks.

Mass communication using audiovisual media is generally regarded as a twentieth-century phenomenon. In fact, however, the contemporary forms of these media are the result of complex historical processes that had already formed finished sets of industrial technologies, distribution procedures, and forms of design by the mid-nineteenth century, which made it possible to supply a mass audience. And we can go back even further. Seeing machines and the image worlds of magic lanterns, panoramas, and dioramas are

regarded as having paved the way for photography, cinema, and the digital media of the present day. Yet without the revolution in image space, which the representational technique of perspective wrought in portrait and landscape painting, without the *camera obscura*, which became the guarantor of “objective observation” before photography was invented, the image media of the twentieth century would be unthinkable. At the same time, the prehistory of artificial visualization points the way forward to the digital world and its immediate future.⁹ The contributions to the “Origins” section therefore deal explicitly with this complex of themes: rediscovering kinetic art and op art in a new context, Peter Weibel shows that terms like “virtual” were already current in the 1960s; Edward Shanken’s questions pertain to methodology and canonicity and locate the historicization of cybernetic, telematic, and electronic art within a larger art historical context through a critical reflection on the mechanisms of canonization in art history. Erkki Huhtamo examines interactivity and tactility through a media-archeological perspective, and Dieter Daniels’s essay analyzes the contribution of Duchamp’s inventions to media art. Going further back into history, Oliver Grau discovers in the phantasmagoria a visual principle, so far not introduced into the theory of media art, which combines concepts from art and science in search of a total medium; and Gunalan Nadarajan in the writings of Al Jazari examines a history of Islamic automation Western art history has thus far been unaware of.

Based on this historical framework, the section entitled “Machine—Media—Exhibition” offers a critical reexamination of key terms in media art theory. Edmond Couchot examines hybridization and automatization for the future orientation of art and culture. The machine is looked at as a productive and transformative principle in Andreas Broeckmann’s contribution considering the “aesthetics of the mechanic.” While the transformation in media art is analyzed through the new contexts of textuality, technology, and cultural institutions by Ryszard Kluszczyński, Louise Poissant finds the transformation in the medium itself, as interest moved from the object’s plasticity to that of the spectators’ neural network. Investigating the shift from object to process and from lone artist to collaborative models of production and presentation, Christiane Paul shows that the accommodation of new media art within the institution and gallery runs counter to traditional ideas of the museum as shrine.

The dividing lines between art products and consumer products, between art images and science images have been disappearing more and more since

the 1960s. So also the distinction between maker and recipient has become blurred. Most recently, the digitization of our society has sped up this process enormously. In principle, more and more images are no longer bound to a specific place and can be further developed relatively easily. The cut-and-paste principle has become an essential characteristic of contemporary image and culture production. The spread of access to the computer and the Internet gives more people the ability to participate in this production. The part entitled "Pop and Science" examines, therefore, concrete forms that today determine the cultural context of new media and what consequences they could have for the understanding of art in the twenty-first century.

With her essay on Device Art, Machiko Kusahara takes us to a concept derived from the Japanese media art scene. On this basis she reexamines the art–science–technology relationship from both contemporary and historical aspects. Ron Burnett's contribution instead explores the ubiquitous use of the term "interactivity" as a marker between old and new media, asking questions about the context that led to the invention of photography and the cinema, with the goal of showing strong historical links among the various technologies in use today and the ways in which their discourses are interconnected. Lev Manovich traces the influence of science on abstraction and brings us to an understanding of the role played by scientific complexity theory in contemporary software abstraction. From the view of another neighboring discipline, the history of science, Timothy Lenoir examines the societal and ethical implications of contemporary technoscience with its multidisciplinary character and encourages collaborative research allowing technoscience to be made public and new media to be made critical.

An increase in the power of suggestion appears to be an important, if not the most important, motivating force driving the development of new media of illusion. Image science, or *Bildwissenschaft*, now allows us to attempt to write the history of the evolution of the visual media, from peep show to panorama, anamorphosis, myriorama, stereoscope, cyclorama, magic lantern, eidophusikon, diorama, phantasmagoria, silent movies, films with scents and colors, cinéorama, IMAX, television, telematics, and the virtual image spaces generated by computers. It is a history that also includes a host of typical aberrations, contradictions, and dead ends.

However, if one were to interpret the telling of this hitherto neglected story line of art and media history as a sign of the changes taking place in the discipline of art history, which parallels current developments in philosophy

and cultural studies and goes by the new label of “image science,” this would be far too superficial. Rather, we must return to and develop an older and successful tradition in art history, which in Hamburg and elsewhere in the 1920s can only be classed as image science. It drew its inspiration from Aby Warburg’s cultural history-oriented, inter- and transdisciplinary approach as well as from Panofsky’s “new iconology.” Although already in the nineteenth century, art history included craftsmanship, medieval studies, collections of photography and was, therefore, in effect image science (see Alois Riegl, *Spätromische Kunstdenkmäler* [Vienna: Staatsdruckerei, 1901]), it was Aby Warburg, today regarded as the most important art historian of the early twentieth century, who helped to expand art history explicitly into image science. His research, which included all forms and media of images, the impressive library he built up, and his MNEMOSYNE image atlas all testify to the universal interpretive energy that can often reveal important discoveries in apparently marginal images. The Nazis extinguished this development, which only went forward again in the 1970s. Film, video, net art, and interactive art have, as yet tentatively, pushed art history in the direction of image science once again.

But today, image science sets out to investigate the aesthetic reception and response to images in all areas. Thus this new interdisciplinary subject is in good company with the recent research areas of the historical study of image techniques, the history of the science of artistic visualization, art history of scientific images,⁸ and particularly the natural sciences-oriented occupation with images in science. This latter recently celebrated its inaugural congress at the Massachusetts Institute of Technology,⁹ an event which also demonstrated that image science without art history—particularly without its tools for critical image analysis—is not capable of developing a deeper and historical understanding of images. It is in danger of propagating old myths and, lacking a “trained eye,” of succumbing to the power of images. The rise of media art has added fuel to this debate, for questioning images has acquired not only new intensity but also new quality and media. The final part, “Image Science,” starts with Felice Frankel’s essay examining the role of intention in visual representations of scientific phenomena. She brings up the need to develop a visual language that can be used by scientists as well as artists.

Further heirs to this interdisciplinary tradition today are scholars who open up new perspectives pleading for an extended image science. Thus the founder of the new image science W. J. T. Mitchell provokes the reader with the headline “There Are No Visual Media”—asking “is ‘visual media’ simply short-

hand for ‘visual predominance?’” and “what is at stake in straightening out the name ‘visual’ media?” From the history of film studies perspective, Sean Cubitt asks whether the field of projected light has more to offer than the emulation of the real, reproducing the separation of the object and subject and revealing a new term in the series subject—object—project. Image science is broadened beyond the visual in the contribution from Douglas Kahn on early computer arts, when music made on mainframes such as that by James Tenney at Bell Labs can be called the first digital art because it required computers for its realization. In the last essay included in this collection, Barbara Stafford brings us full circle, back to one of the major intellectual problems of our times, the accurate depiction of uncertainty as a nonimagistic notion of “mental representation” informed by recent findings in cognitive science.

This book represents the network of scholars who over the past years have been a part of the growing number of dedicated researchers searching for insights into the histories of media art in order to build a solid field of study for the future. Many of the authors had the opportunity to participate in the first international conference on the histories of media art, science, and technology at Banff, for which I served as chair. Planned long before the conference, the contributions of this book went through days of intense discussions at Banff and afterward. With a top-notch international advisory team and dedicated organization partners, this conference laid a foundation of scholarship to build on. The outcomes of the conference and future developments in the field can be found on the Web forum for the field, <http://MediaArtHistory.org/>. This book draws on great thoughts from preceding decades and is just the beginning of the emerging field of MediaArtHistories.

Notes

1. The pioneer project in the field is the Database of Virtual Art: <http://virtualart.at/>. See Oliver Grau, *For an Expanded Concept of Documentation: The Database of Virtual Art* (Paris: ICHIM, École du Louvre, avec le soutien de la Mission de la Recherche et de la Technologie du Ministère de la Culture et de la Communication, 2003), 2–15.
2. Gerhard Dirmoser, “25 Jahre Ars Electronica—Ein Überblick als Gedächtnistheater,” in *Time Shift: The World in Twenty-Five Years, Ars Electronica 2004*, ed. Gerfried Stocker and Christine Schöpf (Ostfildern: Hatje Cantz, 2004), 110–115.

3. See Margaret Wertheim, "Lux Interior," *21C*, no. 4 (1996), 26–31; Eduardo Kac, "Além de Tela," *Veredas* 3, 32 (1998), 12–15; Charlotte Davies, "Osmose: Notes on Being in Immersive Virtual Space," *Digital Creativity* 9, no. 2 (1998), 65–74.
4. Bernhard Dotzler, "Hamlet/Maschine," *Trajekte: Newsletter des Zentrums für Literaturforschung Berlin* 2, no. 3 (2001), 13–16; Yukiko Shikata, "Art-Criticism—Curating—As Connective Process," *Information Design Series: Information Space and Changing Expression*, vol. 6, ed. Kyoto University of Art and Design, 145.
5. See David Freedberg, *The Power of the Images: Studies in the History and Theory of Response* (Chicago: Univ. of Chicago Press, 1989); Hans Belting, *Bild-Anthropologie: Entwürfe für eine Bildwissenschaft* (Munich: Wilhelm Fink Verlag, 2001); Jonathan Crary, *Techniques of the Observer: On Vision and Modernity in the Nineteenth Century* (Cambridge, Mass.: MIT Press, 1990); William J. T. Mitchell, *Picture Theory: Essays on Verbal and Visual Representation* (Chicago: Univ. Chicago Press, 1995); James Elkins, *The Domain of Images* (Ithaca: Cornell Univ. Press, 1999); Lev Manovich, *The Language of New Media* (Cambridge, Mass.: MIT Press, 2001).
6. Oliver Grau, *Virtual Art: From Illusion to Immersion* (Cambridge, Mass.: MIT Press, 2003).
7. Database of Virtual Art (founded in 1999), Langlois Foundation (2000), V2 (2000), the recent Boltzmann Institute Linz (2005), which was influenced by the concept of the Database of Virtual Art.
8. Bruno Latour, "Arbeit mit Bildern oder: Die Umverteilung der wissenschaftlichen Intelligenz," in B. Latour, *der Berliner Schlüssel: Erkundungen eines Liebabers der Wissenschaften* (Berlin, 1996), 159–190; Christa Sommerer and Laurent Mignonneau, eds., *Art@Science* (New York: Springer, 1998); Martin Kemp, *Visualisations: The Nature Book of Art and Science* (Berkeley: Univ. of California Press, 2000).
9. The Image and Meaning Initiative (<http://web.mit.edu/i-m/>) held its first conference at MIT in 2001, followed by the Getty Center in 2005.