As the 20th century drew to a close, we were increasingly likely to encounter the cinema through other media – on television, home video, DVD, or the internet. Media and industry convergences of the late 20th century were enacted in the rise of Home Box Office¹ in the late 1970s, the emergence of home video in the 1980s, and the move from digital special effects to digital editing and projection across the last three decades. Web marketing and access to films online accompanied the rise of corporate conglomerates like Disney-Capital Cities-ABC in 1996, synergetic entities vertically integrated across categories as seemingly disparate as entertainment, information, food and nuclear power, and with a formidable global reach. As New Economist editor Frances Cairncross (1997) announced, distance is dead in the free-market world where corporations build...
brave new markets with the dissolution of the nation-state and the wiring of the Third World.

Convergence of the media raises important issues for those of us in film studies. We find the defining object of our field – film – disintegrating into, or integrating with, other media. Of course, media convergence is not a new phenomenon. Film has never been an autonomous medium or industry. And the potential for global corporate expansion may have been brought to new heights, but was not introduced, by the internet. The film industry’s intersections with television, consumer goods (through product tie-ins), the electrical and lighting industries, and even the make-up and fashion industries since the cinema’s inception in the late 19th century have all been well documented. The difference in the convergence frenzy of the late 1980s and 1990s is that this phenomenon reached a fullness, a potential, captured in the word synergy, a corporate buzz-word describing the exponential-growth effect that occurs with the integration of media and products – and corporate holdings – across industries. The actualization of science-fiction fantasies of convergence faced fewer technological limitations and a climate in which, to cite US circumstances, federal checks on vertical integration were effectively sidestepped with the waves of media deregulation since the Reagan years and fulfilled in the global free-market mentality of the Clinton era. At the level of the technical, convergence became a qualitatively different entity when computers could support those elements previously limited to the media technologies of film and television: high-quality image reproduction and real-time movement, with the latter still not brought up to the level of the cinema and television.

In the academy, the 1990s wave of media convergence has been paralleled by a teetering of film studies’ institutional base as a field of its own. Film studies as a field has been under construction for a mere quarter century, and the cinema itself is barely over a century old. The (debatable) destabilization of a young field was effected in part through the rise of interdisciplinarity as a research and methodological strategy in the late 1980s and 1990s. It was also facilitated by the rise to semi-institutionalization of the interdisciplinary fields of cultural studies and visual studies as logical homes for the study of the medium, the industry and the cultures of film. Film’s institutionalization hinged on alliances forged among scholars trained in the traditional disciplines (history, the social sciences, English, the modern languages) over the object film and its social institution, the cinema. As David Rodowick (1996) reminds us, whereas film studies emerged in the 1960s and early 1970s alongside the disciplines of women’s studies and Africana studies during a period of economic expansion, visual studies emerged in a climate of scarce resources for the humanities (p. 60). The interdisciplinarity of cultural and visual studies fits the institutional imperative to downsize quite nicely. I return to the economic point in a moment. For now, I want to stay with the emergence of film studies in the post-1968 political climate. Women’s and Africana studies programs were founded on a politics of identity and were supported by the advances of civil rights and liberation movements. Gender and ethnic studies have always been marked with their political roots and motivations. Film studies is set apart from these areas in that it is based upon an object of study and not a specific politics or the conditions of subjectivity. Film theory and criticism do have bases in the worker, student and women’s movements of the period. But the field of film studies
was founded on other disciplines and imperatives as well, including the historical and philosophical study of film and the cinema. It is harder to tie the discipline to a politics as a motivation for its emergence.

The growth of film studies finds a more apt parallel in cross-disciplinary programs and departments defined by the neutral qualifier *comparative*, as in comparative literature, comparative studies, and a later formulation, comparative arts. As the term *comparative* gave way to *cultural* in some institutions (such as my own, where comparative literature became modern languages and cultures, and comparative arts became visual and cultural studies), film in some quarters came to be tied to the larger rubric of culture. The UK presents a different narrative, where cultural studies is of course an earlier and broader phenomenon than in the US, paralleling film studies’ emergence as a field. The visual studies rubric for programs was also introduced earlier and more broadly in the UK than in the US. The term *comparative* had against it (or going for it, depending on one’s view) apparent generic neutrality. It implied a degree of similarity among its objects (national literatures, for example). *Cultural* and *culture*, through the terms’ associations with the specific disciplinary and methodological orientations of British and, later, American (read US) cultural studies, have a political legacy and orientation that distinguishes cultural studies from the terms’ earlier use in anthropology. The two legacies of the terms create some confusion, then, for we can trace in ‘visual culture’ both ways of thinking the term – the older anthropological way, and the newer cultural studies way.

Film studies, unlike these other categories, invokes in its very name a medium, an industry, and a specific set of material referents that make the field’s life seemingly dependent on the duration of those entities. The argument can be made that literary studies has always similarly been associated with the study of particular material objects and has nonetheless survived the emergences and convergences of media, modes of inscription and methods. But the history of print culture has been far longer and more materially varied. New objects and practices including film, television and hypertext have readily been incorporated, as new varieties of text, into literary studies. The shorter and more medium-specific history of the cinema (the social institution), and film (the object) may in fact limit the material scope and hence the lifespan of film studies proper. This abbreviated life distinguishes the field from its more entrenched precedent and parallel – literary studies – and suggests film studies in the narrow sense could go the way of the study of dead languages.

That is, if film studies is really about the study of film. There are two directions I mean to take this caveat. The first concerns the entity, film. If film has become a medium interlocked with, and perhaps soon to be subsumed in, the broader category of digital media, we need to re-conceive where and how we take up film as an object of study. This issue is only partly resolved by the game of renaming the field to correspond to its new objects (film and television studies, film and media studies, comparative media studies, visual studies). We also must examine the interdisciplinary fields where film has migrated and with whose objects and motivations it has converged. The view of art historian Christopher Wood (1996) that ‘worrying about the name of the discipline is a pastime for bureaucrats’ (p. 70)
made me envious of the complacency those in more stable fields can afford to have with respect to their institutional base. The stakes in naming are high when the objects, methods, or orientations of one’s work may not be accommodated within the boundaries of the departmental home’s title. Disciplinary naming gives shape to research agendas, canons, and how we enter into intellectual politics, determining our potential to carry on research in certain methodologies and not others, and with certain objects of study and not others. The situation of naming-as-discipline-building raises the questions as to which fields are equipped to support the study of film in its current and future status as a medium, and industry, and a culture? What will film scholars be authorized to study? What will film studies become in visual studies?

The second caveat concerns the degree to which film studies is about film. To put this another way, one of the objects of film study since the early history of the field in, for example, perceptual psychology or the filmology movement, has been the experience of populations or individual subjects with the medium’s material and sensory conditions. Film studies has always been as much about the experience and conditions of duration, spatiality, perception, attention and sound in modernity as it has been about film images and texts. This way of thinking about film studies’ objects, whether as spectator, observer, audience, community, body, population, or subject, has grounded investigations launched through approaches as diverse as psychoanalysis, phenomenology, social-science audience research, historical analysis of the cinema as social institution, and reception studies. The list of film studies scholars who don’t work on film is long. Television historian Lynn Spigel brought her training in psychoanalytic feminist film theory to bear on television history, producing a history of early television audiences solidly grounded in the film canon without ever taking on film. A more complex example: Anne Friedberg, a founder of a graduate program in visual studies at Irvine, has focused her major research of the last decade on the spectatorial conditions of the gaze and the observer in non-film contexts. Her current project, which considers the window as object and trope (Friedberg, forthcoming), was preceded by a book which traced the existence of a virtual gaze in the public urban spaces of modernity. Friedberg (1993) locates 19th-century modernity’s observer in a virtual gaze experienced in the contexts of the panorama, the diorama, and window-shopping. Film theory is the foundation for Friedberg’s investigation of the conditions of the flâneur and the flâneuse; her graduate work was in one of the founding film studies programs. But her object of study is a far cry from the material entity film, filmic images, and the conditions of film spectatorship specifically – except insofar as the latter is one of the contexts in which modernity’s virtual gaze also lives. Friedberg’s study advances film studies in a way that a study of film and cinema specifically could never have done. Her work allows us to get outside the conditions of film spectatorship to see how other gazes at work at the origins of the cinema shaped the conditions for film spectatorship into the 20th century. She identifies in the virtual gaze of postmodernity the conditions for the gaze that most associate with new digital technologies, giving that gaze its history.

My own work in visual studies began with an investigation of film objects, albeit obscure ones (the early scientific medical films found in the scary basements of hospitals and medical museums). These very objects and the conditions of their
production and use led me to question not only what we had come to accept as the material conditions of film at its origins, but also the accepted prehistory and early history of the cinema as an institution. This study led me to rethink the notion of the film archive as I found films alongside the detritus of medical museum displays and film equipment retrofitted with medical equipment for purposes of visual experiment. This took me into the realm of a gaze that was markedly different from the ones being theorized around popular cinema.

Here I want to return to the issue of convergence. I take media convergence as a given, not because I believe it is a new phenomenon (I do not), but because it is a reality of the late 20th century that coincides precisely with the flux of interdisciplinarity, and the reshaping and downsizing, that transformed the humanities in the 1990s. I accept technological convergence as a premise provisionally in order to move directly into the question of the institutional study of film and also as the broader categories of the digital and the visual. By institutional convergence I mean the vertical integration of disciplines and the simultaneous horizontal expansion of objects of study within a given area. Visual studies is the field that concerns me most in this integration of fields and disintegration of boundaries between objects of study. My questions will be along these lines: How did visual studies emerge as a discipline with film in its purview? How does the digital, an aspect of late 20th-century visual culture that emerged roughly simultaneously with visual studies, figure into the field? What happens when film studies is embedded in or combined with visual studies? Some of these questions will be touched upon in the following pages.

It may be useful for me to explain that my lens for these questions is my job of 10 years teaching film studies in a visual studies program that has grown and maintained privileged support during a period of dramatic downsizing of the humanities at my institution. I am nominally appointed in this program (which has no lines of its own). My primary undergraduate teaching responsibility is to an undergraduate film studies program (also with no lines of its own). In my institution, the film program has a major historical debt to the department of English, where my ‘real’ appointment officially resides. I will begin my discussion with a reading, through the lens of this particular institutional positioning, of the place of film studies in the infamous 1996 issue of *October* devoted to the concepts of visual culture and visual studies. A detour through this debate allows me quickly to identify some of the problems in thinking film’s place in the current milieu of visual studies.

**Where is film studies in visual studies?**

In 1996, *October* published an issue with a questionnaire-and-selected-responses section devoted to an interrogation of ‘the interdisciplinary project of visual culture’. The project, which was launched with four ‘questions’ (framed as general assertions) about visual culture and visual studies, piqued the interest of those of us at the University of Rochester teaching in the Program in Visual and Cultural Studies. As the only accredited graduate program of its kind in the country at the time, we were eager to see how a field whose development we had fostered would
fare under the scrutiny of scholars across the contributing disciplines. I was surprised to find that the comments of only two film scholars were included in the 19 responses published, and the representation of scholars who work on television and new media was even smaller (one of the film people constituted this category as well). About half of the responses were from art historians. The topics and selected responses were embedded in a set of essays devoted to discussions launched from art history, some of which more fully fleshed out the questionnaire topics’ implied criticisms. These criticisms were not only of visual culture as a paradigm and visual studies as a discipline, but of the digital future for which visual studies helps us to prepare.

I want to emphasize that in what follows in this section, my aim is not to insist upon the interdisciplinarity of visual studies as liberating or even intellectually enriching. Rather, I want to make a more pragmatic argument for its necessity as both an outcome of and response to the broader conditions of media convergence (conditions that include technological advancement, global capitalism, and so on). Visual studies is one of the few places from which we can adequately address not only the current conditions of media convergence, but also its long and complex history. (Science and technology studies is another emergent discipline in which I believe this can be done well.) One of the framing topics of the *October* (1996) questionnaire implies that visual studies is complicit with the forces of globalization, the next phase of capitalism, and the disembodiment of the image. ‘It has been suggested’, the editors of the survey submit, ‘that the precondition for visual studies … is a newly wrought conception of the visual as disembodied image, re-created in the virtual space of sign-exchange and phantasmatic projection’ (p. 25). This is followed by a claim that visual studies is, ‘in its own modest way, produc[ing] subjects for the next stage of global capitalism’ (p. 25). My argument will be that visual studies has emerged, along with the disembodied image paradigm, not as cause but as a necessary product of the conditions decried in this passage. The argument against digital media is put forth most clearly in the work of Emily Apter, Susan Buck-Morss and Hal Foster, who will be contributing to forthcoming issues of this journal. I argue against their beliefs that visual studies exists as a necessary venue through which to both historicize and reroute the course of global media culture – a culture that is hardly restricted to the visual but must be accessed through this domain.

But first to address problems with the hypothesis that the collapse of images – their disembodiment and release as free-floating entities in the virtual space of visuality – is best addressed by visual studies because the field is interdisciplinary. The case has been made that interdisciplinarity entails having the tools to analyze the array of image forms that make up the flux of contemporary culture, or that it enriches the discrete areas of study that contribute to visual studies. Keith Moxey (1999), also one of the *October* respondents, has noted that in art history ‘a failure to distinguish the study of art from the study of other kinds of images is often used as a criticism’ of visual studies (p. 4). He proposes in response to this criticism an embrace of a comparative approach that sees benefit in interdisciplinarity:

Rather than view the rise of the study of varied and often popular forms of image production, one in which art is included in a spectrum of other kinds of
visual products, as a potential threat to art as an institution, I would claim that the value of these visual juxtapositions lies in comparing and contrasting the ways in which the study of each genre, say painting, television, or advertising, makes use of different theories and methods in making meaning. (pp. 4–5)

The comparative approach has served well as the model for programs like MIT’s new Masters degree in comparative media, where students train for the corporate workplace as well as for further academic study by analyzing new and old media alongside and in conjunction with one another. Graduates of this program are predicted to serve as critically informed liaisons between media services that have yet to be imagined and those who use these services, if not as industry moles who may use their historical knowledge and critical skills to alter the course of global capitalism’s flows. Moxey, however, envisions a history for the comparative approach that would not necessarily ground a practice such as this, but is rather grounded in a kind of disciplinary boundary-crossing that finds its precedents in Warburg, and that locates a strictly art historical genealogy for visual studies. Like Thomas Dacosta Kaufmann and others before him, Moxey begins this lineage with Michael Baxandall (1972) and advances through Svetlana Alpers (1983) and W.J.T. Mitchell (1995).3 The term’s rise is motivated by the concern to relate the production of art to the broader social context, but art stays center.

What are the places of film and media, and the particular evolution of the fields that study them, in this understanding of the development of visual studies as a discipline? Does film deserve its own origins story alongside art history’s, with film as its center? (I would be reticent to provide one.) The comparative approach and interdisciplinarity as models of thinking about the field fail to provide an account of the dynamic of power that positions the discipline’s constellation of objects and methods, making the art historian’s gaze the one internalized among the field’s populace. Visual studies, like any other discipline, has its own institutional gaze. The historical fact of media convergence in itself doesn’t give us the tools to make sense of the constellation of images and looking practices it produces. Nor does it give us the ability to generate a full complement of genealogies and gazes, with each placing its own medium at the center.

Regarding interdisciplinarity, the October (1996) editors gave their respondents a brief genealogy to respond to:

It has been suggested that the interdisciplinary project of ‘visual culture’ is no longer organized on the model of history (as were the disciplines of art history, architecture history, film history, etc.) but on the model of anthropology. (p. 25)

Film history and not film (or cinema) studies is referenced as an antecedent to visual culture. Visual studies is introduced in one of the four ‘questions’, as an interdisciplinary rubric. In the other three topics, visual culture is the object of concern. As Douglas Crimp (1999) has noted in a sustained critique of this debate, cultural studies, visual studies and visual culture are often used interchangeably. Objects of study (visual culture) and areas of research with discrete if intersecting objects and histories (visual studies, cultural studies) are collapsed. My concern
here is with the choice of history and not studies to describe film as an original discipline and past model. This choice results in some crucial omissions in the evolution of film as a node in visual studies’ emergence, and the relationship between film and media study. Unlike art history, film history has never been taken up as a rubric to designate departments, programs, or even a field. Film history is not a discipline in its own right, but names a particular methodology within the discipline of film (or cinema) studies, a field that has always incorporated an array of methodologies. Film history is sometimes posed against film theory in a binary abstraction of the field of film studies, with theory the location of the field’s political life and history the realm of everything else. But history is only one of a number of fields of origin for film scholarship along with philosophy, communications, linguistics, rhetoric, English, literature and sociology. All of these fields have contributed to the foundation of visual as well as film studies.

Art history is one field that has supported the study of film prior to and even after the establishment of departments and programs of film or cinema studies, and it tended to support an historical and aesthetic–philosophical approach to film. Sociology and communications accommodated the study of film as well, but in a context that was also receptive to the study of media, television and (later) digital media. Television and digital media are areas that have become subgroups within film studies proper, as reflected in the Society for Cinema Studies’ inclusion of them as special-interest areas in conferences and publications. But only rarely have they been taken up in art history – except where art history has transformed into visual studies.

Visual studies is at odds with an older model of art history, in its abandonment of history for an alliance with an anthropological notion of culture that finds its source in cultural studies, as the October questionnaire and Foster in the same issue suggest. Visual studies does maintain ongoing allegiances with a political tradition of cultural analysis that can be traced back through two histories rooted in Left and feminist critical theory: cultural studies with its British (and in some cases American) origins in the social sciences and communication, and psychoanalytic film theory. If British cultural studies is to be given the credit it deserves in the institutional emergence of visual studies, though, we should recognize the supporting role not only of anthropology but of communications and sociology, and the methodologies used in those fields, in visual studies’ prehistory. Cultural studies early on shed the tight attachment to empirical research models in all of those fields, advancing models of ethnographic research that have been anathema even to politically sympathetic anthropologists. Likewise, psychoanalytic film theory (supported in the fields of languages and literature) is a model both adopted and reconfigured in visual studies. As Crimp (1999) points out, the fact that ethnographic and psychoanalytic approaches have faced off in cultural studies – as in Constance Penley’s 1992 critique of Janice Radway’s 1984 work on the popular romance (p. 54) – suggests that that field can sustain and thrive in contestation over methodology. Disciplinary convergence does not mean a flattening of difference and a deskilling of its labor force. A case can be made that methodology is in fact subject to internal ‘quality checks’ that result in more discerning producers. Sociologist Jackie Stacey (1994), the cultural studies scholar whose Star Gazing reworked feminist psychoanalytic theory through sociology, is one of the few
scholars who has had the prescience to introduce questions of gender and subjectivity in the discussions of media globalization that have taken place thus far (‘Consuming Nature, Embodying Health’). Her willingness to push the limits of methodological cross-analysis has been exemplary. As one of the most crucial visual studies issues for the decades to come, globalization demands attention at the level of subjects and practices and not only within the generic and disembodied terms that the conditions of globalization set up for us. Globalization is a process subject influence and transformation, and is not solely a corporate world vision with its own momentum.

Television, as the model for media globalization as alienating force, requires more attention as we consider the forces of telecommunications and information flow in conjunction with the visual. Whereas film and digital media are mentioned with some frequency in the various commentaries published in the questionnaire, television is discussed tangentially, as specter of the contemporary conditions of media alienation. These references are through, for example, Susan Buck-Morss’s (1996) identification of MTV as a form that produces subjects for global capitalism (p. 30) and Emily Apter’s (1996) mention of Baudrillard’s bleak vision of America as a holographic landscape of flickering screens (p. 26). The absence of television except as specter of late capitalism’s threat of further image alienation is curious, given its status as a link between the cinematic culture that dominated the first half of the 20th century and the digital media culture that came to the fore by the century’s last decade. Not surprisingly, television studies has tended to rely on the methods of sociology and communications foundational to cultural studies, but it remains marginal to disciplines that shun low culture. Apter (1996) wants to know, will the ‘oneiric, anamorphic, junk-tech aesthetic of cyber-visuality find a place in the discipline of art history’ or ‘will it remain in the academic clearing house of cultural studies’ (p. 27)? Dream, junk and distortion evoke for me another historical moment well attended to by art history though – that of Surrealism and all it contributed to our understanding not only of its social milieu but of scientific knowledge and the transformation of knowledge in relation to materiality, experience and psychic life. If what some would call the hyperreal is our moment’s surreal, then it would seem that art history would be a logical place for its study. Television, text, content, image and meaning have been overworked in cultural studies, leaving us with little analysis of television’s place as an apparatus enmeshed in the production of conditions of materiality, experience and embodiment – the conditions so dramatically altered in the worlds of cyber-visuality.

In dwelling on absences I have yet to address the question of where film comes up in all of this. Tom Gunning and David Rodowick (the two film scholars responding to the October 1996 survey) raise the point that film is hardly limited to the sense of sight and the visual properties of images.\(^4\) Gunning, as an historian who has always considered the broader social conditions of the medium in relation to other media and art forms, like Moxey, is quick to note the benefits of interdisciplinarity. But he shifts the discussion from objects of study to modes of experience and perception that unify the field; visual perception is that which also is signified in the ‘visual’ of visual studies. Gunning cautions that ‘the greatest limitation visual studies might occasion would be reifying a division of the senses’ (p. 38). Thomas Crow makes an apparently similar point, asserting that ‘the new rubric of visual culture …
without question the view that art is to be defined exclusively by its working exclusively through the optical faculties’ (p. 35). Elsewhere (Heller, 1997), he warns of the reduction of art history to a history of images. Rodowick (1996) echoes this point with reference to film:

In the minds of most people cinema remains a ‘visual’ medium. And more often than not cinema still defends its aesthetic value by aligning itself with the other visual arts and by asserting its self-identity as an image-making medium. Yet the great paradox of cinema … is that it is both temporal and ‘immaterial’ as well as a spatial medium. (p. 61)

Rodowick, like Gunning, allows us to move the discussion from image and image-making in emphasizing temporality and (im)materiality. He has his own sustained apparatus for approaching this, elaborated through an earlier essay on the figural, his reading of Deleuze, and his subsequent work on digital culture. I want to use his comment, though, as a segue because, unlike Gunning’s note about the senses, it does not swing us from the object to experience, or film object to experiential subject. Instead, his comment hints at the problematic of the relationship between the two in terms of duration and (im)materiality. A number of the October questionnaire contributors call for a return to the specificity of the materiality of visual objects – films, paintings, photographs, and so forth – lest we lose sight of the particularity of each category’s historical and present function. But the conditions of convergence (which I take as a premise) leave us ill equipped to address not only the material conditions through which we encounter our objects, but our embodied relationships to the equipment and information we encounter in the dynamic. An amusing and obvious side to media convergence and global flows of images is that not only new media and film but works of art from previous centuries are increasingly experienced as global media commodities. We see old paintings reproduced in slides and on the web, on T-shirts and mugs, in blockbuster exhibitions, behind plexiglass shields, and in news accounts of X-ray verification of a work’s authenticity and value, as in a rendering of the Mona Lisa as a ‘first’ digital work of art (Figure 1) or as a cross-stitch reproduction bookmark kit of the masterpiece, replete with gilded frame, offered by the company Charles Craft. Museums have never been more popular, but the museum experience has extended to include educational audio and video media.

I hesitate to illustrate these points because they are so trite and their images so cute. They lead me to suggest what is in the end the wrong point about the status of discrete media and of the image under the conditions of convergence. A more significant fact about convergence is that it is not only images themselves, or image types, that are reproduced, reconfigured and freed for circulation as never before in the exploded realm of the visual. We also find that the registers of, for example, the visual and the aural converge in quite a complex way. My example is not the simplistic one of, say, film being also an aural medium, or the museum experience also encompassing touch and spatiality. What I want to get at is better illustrated by, for example, the relationship of sound and image in ultrasound. This is a medium that relies on sound waves we cannot hear to produce mundane graphic and numerical data that are then crunched to render a visual image in the last instance.
Sound is not in the service of subjective hearing, image does not represent anything in the realm of visuality, except in the most abstract and limited sense. The disintegration of sound, data and image involves a kind of pulverization. We get not the sensorium of the IMAX theatre, with all senses and representational registers in their place, but a re-circuiting of one register of information into another, one sensory experience into another.

Jonathan Crary (1996) begins to get at the problems of focusing on the image as if it were the necessary or primary concern in visuality when he begins his questionnaire response with the following disclaimer:

Admittedly the terms ‘vision’ or ‘visual’ appear in the titles of certain texts I have written and courses I have taught. However, with increasing frequency they are terms that trouble me when I hear them deployed in the expanding visuality industry of conferences, publications, and academic offerings. One of the things I have tried to do in my work is to insist that historical problems about vision are distinct from a history of representational artifacts. (p. 33)
Crary’s point is that visual studies has emerged in part because of a collapse of a certain formulation of the spectator, that visual studies emerges exactly as its object disintegrates. He concludes by suggesting that the analysis of this shift would not entail analyzing the technological artifacts and techniques (computer graphics and virtual reality [VR], for example) that are the artifacts of this shift. Rather, we would engage in ‘the study of colorless, non-visual discursive and systemic formulations and their mutations’ (p. 34).

I want to suggest that to study the apparatus that produces these artifacts – computer graphics and VR – in conjunction with their production and use in a system that enters users directly into the mechanisms of convergence – is precisely to study non-visual discursive formulations. Images and ‘visual’ experiences are only some of the by-products of the global media industry that has necessitated the field of visual studies. The visual has been late in coming in to the digital. The visual has always been almost an afterthought to the real transfiguring work of globalizing media cultures. Film studies has been one of the few areas of visual studies that has allowed us to get at the preconditions of the medium overridden by too much attention to image and artifact, precisely because film engaged the conditions of immateriality from the medium’s beginnings. Film necessitated the interrogation of ‘disembodied images’ well before art history’s objects did. I am not making the argument that film is not just visual but also aural and spatial, but that film has facilitated a certain sublimation, bypassing and rerouting of visual–sensory experience by invoking the virtual. Our experiences with film have prepared us for our experiences with virtual media, allowing us to use images as expedient resources to access dynamics that engage something other than the experience of sight. The obvious visual-ness of the cinema distracts us from the fact that the medium has trained us in a sensory disintegration that makes the virtual possible as fundamentally not visual experience.

I route my explanation of this cryptic argument through an analysis of a virtual project, the work and theory of medical researcher Richard Robb (1996). My intention is to demonstrate that this rather phenomenally visual- and image-based project, seen in its historical and projected future contexts, is in the end only marginally concerned with the visual. We need to start with the images, because they are the key entry point into the system Robb works with, though they are hardly its endpoint. The ‘gaze’ Robb offers us is not a visual dynamic but a relationship that takes us into the realm of representing the mechanisms of physiological and physical behaviors at the level of microscopic anatomy and biochemical systems. Perhaps the role of the spectator as we knew it (figured in the model of visual perception) has collapsed, but the sensory disintegration that ensues from this collapse provides precisely the conditions that support the kind of experience with and through media suggested in Robb’s formulation, to which I now turn.

**Optical virtuality**

In 1964, Stan Van der Beek and Ken Knowlton at Bell Labs were among a group of computer scientists pushing the envelope of body-image construction on the
computer. Some of the work they produced is documented in a series of films, titled *Poem Field*, made in the mid-1960s. These animated line-renderings viewed from the perspective of the early 2000s and the late 1990s evoke the CAD drawings that cropped up in car advertisements of recent years, the ones that reveal the inner structure of the car in a rotating linear diagram (usually green). The jerky linear body-models progressed from rudimentary sketches to volumetric and fluid mobile forms over the years of their studies. Viewed through the lens of late-1990s medical imaging, it is easy to think of these images as exercises in the direction of the kinds of moving volumetric body simulations that wowed the medical industry in that decade. Like these medical volumetric motion renderings, behind these studies stood many hours of computation and data entry and analysis. They pointed in the direction of the multitude of *Terminator* bodies and medical Visible Humans, but their very unspectacular-ness suggests a different, much less glamorous purpose: an attempt at the computation level to make these bodies perform as bodies. The image – getting it to *look* right – was just a by-product and sometimes even an annoyance. As is known in programming, getting objects to perform right in space can result in distortions of appearance. Images that perform like real bodies sometimes don’t look like real bodies look.

Researchers in the field we have known as medical imaging since the early 1990s widely agree that, if simulation is the goal, organs in the body must not only look realistic, they must *behave* realistically. These are two different, and not necessarily mutually supportive, goals. This move toward an interest in behavior simulation hints at the fact that medical imaging was already dead in the water when the field came into existence barely a decade ago. The objective of the post-visual era is reproducing behaviors and functions, not appearances – but through images nonetheless. (Enmeshing the experience of the observer with the object experienced is another level of convergence within this objective.) Simulated organs and tissue that stretch when pulled, react to gravity, respond to pressure, contract involuntarily, bleed when cut, and re-attach when stitched are the goal of imaging specialists who want to make their entities behave in life-like ways. The goal is to reproduce physiology in the virtual image: movement, systems in process, and so forth. This concept also entails integrating the user’s senses, the apparatus and the simulated body, into a system that allows for the user to experience the sensations he or she generates in the virtual body-object: the user must feel that he or she has pressed, cut through, impacted the virtual body-object as if it were real. Altering the conditions of experience to make sight trigger the sensation of touch and spatiality is crucial to this goal. The orientation of sensory experience in this process does not simply shift (from sight to, say, sound and touch) in order to generate the desired experience. The idea is that the image can be a catalyst for other sorts of sensory experiences, in a kind of re-circuitry of the senses. This is echoed in one research group’s goal to allow users to feel organs (again in their words) ‘deform in their forceps’ (Merril et al., 1996: 1). Anatomical form and visual appearance having been conquered and found lacking, physiological or behavioral realism is the new representational frontier into which the image is entered.

Virtual endoscopy will be my point of access into this post-visual domain of ‘imaging’ science. Endoscopy is the use of fine flexible tubing and minute fiberoptic lenses to enter and acquire visual data about the interiors of organs like the
stomach or the organs of the reproductive system. Virtual endoscopy is the practice of simulating that optical journey. As I’ll further explain, virtual endoscopy goes beyond the visual to include other sensory registers. Richard Robb (1996), a researcher at the Mayo Clinic, describes virtual endoscopy as ‘the fountainhead of an entire generation of new diagnostic opportunities’ – a tall claim for a modality that emerged during an era in which we’ve seen a profusion of new biomedical imaging systems. Robb lays out what he calls a ‘taxonomy for several generations of virtual imaging’ (Figure 2). He shows five phases, beginning with the geometric modeling of 3D organ shapes, passing through the representations of physiological and physical behaviors described above, and ending with techniques for simulating microscopic anatomy (of glands and the neurovascular system) and biochemical systems – the simulation of the body experiencing shock, for example.

His plan is useful because it clearly maps out the goal of moving representations (of bodies in this case) along toward becoming not just images of bodies, but simulations at the level of function. A virtual endoscopic procedure at the final level of image representation, Robb (1996) explains, ‘might eventually become indistinguishable from the actual patient’. In other words, the experience of the program’s user would be not being able to tell whether he or she was working on a real or simulated body. Clearly, in this case, the realism of the simulation depends

**Figure 2** Four virtual endoscopic views of internal surfaces of anatomic models of visible human male, including the trachea (upper left), esophagus (upper right), colon (lower left) and aorta (lower right). Navigation guides provide precise body orientation and both 3-D and 2-D anatomic location of current viewpoint. Richard Robb, virtual (computer) endoscopy. Courtesy of Dr Richard A. Robb, Biomedical Imaging Resource, Mayo Foundation/Clinic, Rochester, MI.
on the user’s realistic multi-sensory experience of the simulation as identical to a real body.

It is important to note that, as in any VR system, it is not the simulation that is virtual (or virtually real) in this account, but the experience of the user. While ‘spectator’ is no longer an adequate term for describing the multi-sensorial experience of the person engaged in VR, user is a more generic and equally inadequate term. It fails to describe what we might call, for lack of a better set of terms, the ‘user–computer–object nexus’.

To understand this point about the term virtual being linked in most usages to the user not the body simulated, it is helpful to review as well Robb’s (1996) account of the concept, which he lays out in detail. The term virtual endoscopy, he argues, is not correct. What is commonly meant by virtual endoscopy is better captured, he explains, in endoscopic virtuality. Whereas virtual means ‘possessed of certain virtues’ and ‘being such in effect’, virtuality means ‘essence’ and ‘potential existence of’. Coupled with endoscopy, virtual means ‘in effect visualizing the interior of a hollow organ or cavity’, while virtuality would suggest ‘the essence of visualizing the potentially existing interior of a body’ (p. 1). In other words, with the switch to virtuality, the position we typically call the user is lifted out of the vague territory of the virtual. The user’s experience is not had ‘in effect’ (or in the realm of the virtual). It is the body operated upon that is understood to exist in the realm of the potentially disembodied.

Robb’s discrimination about terms clarifies an important misunderstanding about what is meant by the term virtual, as it pertains to representation or image side of the equation. Virtual medicine is not about treating real bodies in effect, or as if they were being treated, in the hazy realm of the virtual. Rather, virtual medicine is the medical professional’s (or VR user’s) essential experience of treating potentially existing bodies. What is disengaged from materiality is not the experience of the user, but the body acted upon – as representation.

The import of this sense of the virtual is captured in the work of Richard Satava, a ‘pioneer’ in telepresence surgery, which involves using virtual reality to perform surgery at a distance. Satava distinguishes between artificial and natural VR. Whereas artificial VR is completely synthetic and imaginary (placing oneself inside a molecule, for example), natural VR imagines situations one could conceivably inhabit in one’s own body and world. Satava insists that

… the day may come when it would not be possible to determine if an operation were being performed on a real or a computer-generated patient ... the threshold has been crossed; and a new world is forming, half real and half virtual.

This new world is the very same one imagined by Robb in his projection of a near future when a virtual endoscopic procedure might be indistinguishable from one performed on an actual patient. On one level, it is tempting to hypothesize about the position of the spectator in relationship to this new world of the half real, half virtual. In film studies and in visual culture studies, this claim opens up a whole new realm of spectatorship analysis, taking spectatorship out of the realm of the
visual and into a more complexly constituted network of experience. How, we might ask, is the physician situated as a subject in relationship to this new sort of gaze, a relationship with the visual representation that propels the viewing subject into the realm of full sensory experience, and full bodily participation, but with his senses disintegrated and misrouted?

Questions like this signal an important domain, I argue, for visual studies not because the image holds new powers, but because it provides an expedient link into a kind of subjectivity that is quite radically different. If this is a new gaze, it is not one where the visual is terribly important.

I leave my example, having left much of what it suggests undeveloped, in order to return to some of the central questions of this article. I have argued that with media convergence, film studies becomes a study of something else: a different configuration of media, different conditions of experience and subjectivity. I have also argued that film studies has never been about film (the medium, its social contexts, its spectator) alone, but has always been about conditions of sensory experience in modernity. The material conditions of film have left film scholars well prepared to take on questions of the materiality of virtual media and simulation precisely because, as Anne Friedberg’s work has shown, the filmic spectator has always been entered into a virtual world that is not limited to the experience of the cinema alone. If the image has migrated into the function of signifying something other than visual experience, it is still the specialist in visual analysis who is best equipped to understand the function of the visual to perform a different sort of work. Film studies is one of the areas of scholarship best equipped to address the conditions that underlie the more spectacular aspects of ‘cyber-visuality’, precisely because its object has never been solely representation but the conditions of materiality and intersubjectivity that have always structured the field of vision.

Notes

1. Home Box Office is a US cable network that operates several channels and produces its own programming, largely made-for-television movies and specials. Originally established as direct competition to the film industry, it appealed to cable television viewers’ anticipated interest in seeing new film at home.
2. ‘Visual Culture Questionnaire’ in in-text citations throughout refers to the publication of four ‘questions’ on the issue of visual culture and responses to them from various scholars in art, architecture, film, government, literary studies and history, in October 77 (1996).
3. Kaufmann dates the term to 1972, with the publication of Baxandall’s Painting and Experience in Fifteenth-Century Italy, followed in 1983 by Alpers’s The Art of Describing and (later) Mitchell’s ‘What is Visual Culture?’ (1995). Moxey’s own work with Norman Bryson and Michael Ann Holly contributes to this visual studies canon as well.
4. Interestingly, both film scholars chose to consider the term in its institutional contexts before taking up visual culture and the methods of its study on its own terms.

References


Lisa Cartwright is Associate Professor of Visual and Cultural Studies and of English at the University of Rochester, where she is also Director of the Susan B. Anthony Institute for Gender and Women’s Studies. She is author of *Screening the Body: Tracing Medicine’s Visual Culture* (University of Minnesota Press, 1995); *Practices of Looking: An Introduction to Visual Culture* (with Marita Sturken, Oxford University Press, 2000) and co-editor of *The Visible Woman: Imaging Technologies, Gender and Science* (with Paula A. Treichler and Constance Penley, New York University Press, 1998).

Address: Department of English, University of Rochester, 319 Morey Hall, Rochester, NY 14627, USA. [email: lisac@rochester.rr.com]