

The Bastard Spawn: Hollywood Computer-Generated-Effects Movies—Some Introductory Comments

Bram Stoker's sixtyish Dutch doctor is re-cast as a thirtyish hunk (Jackman) . . . (who) goes to Transylvania to save the last of a family of vampire slayers (Beckinsale) from Count Dracula (Roxburgh). . . . *Van Helsing* is the bastard spawn of a sub-genre, a Gothic fantasy movie inspired by the graphic novel and the computer game. . . . It is beautifully shot, monumental in conception, full of amazing effects, and dull as someone else's tax returns. It's an example of everything that is wrong with Hollywood computer-generated-effects movies: technology swamps storytelling, action is rendered meaningless by exaggeration, and drama is reduced to monotonous physical bouts between "good" and "evil."¹

—PAUL BYRNES, *SYDNEY MORNING HERALD*

For digital-visual-effects artists, the last twenty years have been, to borrow a phrase, the best of times and the worst of times. DVFX are considered a fundamental element for "blockbuster" films, which affords the effects artists not only regular employment but also a certain status among fans that was rarely achieved by previous generations of special-effects artisans. On the other hand, as Paul Byrnes's review of *Van Helsing* (2004, Sommers) indicates, DVFX routinely are cited as the means by which Hollywood is ruining storytelling.

The attention being accorded to the use of DVFX is not unique in the history of filmmaking. When sound and color first were introduced, the arguments mounted against them were much the same. One complaint in particular, that the spectacle of these technologies undermines storytelling, a focus of this book.

In considering this issue, some interesting distinctions need to be taken into account. Film critics often imply that the use of DVFX is a substitute for "good"

storytelling. Such comments suggest that storytelling used to be better before the advent of DVFX and that the use of these effects is symptomatic of a “Hollywood gone bad.” Some scriptwriters have suggested to me that a story is no longer necessary as long as a film has sufficiently impressive digital visual effects. This, however, is not said as a compliment to the standard of effects usage. It is more like speaking ill of the dead—an R.I.P. for storytelling while the digital effects dance on its grave.

Film theorists take a different approach, focusing largely upon issues of spectacularity and its relationship to narrative. Theorists interested in a genre such as science fiction look upon the use of effects with something of a proprietary interest, claiming the use of such effects has particular validity for science-fiction films. Some go so far as to say that effects are a defining trait of the science-fiction film.

The fact that DVFX are one of the most significant and expensive aspects of the digital revolution in film makes them particularly interesting to theorists with broader interests in the areas of technology and globalization. These theorists often see other factors than straightforward technological advancement at play in the adoption of DVFX by corporately financed film producers. While some of these arguments approach X Fileian proportions in their attribution of sinister and far-reaching political and economic influences, there are undeniable relationships between the development of DVFX and their use in military applications. Digital visual effects also are closely associated with the range of entertainment products that are the commercial interests of the fastest growing, most powerful industry: global entertainment.

Serious as these concerns are, however, economic/political arguments are not the focus of this book. Discussion of the economic, industrial, and political machinations that are of influence in the industry is best led by experts in the fields of economics and politics, and it is a subject that does not lack for attention. Similarly, the case studies in this book do not take up many of the wider issues of narrative theory, reception theory, psycho-sociological theory, philosophy, and others that might be pursued valuably by theorists considering the impacts of DVFX.

In fact the task of writing this book, even limiting it to the parameters chosen, has meant curtailing discussion in many areas. There are aspects of narration, camera movement, art history, developments in new media, and the film industry that could be pursued further with great benefit. I have restrained myself from taking too many detours yet hope that I have signposted, for readers who

wish to continue on at the end of this path, some of these fascinating alternate journeys and recommended the best of many resources I have drawn upon.

This book is grounded in filmmaking, specifically the scriptwriting process. It looks at the issues that arise out of the impact of DVFX on the storytelling process and the closely related issues of spectacularity and narrative functioning, including associations with particular genres. I hope it also offers a starting point for rethinking DVFX usage overall.

So the questions that inspired this undertaking include:

- Does using DVFX undermine classical storytelling structure?
- Are DVFX being used as a substitute for story?
- Do DVFX always draw attention to themselves?
- Should DVFX be limited to certain genres?
- Have DVFX fundamentally changed the filmmaking process? And if so, how?

Paul Byrnes's critical response to *Van Helsing* is a good place to begin considering these questions. The review reveals certain flaws in logic that are central to the criticisms aimed at DVFX in filmmaking.

For example, to describe a film as a Hollywood computer-generated-effects movie is almost as helpful as describing it as a Dolby-surround-sound film or a 35mm film movie. Further, to make the accusation that “technology swamps storytelling”—perhaps meaning that the effects are more interesting than the story—is more a comment on the story than it is upon the technology. As the reviewer goes on to observe, other aspects of the technology of filmmaking—in particular, its cinematography—also are showcased in *Van Helsing*. So why is cinematography not blamed for the swamping of story?

In all likelihood, neither the cinematography nor the DVFX are to blame for the story's failings. The reviewer himself has identified a significant number of factors that influence a story's quality: poor structure, massive changes to fundamental plot details in the adaptation from an original source, poor premises, and reliance upon spectacle as a substitute for action, character development, and thematic resonance. In other words, it seems fair to say that it should come as no surprise that the film is a disappointment, to put it politely, when a filmmaker takes an idea but does little to give it substance in the way of real characters then goes on to give these character sketches very little to do except engage in relentless fight sequences and for precious little thematic reason. Further, as Byrnes has noted, although he *blames* the effects, he does seem to understand

that reducing a film's theme to monotonous physical bouts between "good" and "evil" or that by halving the age of the lead character, the filmmakers have made substantial alterations to the original story of Dracula—with consequent box office results.

Yet, while *Van Helsing* is what would most often be described as a "Hollywood computer-generated-effects movie," an equally curious reading of effects is presented by Chris Norris in his review of *The Eternal Sunshine of the Spotless Mind* (2004, Gondry):

The conventional mode for rendering . . . [the effects in the film] would be some kind of multiple screen, CGI morphing, and other techniques that a toddler would now read as Special Effect. Following some sublime atavistic impulse, Gondry instead opts for low-tech, painstakingly wrought effect—labors of love rather than Industrial Light and Magic—and the results are somehow more dramatic.²

Charlie Kaufman's script has earned accolades and awards for its achievement in scriptwriting. For this cleverly crafted story, the issue is not about a weak script being dressed up with layers of digital effects. Quite the contrary, the argument is that the effects make the story *more dramatic* because they were *not* crafted by computers. In other words, Norris seems to be suggesting that it is the use of computers in creating effects that can suck the soul out of a story.

However, this neglects two important points about the use of effects in *The Eternal Sunshine of the Spotless Mind*: most people are unlikely to know how the effects were achieved, and because visual effects are now predominantly produced digitally most audiences are likely to assume that the images were digitally crafted. More to the point, some of the effects in that movie were in fact DVFX—not, as Norris's warmly praises, ". . . analog instead of digital—seeking a small, quiet place to tell the sweet lovely story with global resonance."³

The Eternal Sunshine of the Spotless Mind relies upon digital composites and computer-generated (CG) effects to create and destroy the beach house and to add debris and snow elements.⁴ Further, in a use that was necessary for practical reasons but also thematically resonant, Catherine Feeny reports:

Gondry's idea was that, as Clem walks down the street, the viewer realizes she has only one leg. "We had to remove both legs and create a CGI leg says [Louis] Morin [Visual Effects Supervisor, Buzz Image Group] . . . [and] removed the head from the first take and used it to replace the head in the second take. The only thing that wasn't touched was the middle part of her body."⁵

This digital erasure and reconstruction, when considered within the context of a story about someone having her memories erased and reconstructed takes on a deeper meaning. As a technical achievement, the effects work is unexceptional (although well executed). As a narrative achievement however, it is notable.

Thus, in this instance the reviewer is reading effects based on an assessment of story quality, and here the wonderfully dramatic script is giving the digital and analog effects a perceived warm analog glow. Essentially, the story is good and the effects, both digital and analog, are performing the rightful job of effects: to support the kind of story being told.

Of course neither Byrnes nor Norris deserves to be taken to task for their comments on the use of effects in these films because they are expressing views that are often held by film commentators. What I find most valuable from these examples is that they show the ease with which DVFX are scapegoated for common storycraft failings and, in the case of *The Eternal Sunshine of the Spotless Mind*, that there is a perception that analog is “real” but digital is not.

It is also important to note that these films tell quite different kinds of stories yet both rely upon visual-effects imagery. In this they give a good indication as to why the questions raised above have become so important to our consideration of how effects are being used in film storycraft.

While researching how DVFX impact traditional film-production practices,⁶ virtually every effects artist I interviewed stated that effects always derive from story. It was this discrepancy between what the commentators say and what the digital-effects practitioners assert that demanded further investigation. This book looks at how the growing use of DVFX influences, and is influenced by, story.

Within film theory there is a long-held belief that narrative integrity always is sacrificed for the benefits of spectacle when effects are used. Often even those who are enthusiastic about current developments in the use of special effects discuss them in a manner that reflects admiration but also the view that effects overwhelm story. Yet, as digital effects are incorporated in more films and more kinds of films, and because the range of practice is such that it becomes virtually impossible to detect the presence of effects, there is an increasing need to reconsider the place of these affects in contemporary filmmaking and how they have come to hold this place.

Theories on the impact of spectacle on narrative predate the use of DVFX and usually are couched in terms of “special effects.” The term “special effects” generally is used in a broad fashion to cover an array of film techniques. So it is

important to make a distinction between digital visual effects and special effects because the critics of DVFX often suggest that their use is a contemporary phenomenon that detracts from a glorious past of much better storytelling, in spite of the well-established arguments about special effects clashing with narrative engagement.

Almost any history of film will cite the very early use of special effects. In 1897 Méliès's films used in-camera effects, and the value that effects offered to filmmakers were prized to such an extent that, as Andrea Gronemeyer has said, beginning in the 1920s, "[Hollywood] directors controlled the largest production budgets in the world and could invest staggering sums in stars, costumes, sets, and special effects."⁷ Hollywood filmmakers were not alone in using effects. Gronemeyer, discussing French Impressionism, states, "By using optical tricks, they [the Impressionist directors] attempted to illustrate the impressions of the film characters: Dreams, memories, visions and thoughts."⁸ This practice later was taken up by Hollywood and has become developed even more expressively since DVFX were introduced.

These observations on film history point to an early use of special effects, the diversity of uses to which effects have been applied, and that effects were of interest for a range of film practitioners. This establishes the foundation upon which DVFX builds. However, in order to distinguish digital effects' impacts from this historical practice, it is important to clarify what comprises effects usage. Gronemeyer's reference to optical tricks is but one kind of "special effect." Pyrotechnic effects, mechanical effects, matte paintings, glass mattes, rear projection, miniatures, models, prosthetics, make-up, specialized props, and such also were well within the scope of early filmmakers, who used them to great result. These techniques, in addition to the optical "trickery" of special lenses and optical printing, enjoyed broad application from the earliest days of filmmaking and are still integral to "special effects" practice. Many films that use DVFX do so in conjunction with other special effects, so Norris's high opinion of the analog nature of the effects in *The Eternal Sunshine of the Spotless Mind*, should, to be fair, apply to a great many other contemporary films that also mix traditional-special-effects crafts and digital visual effects.

Therefore, the history of special-effects practice is valuable for two reasons. First, it allows consideration of how DVFX have impacted narrative structure by providing an opportunity to compare digital-visual-effects usage with traditional-special-effects practice. Second, it offers an opportunity to show how the theoretical placement of traditional special effects, in particular the arguments about

spectacle and genre, informs our current understanding of the impact of digital-visual-effects usage.

There is a vast discourse on spectacle and its relationship to narrative and genre, and these views are taken up in more detail throughout the book. However, for the sake of establishing the relevant tensions that are of issue, the following authors have made particularly useful observations that outline the range of arguments that have developed.

Vivian Sobchack, in her article “The Fantastic,” makes reference to “foregrounding a range of cinematic practices identified as ‘special effects.’”⁹ She does this in the context of discussing films that “defy or extend verisimilitude by portraying events which fall outside natural confines.”¹⁰ Her discussion of the development of special effects usage from Méliès (1902) through fantasy adventures from the 1930s to the 1950s and the biblical epics of the late 1940s and 1950s highlights the “special” tag attached to the use of “special effects” and the association of these effects with certain kinds of narrative. This marking out of spectacular effects and their association with genres such as science fiction has become a cornerstone for much of the academic analysis of the field.

Building on Albert J. La Valley’s statement that “Special effects thus dramatize not just the thematic materials of science fiction and fantasy plots, but also illustrate the ‘state of the art,’”¹¹ Martin Barker argues that this “arbitrarily limits special effects to the realm of the celebration of technology.”¹² Barker’s argument is that special effects serve to indicate “moments where modality shifts take place”¹³ in a narrative and that “to become ‘special’ in any film, some moments have to be signalled apart.”¹⁴ This reflects the idea that special effects have a narrative impact but contains it within the perspective that they stand out and serve to change the flow of the narrative. He goes on to observe:

Special effects have to be both narratively integrated and convincing representations of a realistic fictional world here for the audience to believe in them sufficiently, and so to engage with the resulting dilemmas posed for the film’s characters. On the other hand, the simultaneous self-reflexivity of effects solicits attention in a more direct fashion, inviting the audience to see them as effects, and to react with awe and wonder at the capacity of the cinematic apparatus.¹⁵

Here is the issue that really needs to be addressed, as the questions earlier have outlined. As Barker and many others have argued, classical narrative is supposed to be so engrossing as to keep the “apparatus” of the filmmaker invisible, but spectacle, as created by effects, also is supposed to make the audience

aware of the technology of filmmaking. So the question arises: is it ever possible for spectacle—and effects—to fit into classical narrative filmmaking?

Joel Black also considers these issues in *The Reality Effect: Film Culture and the Graphic Imperative*. He comments that “A growing number of science-fiction and action-adventure films . . . don’t just use special effects; they are special effects.”¹⁶ This comment is easy to accept for films that rely almost entirely upon computer-generated environments as backdrops for live-action performances in a greenscreen studio or films that make extensive use of computer generated performances either interpolated with an actor’s real performance (such as in *Spider-Man* [2002, Raimi]) or major role performances by a CG character. He also observes that “Whereas special effects were formerly reserved for isolated scenes except in the case of full-length animated features, such effects are now routinely used throughout the entire picture.”¹⁷ This is true, not only for the spectacular special effects he is highlighting but also for a myriad of “invisible” effects that work to underpin narratives across a range of genres. In raising the issue of impacts Black comments that “while special effects once allowed filmmakers to present glimpses of the unreal world of dreams (*Un chien andalou* [1929, Buñuel], *The Wizard of Oz* [1939, Fleming], *Spellbound* [1945, Hitchcock]), today’s sophisticated effects are increasingly used to produce a heightened illusion of reality itself (crashes, disasters, wars, space travel, etc.)—of truth as visible spectacle, of reality as anything that is filmable.”¹⁸

These comments on “unreal” worlds and “heightened illusions of reality” raise important questions about how we are to assess the relationship of effects to narrative especially as DVFX are quite capable of imperceptible use.

Black also goes on to speak about using digital effects “in place of shooting the image”¹⁹ as if this were in some way an extraordinary practice. This is indicative of what I call *pre-tech paradigms*, where the idea that digital image creation is somehow exceptional, distinct from “real” filmmaking, a mind-set shown in Norris’s review of *The Eternal Sunshine of the Spotless Mind*. As the diverse case studies in this book show, this is a misconception because the use of digital effects is increasingly integral to the filmmaking process, whether its use can be perceived or not.

In real terms, filmmakers now have three options for image capture: sound stage, location, or digital studio. Each of these options brings a particular quality of experience, level of control, and perceived set of aesthetics. Each has its own advantages, and experienced filmmakers can manipulate these options to an extent that makes it difficult for anyone not on the crew to assess which

method created the images. Increasingly, the images in feature films originate in all three sources and sometimes it is difficult, if not impossible, to distinguish where and how elements were sourced.

Black's discussion also gives example of another common practice—the conflation of digital effects with other digital practices and technologies. In his discussion he places digital effects within postproduction and slides from discussion of effects to digital technologies such as editing and storage.²⁰ This lumping together of all things digital is a common misunderstanding, as can be the enshrining of “digital” as necessarily a symbolic representative of “the digital” as a concept. As digital technologies pervade more and more levels of experience, the use of the term and discussion of its meaning and application requires more precision if it is to be informative. In the case of DVFX, the use of digital images in film is quite advanced and, while production pathways are eased by growing use of digital-camera image capture through to the very-well-established use of digital sound and picture editing, image creation using DVFX remains an area of particular interest and should be understood as a specific aspect of the overall production path.

Another crucial distinction within this discussion is that the use of digital effects is considered to be a goal-specific use of technology that is a fundamental part of the *production*, not the *postproduction* process. This distinction is a more accurate positioning of the tasks and role digital effects hold within the industrial practices of film production. Digital visual effects are image capture and creation and, increasingly, they are becoming part of the story-development process working in what once was described as the preproduction stage of filmmaking. Looking at digital visual effects in this way also allows examination of the relationship DVFX have to narrative alongside other image-creation practices that operate within the industrial structures of the production of film images. This comparative assessment is necessary because much of the traditional view about effects tends to hold the physical practices as separate and “special.” It also, as mentioned, tends to confuse a variety of technical inventions under the heading “digital” and, in so doing, does not offer a full opportunity to properly consider the true impacts of DVFX in creating narrative.

For example, Barker remarks that “Special effects . . . are pointless if they don't evoke at least a component of the reaction that fireworks can catch from us: ‘Wow!’”²¹ Clearly interest is in those effects that are meant to be spectacular, but this becomes something of a circular argument. Effects are defined as those that can be discerned as effects and, if they can be discerned as effects, they

must be spectacular or they are, in his view, pointless. He then goes on to state, “there cannot be a general theory of special effects since the ‘special’ can only be defined by its difference from the ordinary modality of viewing proposed by the particular film in which FX occur.”²² Again his argument, by focusing on spectacular DVFX, does not take into account those instances where effects serve to ensure “the ordinary modality of viewing” by working invisibly to support the narrative.

These various commentators demonstrate some of the misconceptions that prevail even though they, at the same time, make valid and crucial points about the use of effects in film. The observation that special effects are used to great value in certain types of narrative is quite correct, as is the view that the use of effects must be integrated with narrative. Further, the argument that special effects can be used to mark certain moments in the narrative as “special” also is valid—but it does not necessarily lead to instances of narrative interruption.

To limit effects to certain kinds of narrative, to moments of self-reflexive spectacle, to say that they must have a “Wow!” factor, is to underestimate the scope and power of digital-effects practice and their contribution to contemporary film. While this book does not propose a general theory of special effects per se, it certainly points to opportunities for a wider understanding of effects within the general theory of film and provides a framework for analyzing their narrative functions.

How effects might be perceived to impact narrative is highlighted by Laura Kipnis’s comment that, “New computer software such as the infamous ‘morphing’ technique of *Terminator 2: Judgment Day* (1991, Cameron), become the stars of the big new blockbusters, which now tend increasingly to be written around new special effects rather than special effects being used organically to help tell a compelling story.”²³ This view of the perceived impact of digital effects on storycraft reflects a set of fears held by scriptwriters. Implicit in these criticisms is the view that blockbusters, especially the ones incorporating digital effects, are not aimed at telling a compelling story—which, it is implied, *should* be the goal if the creation is to fulfill its function as a film.

In the first instance, this view presupposes that the aim of film is to serve the classic Hollywood narrative goal of telling an easily understood, linear story with cause-and-effect structure, a goal-oriented protagonist, and a clearly resolved ending. This classic structure is a standard against which it is easy to examine the achievement of the filmmakers in instances of particular films as well as an assessment of the validity of criticisms such as the ones cited above. Fur-

thermore, the vast majority of early digital effects–laden films were developed and produced by the Hollywood system. Nonetheless, there is no consensus that film narratives need to conform to this standard, nor that commercial films are limited to strictly linear narrative structures.

David Bordwell, Janet Staiger, and KristinThompson define the classical Hollywood narrative as “telling stories clearly, vividly, and entertainingly”²⁴ and maintain that “Hollywood continues to succeed through its skill in telling strong stories based on fast-paced action and characters with clear psychological traits.”²⁵ According to these authors, classical stories should establish the film’s story world (or “diegetic” world) and its disruption, the character’s traits and goals, and move forward through a series of actions that causally and linearly lead to a resolution of the character’s goal and reestablishment of a balanced world.

Most criticisms of the use of digital effects pertain to the alleged failure to contribute to this narrative structure and are used to support assertions that films that do not meet the classical standard exist solely for the purposes of spectacle. In *Narration in the Fiction Film*, Bordwell asks the question, “Is there anything in a narrative film that is not narrational?” and raises Roland Barthes’s concept of “fellow travelers” and Thompson’s “excess” materials.²⁶ In analyzing the use of digital effects and their contribution or lack of contribution to narrative, there exists the opportunity through case-study analysis to take up at least some aspect of the question of excess and the established views about the inherent spectacularity of DVFX.

One way to assess this is raised by Bordwell in his examination of contributors to narrative, where he observes that “narration can in fact draw upon any film technique as long as the technique can transmit story information.”²⁷ The efficient transmission of story information is integral to the scriptwriting process and so the analysis of the extent to which the adoption of DVFX are used to transmit story information is considered indicative of its impact, or at least its utility, in achieving the established norms of Hollywood storycraft.

On this point of spectacularity, Bordwell states that “Hollywood (from its earliest days) has eagerly employed spectacle and technical virtuosity as a means of artistic motivation” for the purpose of narration, and while he goes on to state that “exploitation of special effects all testify to a pursuit of virtuosity for its own sake,” he adds that “digressions and flashes of virtuosity remain for the most part motivated by narrative causality or genre. . . . If spectacle is not so motivated, its function as artistic motivation will be isolated and intermittent.”²⁸

By looking at the extent to which the use of DVFX is motivated by narrative causality or genre, this book explores whether there is growing nonnarrative use of digital visual effects. It also looks at how and why they are used—i.e., spectacle for spectacle's sake or as an expansion of the stylistic devices available for plot or, for instance, expansion of a genre's canon.

Discussing this relationship with genre, Thompson comments in *Storytelling in the New Hollywood* that “Dazzling developments in special effects have made flashy style much more prominent, especially in science-fiction and action films. Yet these techniques have not broken down the principle that style's most fundamental function is to promote narrative clarity.”²⁹ As Sobchack, Black, and Barker have argued in support of spectacularity, Bordwell and Thompson argue for the power of narrative engagement. It would seem that digital-visual-effects practice is caught in something of a theoretical rope-pulling contest, but these writers' positions are not mutually exclusive.

Digital visual effects are not the first technology to require accommodation for it to suit the needs of the classical Hollywood cinema. In his analysis of this school of filmmaking, Bordwell observed that there were camera angles that once were considered unsuitable for classical Hollywood cinema.³⁰ Then, he observes, where it suited their requirements to be innovative, classical Hollywood cinema filmmakers rapidly adopted and adapted experimental, art cinema, and avant-garde techniques.³¹

In *Cinema and Technology: Image, Sound, Colour*, Steve Neale documents how sound technologies led to soundstage-based filming³² and that the general opinion of critics was that sound detracted from film style. Bordwell also describes at length the difficulty that film commentators had with the impact of sound on filmmaking.³³ In particular, the locking-off of the camera in a static position, the introduction of dialogue, and the impact of locked-off camera on performance have been raised to argue that the introduction of sound in films was a step backward in its stylistic development.

The introduction of color also attracted criticism. Steve Neale comments, “Colour was still overwhelmingly associated, aesthetically, with spectacle and fantasy (in the 1940s and 1950s).”³⁴ Citing Edward Buscombe's article “Sound and Color,” Neale says,

Colour would, or could, “serve only to distract the audience from those elements in the film which carried forward the narrative: acting, facial expression, ‘the action.’ The unity

of the diegesis and the primacy of the narrative are fundamental to realist cinema. If colour was seen to threaten either one it could not be accommodated.”³⁵

Summarizing the arguments raised against the use of color, Neale says, “These comments highlight both the extent to which colour as spectacle was itself, however motivated, composed and controlled, to some extent incompatible with narrative and drama, and the extent to which, in any case, such motivation, composition and control was essential.”³⁶ He also documents how the use of color was controlled strictly by special color consultants who assessed the aesthetic needs and emotional requirements of the drama to ensure color was used appropriately by filmmakers.³⁷ Even though color is still used to mark stories for both spectacular and narrative reasons (for example, *Pleasantville* [1998, Ross]; *Schindler's List* [1993, Spielberg]; and *Hero* [2002, Yimou]), it seems odd to think that color could be argued as being incompatible with narrative these days. Yet, as we see again with the introduction of DVFX, these traditional concerns simply have become attached to a newer technological change.

Bordwell has identified three factors that influence the adoption of technology—production efficiency (economy), product differentiation (novelty), and adherence to standards of quality and aesthetic norms.³⁸ Examination of the adoption of technical innovations for digital-image creation such as virtual camera moves or the narrative use of flash-forwards shows that there has been integration and exploitation of these techniques for storytelling purposes over the last twenty years and that this is quite in keeping with Bordwell's three criteria. As a proportion of one hundred years of cinema, the last twenty years represents a significant period of influence, one that has allowed the use of digital effects—emerging in feature filmmaking in the early 1980s—to establish its own norms and cues for filmmakers.

As Thompson observes “the science-fiction film often features special effects over stars as its major draw, as *2001* and *Star Wars* demonstrated.”³⁹ One could argue that this also holds true for disaster films, such as *The Day after Tomorrow* (2004, Emmerich), or fantasy films such as *Stuart Little* (1999, Minkoff). In considering the impact then that these practices have had, Thompson's observation points to even more reason to accord DVFX a scrutiny comparable to that directed at stars or any other variable represented as a “major draw.”

To do this, we must note of the *type* of film being assessed because criticism about “Hollywood computer-generated-effects movies” frequently is addressed

as an issue of digital effects rather than of the type of film, as the examples that opened this chapter show. The focus of this kind of criticism overlooks the fact that digital effects have vast potential and are used in a wide variety of films and storycraft practices. The kind of films employing digital effects that often are critiqued reflects but one storytelling option, yet critics repeatedly considered them to represent the singular digital effects option, and they frequently blame the narrative deficiencies of the type of film—as the review of *Van Helsing* indicates—on the use of these effects. It is entirely possible, and worth examining, that the extent to which the effects dominate a movie reflects the poor use of film technique by the scriptwriter and director. However, this is not to deny that digital effects can make a bad story worse and, where this is the case, how digital effects are used to poor result is noted. However, good digital effects work also can be wasted in an otherwise poorly structured story.

One of the fundamental arguments in this book is that knowledge of technical tools and mastery of the narrative uses of CGI (computer generated images) can offer new techniques to support storytelling. In some instances the discussion only can raise the broader issues that are the basis of film theory, and I hope that much of what I present here will offer theorists from different philosophical positions an opportunity to reconsider digital-effects practice within film as it pertains to their own areas of interest. As mentioned, while this book does not proffer a general theory of special effects, it does address fundamental questions about the purpose, quality, evolution, and narrative functions of DVFX. That this offers insight to the extent that digital effects are by nature self-reflexive or have aesthetic or ideological consequences will be—I hope—of value to filmmakers, film scholars, and theorists.

In *The Classical Hollywood Cinema*, Bordwell quotes cinematographer John Seitz's observation that, "Motion picture photography of the silent era was an optical and chemical business. The addition of sound changed it to more of an electrical business."⁴⁰ The adoption of digital visual effects—and other digital technologies—has moved filmmaking into a data business. The full impact and meaning of this will, in all likelihood, provide much creative scope for filmmakers and theorists alike, and how we go on to use this "data" is open for broad, but overdue, consideration. While the so-called Hollywood computer-generated-effects movies may be the child of a technology that is changing the business, it is virtually certain that, like the flicks and the talkies of previous generations, they will become legitimate inheritors of film storycraft.