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Introduction

Seeing Past the State of the Art

At first glance, the relationship between special effects and contemporary Hollywood blockbusters might seem so straightforward as to go without saying. As of 2017, the top ten movies enjoying domestic U.S. grosses in the \$500 million to \$1 billion range were all pointedly spectacular productions, such as the dinosaur theme-park adventure *Jurassic World* (Colin Trevorrow, 2015) and Christopher Nolan's IMAX Batman epic *The Dark Knight* (2007); spots two and three belonged to *Avatar* (2009) and *Titanic* (1997), brainchildren of writer-director James Cameron, a "technological auteur" renowned for his cutting-edge use of visual effects technologies;¹ and two others, *The Avengers* (Joss Whedon, 2012) and *Avengers: Age of Ultron* (Joss Whedon, 2015), assembled teams of amazing superheroes to combat world-destroying villains. Number one on the list was *Star Wars: The Force Awakens* (J. J. Abrams, 2015), with *Star Wars: Episode I—The Phantom Menace* (George Lucas, 1999) and the first *Star Wars* (George Lucas, 1977) clocking in at positions eight and nine respectively.² If the latter trio stands out for bringing together three generations of a storytelling empire some forty years in existence, it should not escape notice that the top ten highest-grossing franchises are similarly dominated by special-effects-heavy properties, included four based on superhero comics (X-Men, Spider-Man, and the collective titles that make up the Marvel Cinematic Universe), along with four science fiction and fantasy properties (including Harry Potter, The Hunger Games, and Peter Jackson's Middle Earth saga).³

Again: it may seem self-evident that these movies' outré environments, titanic events, impossible physics, superpowered bodies, and unusual creatures are difficult if not impossible to imagine without the special effects that went into their making. In the franchise films that are its most resource-intensive tentpoles, modern blockbusters promote

both explicitly and implicitly the role of digital technology in facilitating their deployment of special effects in such proliferation and sophistication. What we once, during what Michele Pierson terms the “wonder years” of its nascence,⁴ labeled computer-generated imagery or CGI to distinguish it from analog forebears such as matte painting, miniature models, and stop-motion animation, has now generalized into an infinitely mutable cinema premised on less visible manifestations of the microprocessor. Film scanners that convert photochemically captured images into endlessly manipulable bitmaps; digital intermediates (DIs) that enable precise color grading and lighting; digital compositing that sandwiches near-infinite layers of separately generated elements into finished frames; and workflows of nonlinear editing and sound mixing all did their part to erode, years before the screen’s colonization by virtuosic unrealities, a fundamental connection between the indexically captured materials of filmmaking and their file-based storage and recombination. Not accidentally, our ways of perceiving this transformation are inflected by an overwhelming sense, for better or worse, of *currency*: look at how many of the titles mentioned above were made (or remade, reimagined, and rebooted) after the year 2000. Taken together, then, these are the defining features of what we call the state of the art: a popular culture dominated by movies whose huge budgets are part and parcel of the advanced technologies involved in their production—a smorgasbord of spectacles working at one level to immerse us in their enclosing narratives and at another to demonstrate the limitless capabilities of an entertainment industry prolix with its powers of illusion.

Against such an onslaught of manufactured visibility, this book asks what might be missing from our critical understanding of contemporary special effects—what dynamics and behaviors might be hiding, as it were, in plain sight. Answering that question, I suggest, involves seeing *past* the state of the art, moving beyond narrow conceptions of special effects as simple trickery or as symptoms of a constantly updated digital present. The four case studies presented here approach special effects instead as inherently *transmedial* constructs that play crucial, productive roles both within individual textual “homes” and across media platforms, creating and expanding the storyworlds and characters around which our systems of blockbuster entertainment—not just movies, but television, videogames, comics, and other materials—are increasingly

organized. Beyond the work they do as a kind of connective tissue knitting together the texts and paratexts of convergence culture, today's special effects in fact display remarkable migratory and evolutionary behaviors of their own, providing audiences with content for borrowing, remixing, and modifying according to their own critical, creative, and social interests. This larger lifespan plays out in a double-barreled way, reflecting special effects' unusual industrial status as what Christian Metz calls "avowed machinations"—illusions that seek to "fool" us even as they invite appreciation as elaborately prepared and presented tricks.⁵ By appealing to us both as memorable moments within stories and as feats of technical achievement and artistic innovation, special effects are key to understanding not just the ways in which much contemporary entertainment operates, but the larger cultural practices through which we engage what is "real" and what is "fake" in our media and, by extension, our conception of the world around us.

Just as it is important to look past the work done by special effects in individual media texts, it is also important to view them historically. Indeed, many aspects of contemporary transmedia storytelling—which, in Henry Jenkins's foundational definition, involves the coordinated unfolding of invented worlds and experiences across multiple media⁶—and the larger entertainment economy in which such narratives are embedded, came about not overnight but gradually, as first one and then another property learned to exploit the unique powers of their special effects. Only in recent years has this been done with any kind of organized logic on the part of media producers; as explored in this book, the first flowerings of truly transmedial special effects took place decades earlier, almost by accident, in the 1960s and 1970s. The evolution of special effects from the relatively limited role they played in Classical Hollywood and early television was helped along by forces falling outside traditional definitions of authorship and ownership, as fans gravitated both to the kinds of stories made possible by special effects and to effects "themselves"—the avowed machinations and the artists who made them—as objects of fascination and emulation.

The first half of this book explores media properties born in the 1960s and 1970s as a way of charting the growth of transmedial special effects and the franchise-sustaining storyworlds they made possible. In the case of *Star Trek*, this activity began with the establishment of

design elements whose world-building capabilities were largely the result of fan labor taking place between the cancellation of the Original Series (1966–1969) and the release of *Star Trek: The Motion Picture* (1979), which marked the first significant continuation of the storyline along with its first extension into another medium, film.⁷ In the case of Star Wars, by contrast, creator George Lucas exerted total control over new installments and the production of tie-ins, rendering fan contributions irrelevant—at least initially. Yet despite the narrative and industrial differences between these two sagas, both have survived to the present day and continue to thrive with the production of new installments across multiple media. Although many explanations for this longevity have been offered over the years, the role of special effects as designed elements giving consistency to individual “chapters” while exerting their own unique hold on audiences’ imaginations has gone unremarked.

While Chapters 1 and 2 concern themselves with the role of special effects in building storyworlds and establishing franchise authorship, Chapters 3 and 4 consider the circulation of special effects beyond those branded territories, as elements in a larger transmedia economy, and in relation to “digitality” as both technological reality and auratic construction. Characters built in whole or in part on special effects populate our screens in performances ranging from the superpowered stars of comic-book movies to the creatures and races that make up Peter Jackson’s Middle Earth trilogies *The Lord of the Rings* (2001–2003) and *The Hobbit* (2012–2014). In doing so, they draw on a long history of technologically augmented acting that comprises animated beings, monsters, aliens, and anthropomorphic animals. The ways in which such bodies reappear and evolve over time can be seen as a specific instance of a more general tendency toward migratory travel by special effects that reproduce and mutate as spectacular subunits in themselves, exemplified by *The Matrix* films (the Wachowski siblings, 1999–2003) and their signature effect, bullet time. In both cases, behaviors that seem to arise from special effects’ digital nature in fact boast precedents extending back into filmmaking’s “analog” era: continuities discoverable in the sedimented history of special effects manufacture but often elided in order to cement a larger narrative of digital cinema’s (allegedly) game-changing break with the past.

Attending critically to the transmedial behaviors of special effects is thus essential to understanding not just how much contemporary media entertainment works, but how those operations take place in unexpected, and paradoxically unobserved, ways. Academic accounts within cinema and media studies have done a great deal to delineate and historicize special effects' techniques and meanings, but have engaged far less with the way they function outside and among traditional narrative and generic homes—at the intersectional, extensional connections among sequels and installments, at scales both larger and smaller than the two-hour feature film or one-hour TV drama, in forms both textual and paratextual. Meanwhile, transmedia studies have emphasized the importance of world-building, promotion and marketing, active audiences and fandom, and new avenues for generating and sharing media content, but overlooked the key role played by special effects in these spheres. “Transmedia storytelling,” Jenkins points out, only “describes one logic for thinking about the flow of content across media.”⁸ He goes on to identify transmedia branding, transmedia performance, transmedia ritual, transmedia play, transmedia activism, and transmedia spectacle as other such logics, but leaves these as signposts for further investigation. This book, which exists at the intersection of studies of special effects and studies of convergence culture, answers Jenkins's hail by taking up the question of how special effects move through—and to an extent even constitute—our media networks, shaping the behavior of texts and genres as well as producers and audiences.

Theorizing Special Effects

Although special effects have been recognized as a discrete practice in film production since at least the 1920s, when the Academy of Motion Picture Arts and Sciences began to give awards in categories such as Best Engineering Effects and Best Special Effects, they did not begin to come under close academic scrutiny until 1977, with the publication of Christian Metz's “*Truque and the Film*.”⁹ From today's vantage point, it is hard to ignore the felicitous (if entirely coincidental) timing of Metz's essay with the release of *Star Wars*—a movie generally credited with revitalizing the effects industry and public interest surrounding it.¹⁰ Metz's psychoanalytic take, however, focused less on the emergence of

the contemporary effects blockbuster than on the peculiar convolutions of belief and disavowal he suggests spectators undergo when confronting images they know to be unreal but provisionally accept nonetheless. Pointing out that our immersion in the screen's representations involves a complex sorting of filmic illusion into various levels of noticeability, Metz famously asserted that "all of cinema is, in some sense, a special effect," from the commonplace and unremarked techniques such as fades, dissolves, and titles to the dramatic presentation of scenes and events that invite us to appreciate them precisely as achievements of cunning artifice.

Metz's emphatically psychodynamic approach has not, by and large, been replicated in more recent academic work on special effects. But his seminal essay deserves to be labeled as such because of the key insights it introduced: insights that have been foundational, both in positive and negative ways, to the investigations that followed. First was his argument that special effects are sites where artifice and its opposite, a profilmic "truth," are most powerfully co-present for spectators, making the default mode of engaging with special effects one of division and hybridity, conflict and uncertainty. (Dan North neatly describes it as "a kind of doublethink on the part of the viewer."¹¹) By suggesting that audiences neither believe nor disbelieve in special effects outright, but respond to them in a kind of fascinated hesitation, Metz opened the floor for future scholars to talk about a range of in-between (or to adopt a term from videogame studies, "half-real") spaces that would otherwise have been foreclosed to study.¹² Pierson, for example, writes about fans who dig deeply into the technical arcana behind special effects, while Jonathan Gray notes the way in which behind-the-scenes featurettes on DVD and Blu-ray function as media paratexts, shaping appreciation and interpretation of the movies with which they are packaged.¹³ With analog precursors such as professional publications *American Cinematographer* (1920–present) and *Cinefex* (1980–present), and digital descendants like the promotionally celebratory visual-effects "breakdowns" and sarcastic "10 Greatest CGI Fails" videos available on YouTube and Vimeo, our ongoing attention to artifice demonstrates the point that "doublethink" is never without its share of pleasure.

Metz's other influential insight was that special effects are as much *discursive* constructs as industrial ones: that is, the way we choose to

describe them profoundly shapes what we understand them to be. As in the Chinese encyclopedia discussed by Michel Foucault (a mythical taxonomy whose unruliness demonstrates the arbitrariness of all classificatory gestures), we have been conditioned to group some forms of cinematic practice under the headings of artifice, fakery, and manipulation, while excusing others as real and authentic.¹⁴ In so doing, we call special effects into existence as identifiable entities. This is not to say that special effects are entirely constructs of language; obviously they denote specific kinds of intervention in the frame, encompassing a range of techniques that, although they have evolved over time, tend to involve the same core concepts (makeup, animation, painting) and formal characteristics (composites and layering). Still, to fully describe effects' complex operations means embracing the heterogeneity and flexibility of the term. I am not, therefore, particularly interested in the relationship between reality and its manufactured double that special effects, following North, seem invariably to highlight. Relatedly, I do not think it of great importance whether a scene was done live and "unmediatedly" before a camera or engineered by optical printers, model shops, or 3D software. To me, it makes much more sense to see these apparently opposed qualities in terms of *degrees of intervention*, following Albert J. La Valley's expansive understanding of screen illusion:

There must be a significant and important gap between the illusion of what we see on screen and what was used to produce it. Sets, even interplanetary and futuristic ones, are at the low threshold of this discrepancy; miniatures and glass shots are in the middle range; and optically printed shots combining things of many sizes as in *King Kong* and *Star Wars* are perhaps the most discrepant and seem to call on the most sophisticated forms of special effects technology. Special effects then are a kind of continuum embracing the entire cinema, but most fully articulated in films which depict the unseen or unseeable: disaster, spectacle, fantasy, horror, and science fiction.¹⁵

LaValley's formulation, written in the analog era, usefully relaxes the definitional strictures that have tended to limit our discussions of special effects. As Metz suggests, there are many ways to map the manipulation of motion-picture imagery, ranging from the overly general to the

overly specific. On the one hand, to describe all cinema as trickery may be philosophically provocative, but fails to explain why we consider certain classes of image as more or less “special” than others. On the other hand, categorizing special effects according to the processes by which they were achieved (e.g., distinguishing between stop-motion and digital animation, between painted matte shots and front-screen projection) may be appropriate to technical discussions or how-to articles. When it comes to questions of theory and history, however, this approach seems fine-grained to a fault, paying little attention to the plasticity and combinatorial fluidity that drive technological innovation in cinema and other media. More damningly, both taxonomic extremes reinscribe a fundamental misrecognition of the way effects acquire their semiotic identities: the assumption that special effects work only at the level of the *shot*. In truth, effects draw meaning not just locally from their constitutive elements (fragments of image composited together to simulate one unbroken take of film), but globally from their surrounding contexts (narrative, *mise-en-scène*, and genre).

The approach taken in this book, then, is to treat the category of special effects elastically enough to range from their traditional industrial definition as applications of technique (such as prosthetic makeup or optical and digital compositing) to any material “faked” for the production, including, for example, certain types of set design, prop construction, and costumes. Films and television shows set in the real world may score low on this metric of artifice (though this is not to say they are any less dependent on greenscreen and digital models to generate their settings). But in fantastic media franchises, whose worlds, objects, and events must be in a sense be built from scratch, the philosophical, ontological, and practical lines dividing special effects from a “real” to which they are conventionally opposed become blurred to the point of merging completely. Treating special effects in this manner may be a controversial move, given the welcome turn to technological and historical specificity in recent scholarship on special effects. But the kinds of phenomena I engage in this book take place at multiple levels, on multiple fronts, over time periods extending into years and decades, in articulations whose unpredictability requires an adaptive eye to follow. If only because our ways of attending to them shift so easily from the intensive technical

detail offered by professional media to the abstract sense in which critics praise or disparage a new release's use of them, special effects must be understood both as concrete industrial practices and as discursive constructs: media "events" that are themselves always mediated, marked as artificial, by the knowledges circulating around our encounters with them. The book's four chapters delve into technical specifics where appropriate, but their larger goal is to explore what it means to live in the full realization of Metz's "cinema of special effects"—a characterization truer now than in the time of his original writing—in which all filmic narration is ultimately subsumed into visualization, or more accurately, *previsualization*.

Previz avant la Lettre

Engaging special effects in a transmedia context means, ironically, peering backward along the axis of time into the analog past from which they arose. By doing so, we can begin to see ways in which special effects from the start behaved differently from other elements of filmic narrative, reaching outward to other textual homes and audiences. Moving beyond the moment of special effects' initial display and impact on the viewer brings into view two phases common to all filmmaking but which bear particular importance to the genesis and circulation of effects: preproduction and postproduction. In *previsualization* or *previz*, motion-picture imagery is planned through a series of sketches, rough drafts, and preliminary versions. From the standpoint of special effects, this phase can be viewed as the period during which "new" cinematic texts coalesce from predecessors and influences, minting themselves as "original" in the process. Hence it is essential to the industrial logic by which movies-as-products ensure their own replication. On another level, preproduction and postproduction are interesting because of the degree to which they contribute to Hollywood's self-presentation in forms other than the end product. As Gray argues, completed feature films rarely intersect our lives in isolation. Instead, they arrive in a halo of secondary discourses: print and TV journalism, coffee-table books, trade and fan magazines, word-of-mouth, and more recently, websites, blogs, podcasts, and YouTube videos.¹⁶ Some of these paratexts

are officially sanctioned and coordinated by the marketing arm of the industry; others issue from outside the privileged inner circle, in the grassroots work of fandom. The important point is that in both cases, public awareness of the movie in question is frequently informed by materials drawn from pre- and postproduction.

It is a commonplace of new media discourse to claim that recent innovations, such as the introduction of the laserdisc, DVD, and Blu-ray formats, have made much more information about what we might call “paraproduction” available for public consumption, increasing our access by going behind the scenes of a movie to explore its conception, design, and execution. In truth, the circulation of such materials dates back to the dawn of moviemaking. Many lost films survive only through their planning materials (written scenarios, sketches or blueprints of sets) or through paraphernalia of promotion and exhibition (movie posters, lobby cards, tie-in products). One of the most famous images of early cinema—the Moon with a rocket jammed in its eye, from Georges Méliès’s *A Trip to the Moon* (1902)—is frequently reproduced in the form of its associated preproduction painting, as well as the actual film frame in which it appears [Figure I.1]. In crafting his illusions, Méliès arguably produced the earliest examples of previz. Special-effects historian Christopher Finch points out that “Méliès, a frustrated cartoonist, seems to have initiated the idea of production sketches, planning many of his key scenes on paper before committing them to film.”¹⁷ The naturalistic *actualités* of Louis and Auguste Lumière required little more to produce than the placement of a *cinématographe* at a vantage point from

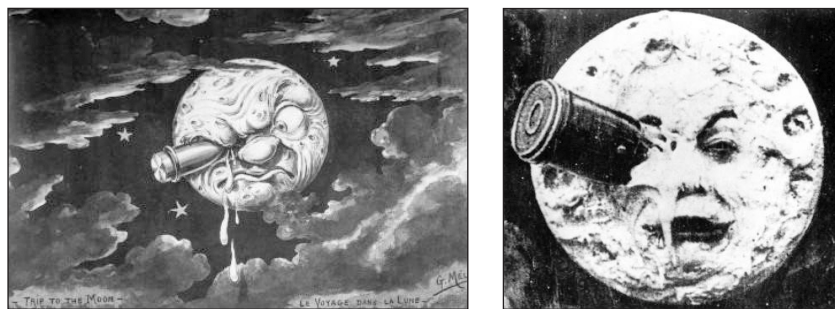


Figure I.1. Méliès preproduction art (left) and final image (right) for *A Trip to the Moon*.

which it could capture sixty seconds of activity occurring before it. By contrast, Méliès's screen trickery—expanding rubber heads, dancing midgets, painted backdrops, exploding Moon creatures, and cutaway submarines—necessitated planning in advance, for almost all of his illusions played on precise camera position and alignment, manipulation of depth of field, and large-scale mechanical prop effects like those in *The Merry Frolics of Satan* (1906).¹⁸

Méliès's illusions were but the start of a long process of incorporating special effects and their associated preproduction materials in the nascent filmmaking medium. The multiple layers of even a simple process shot require careful alignment to prevent elements from overlapping and creating distracting matte lines or soft edges. It is therefore likely that Edwin S. Porter's employment of the first "naturalistic" optical effect in *The Great Train Robbery* (1903)—to show an arriving train, seen through a window—was preplanned in order to correctly position the blacked-out areas of the matte against foreground action shot on the set of a railroad telegraph office. Over the next few years, visual effects continued to be put to work as part of an emerging narrative paradigm. In his *Missions of California* (1907), Norman O. Dawn pioneered the use of "glass shots" to extend partially built sets into full-scale vistas, a process adapted from still photography. "At one mission a row of arches had been reduced to a few piles of broken masonry. Dawn simply painted the missing arches on a sheet of glass, set the glass up in front of his camera, and, through the viewfinder, lined up the painting with the actual building, which was miraculously made whole again."¹⁹ Glass shots remained popular for almost two decades, until they were supplanted by more sophisticated techniques such as the Schüfftan Process, a mirror-dependent illusion developed by German cinematographer Eugen Schüfftan in 1923.²⁰ Along with descendants such as matte paintings, front- and rear-screen projection process shots, traveling mattes generated through rotoscoping or blue- and greenscreen substitution, and most recently electronic (video) and digital compositing, special effects thus had a linked function of generating diegetic spaces and streamlining production costs. Studio effects departments labored "to create *mise-en-scène*—beautiful mountains instead of the tops of an adjacent set, multi-storied castles, and locales not available for mass transportation of hundreds of staff and players and tons of

equipment.”²¹ These techniques depended on ever more precise mechanisms to align elements generated at different points in space and time; “standardization of precision registration around 1914 was particularly important in permitting certain special effects.”²²

This brings us to another perspective on the evolution of preproduction as a centerpiece of studio industrialization. Preproduction assisted cinema’s transition from a new and experimental medium to an assembly-line-like process involving the coordination of a large labor force, working under studio supervision, resulting in productions of increasing scale and complexity. Within the production culture I am examining, certain aspects of special effects receive the bulk of public attention: the wondrous imagery they create (the “magic trick”) and the nuts-and-bolts of their engineering (how that “magic” was accomplished). Yet neither dimension, I suggest, is particularly helpful in placing special effects in the larger context of a mode of production.

The fact that so many special-effects breakthroughs can be traced to advances in preproduction raises the question of how such practices reflect a longer history of Hollywood’s operations—not just in the creation of “spectacle,” but in the manufacture of movies more generally. As David Bordwell, Janet Staiger, and Kristin Thompson observe in *The Classical Hollywood Cinema: Film Style and Mode of Production to 1960*, special effects—along with other technological innovations such as color, sound, and widescreen—have long been as much a part of movie marketing as movie making. “Hollywood,” they write, “has promoted mechanical marvels as assiduously as it has publicized stars, properties, and genres.” Yet, they remind us, “there is nothing oneiric about technology; it is a concrete historical force.”²³ In this sense, the creation of special effects must be considered in relation to Hollywood’s mode of production. Staiger defines this concept in terms of three components that interact dynamically: labor force, means of production, and financing of production.²⁴ The mode of production is crucial to understanding how Hollywood both adheres to and departs from the logic of the Fordist factory system. While movies made under the studio system are undeniably products of an assembly-line-like process, they are also artistic works imprinted with the authorial signature of a director, producer, and sometimes a writer or star. This produces a tension between

public conceptions of movies as art and artifact: a tension mediated in part through the discourse of special effects.

Two “descriptive and explanatory schemata related to the organization of the labor force” mentioned by Staiger are relevant to my discussion of preproduction: the specialized division of labor and a succession of different management systems.²⁵ It is in these areas that classical preproduction practices demonstrate their utility in the industrialization of the cinematic medium. From the perspective of labor and management, preproduction is a wide-ranging category comprising a variety of different tools for mapping, envisioning, refining, and engineering motion pictures. Each of these tools can be seen as an incremental stage in transforming an initial concept into a finished feature film. Crucially, each also functions as a form of distributed authority for coordinating the sprawling and specialized labor force involved in moviemaking. Visual materials such as costume and set designs, storyboards, and artwork are variations of the more concrete and publicly acknowledged bible for any given movie—the script—whose importance Staiger emphasizes as “a blueprint for the film”:

In the early teens a detailed script became necessary to insure efficient production and to insure that the film met a certain standard of quality defined by the industry’s discourse. While pertinent before the early teens, the simultaneous diffusion of the multiple-reel film and certain stylistic options at that point placed such demands on the production crew that a precise pre-shooting plan became necessary. The script, furthermore, became more than just the mechanism to pre-check quality: it became the blueprint from which all other work was organized.²⁶

The scope of preproduction expanded as movies themselves became longer and tackled more complex subject matter, eventually finding stable form in the psychologically oriented, causal narrative model that came to define the studio product. Before 1909, a casual story outline sufficed to guide production. But under the director-unit system that lasted from 1909 to 1914 and which was typified by filmmakers such as Mack Sennett and D. W. Griffith, the story outline gave way to a more detailed plan, the scenario script, assisting the studios’ reorganization “into a predictable,

efficient assembly system.”²⁷ Scenario scripts allowed directors for the first time to shoot out of sequence and assemble the components of the story later, in editing, guided by the script. It also encouraged the construction of a formally unified narrative within the confines of fixed-length 1,000-foot film reels. “By preparing a script which provided narrative continuity before shooting actually started,” producers ensured “complete narrative continuity and clarity despite the footage limitation.”²⁸ This restriction fell with the introduction of the continuity script, enabling movies to leap from an average of eighteen minutes to seventy-five minutes in duration. Again, changes in narrative, stylistic, and visual form mirrored shifts in the underlying mode of production, including an increasingly prominent role for the producer, who used the “very detailed shooting script . . . to plan and budget the entire film shot-by-shot before any major set construction, crew selection, or shooting started.”²⁹

Preproduction continued to expand and diversify as the director-unit configuration gave way to what Staiger calls the “central producer” system, dating from approximately 1914 to 1931. The Taylorist school of scientific management influenced Hollywood’s consultation with efficiency experts and its establishment of production-line practices in which paper records were increasingly used to coordinate film production. Before a single frame was shot, planning departments broke down scripts into lists of sets, wardrobes, props, and personnel such as stage hands, carpenters, and painters, in order to calculate costs and allocate resources. Of particular importance were detailed sketches of sets and costumes prepared by production departments to assist directors with their creative conception and producers with budget management. As Staiger summarizes,

Planning the work and estimating production costs through a detailed script became a new, extensive, and early step in the labor process. This improved regularity and speed of production, use of materials, and uniformity and quality of the product. The script became a blueprint detailing the shot-by-shot breakdown of the film. Thus, it could function as a paper record to coordinate the assembly of the product shot out of order, prepared by a large number of people spread at various place through the world (location shooting, for example, to be matched to an interior in Santa Monica), and still achieve a clear, verisimilar and continuous representation of causal logic, time and space.³⁰

One of the specialized departments called into existence during this time was that of art direction or production design. Dating from the teens, when theatrical holdovers such as stationary camera positions and sets with flat painted backdrops gave way to three-dimensional sets and mobile cameras, design experts prepared “pre-construction diagrams of the sets with camera set-ups precisely marked.” Storyboards were born as a result of the need to consider “how a set would photograph with the camera at varying distances (an effect of closer framing and analytical editing).”³¹

The art director quickly took on an essential role in planning a film’s “total visual look.”³² The first art directors came from the world of theater, including Wilfred Buckland, Joseph Urban (famous for his association with Ziegfeld Follies), Cedric Gibbons, and A. Arnold Gillespie, who, as many such figures did, soon became proficient in special-effects work.³³ Another important influence on Hollywood’s growing stylistic and technical repertoire was the work of German filmmakers such as Fritz Lang and F. W. Murnau, whose “highly imaginative and dramatic art direction” required heavy use of enclosed stages. The resulting emphasis on “innovative sets, inventive approaches to cinematography, and an extensive use of special effects” drove preproduction to greater heights of sophistication and complexity.³⁴ According to one historian, the period to 1930 saw the steady rise of films that were “ambitious in scale and spectacle.”³⁵ This trend culminated in a series of productions renowned for their visuals—some within the expected fantasy and science-fiction genres, such as *King Kong* (Merian C. Cooper and Ernest Schoedsack, 1933), and others in the mode of the historical epic, such as *Gone with the Wind* (Victor Fleming, 1939). Both movies made substantial use of visual effects, and both were heavily “preproduced” [Figure I.2], the former largely through drawings by stop-motion animator (and uncredited visual-effects supervisor) Willis O’Brien, the latter by William Cameron Menzies. Menzies, who received the first screen credit for “Production Design” at the request of producer David O. Selznick, was said to have “controlled the look of every scene through detailed storyboards which were rigorously adhered to.”³⁶ In the decades that followed, storyboarding and other preproduction tools became an indispensable part of the process by which movies underwent alchemical transformation from text to screen.



Figure I.2. Art-to-shot comparisons, *King Kong* (1933).

Production designers continued to build their artistic cachet, many becoming names in their own right: Anton Grot, Ken Adams, John Barry, Dean Tavoularis, Norman Reynolds, and Anton Furst. None, perhaps, was more recognizable than Busby Berkeley, renowned for his opulent and sometimes hallucinatory musical numbers. Directors such as Alfred Hitchcock received much attention for their extensive reliance on preplanning and storyboarding, as did dedicated special-effects artisans such as Ray Harryhausen.

By revisiting the history of image production and circulation in this way, this book rethinks special effects in ways that are more specific to their industrial nature, more flexible in their understanding of what constitutes a special effect, and how those effects are taken up both discursively/affectively and within the transmission and display nodes of our complexly, ubiquitously technologized visual culture—a culture whose dominant form, the fantastic transmedia franchise, evolved hand in hand with special effects.

Special Effects and Transmedia

The traditional view is that in Classical Hollywood cinema, special effects worked either invisibly to suture viewers into diegetic and dramatic spaces, or visibly to create screen events that could not have been attained without the intervention of a technologized “magic.” In today’s fantastic transmedia franchise, by contrast, special effects often function in highly visible, foregrounded ways across larger, multitextual domains to create settings, characters, creatures, and events whose

unreality coexists in pleasurable tension with the detail brought to their visualization. By bringing perceptual verisimilitude to fictive domains with few or no real-world referents, special effects in fantastic transmedia do more than just “fool the eye”; they also generate continuities and histories that link together the disparate texts belonging to the franchise.

According to Angela Ndaljian, blockbuster screen entertainments of the twentieth century underwent profound changes in the years leading up to the twenty-first, evolving toward technologically dispersed but narratively centralized texts whose cumulative impact is one of labyrinthine complexity and immersiveness. In Ndaljian’s concept of the “neo-baroque,” which anticipates by a few years Jenkins’s popular codification of transmedia storytelling, the merging of media industries drove formal changes in the behaviors of media from film and video-games to comic books and theme-park rides increasingly built around shared storyworlds to be explored and experienced by actively questing audiences.³⁷ Along with a new emphasis on serialized storytelling, special effects are a dominant trait of the neo-baroque: “Media merge with media, genres unite to produce new hybrid forms, narratives open up and extend into new spatial and serial configurations, and special effects construct illusions that seek to collapse the frame that separates spectator from spectacle.”³⁸

The spectator Ndaljian identifies as the focus of this transformed blockbuster system is hardly a naïve one; neo-baroque special effects that merge “an artificial reality into the phenomenological space of the audience,” she observes in a Metzian vein, “simultaneously [invite] the spectator to recognize this deception [and] to marvel at the methods employed to construct it.”³⁹ The deception itself, however, is aimed at overwhelming audiences by “highlighting intense sensory experiences” such as kinesthesia, vertigo, and awe.⁴⁰ Placing neo-baroque special effects in a history that includes the camera obscura, panoramas, trompe l’œil painting, and other magical “devices of wonder,” Ndaljian follows a traditional genealogy of sensory immersion through technological artifice that is important for its emphasis on *affect* as a key category of special effects reception. The neo-baroque model has less to say about special effects’ connection to the serialized and continuity-heavy storyworlds of fantastic media. In the case of properties such as Jurassic

Park (1993–) and the Terminator (1984–) franchises, special effects work architecturally to spatialize filmic *mise-en-scène* and make it available for exploration in other media such as videogames and theme-park attractions.⁴¹ But these fundamentally immersive ends pivot on questions of spectator belief and disbelief in the experiences being created, rather than on how these experiences convey information about the story-world and its characters. The “new sensibility” of the special effects in *Star Wars*, Ndalianis writes, stems from “their spatial orientation and their depiction of objects in space in a way that produces a neo-baroque relationship between spectator and image.”⁴²

The genres of science fiction, fantasy, and horror point to the dependence on special effects to create and extend what I am loosely calling *fantastic transmedia*. For Ndalianis, the coevolution of genre and technology is inseparable from the rise of digital technology. “The revival of popularity in these genres coincided with the growth in special-effects companies, which themselves relied on advances in optical technology made possible by the computer revolution.”⁴³ Julie Turnock takes a closer look at the entanglement of science fiction and the special-effects industry at a moment of significant change in her exploration of *Star Wars* and *Close Encounters of the Third Kind* (Steven Spielberg, 1978).⁴⁴ The former in particular established, for Turnock, an “expanded blockbuster” aesthetic that can be seen as the precursor to Ndalianis’s neo-baroque: “Overflowing with kinetic action, taking place within a minutely detailed, intricately composed *mise-en-scène*, comprising an all-encompassing, expandable environment.”⁴⁵ Late analog, proto-digital effects practices such as optical compositing, which multiplied the abilities of traditional optical printing and traveling-matte generation with the precision of microprocessor-driven “motion control” cinematography of miniatures, contributed unprecedented levels of depth and detail to the screen presentation of *Star Wars*’s universe, while the sheer number of effects shots—some 360, in a time when the typical science-fiction film might employ a tenth that many—and their even distribution throughout the film’s running time worked to stitch together a consistent-seeming set of worlds, vehicles, structures, and creatures.⁴⁶ Turnock connects the construction and depiction of this world to the auteurist visions of the “film school generation”: figures such as George Lucas, Steven Spielberg, and Francis

Ford Coppola, whose debut features were much more idiosyncratic and artistically perceived than we tend to credit nowadays.

I think Turnock is correct in attributing to *Star Wars* a breakthrough in world design as an expression of auteuristic vision and control (though her neglect of the design stage, preferring to focus on the technical and engineering, leaves out Ralph McQuarrie, Joe Johnston, and other contributing artists discussed in Chapter 2). She lays an important groundwork for understanding how techno-auteurs subsume the contributions of others. But while her history of the industry follows special-effects houses into the 1980s, she doesn't stay with the worlds themselves, providing less insight on how special effects form the interconnective tissue among media installments. If traditional film studies has mapped out essentially *negative* roles for special effects—based on their inherent falsity and deceptiveness, their ontological difference from “live action,” and their alterity to narrative—the dynamics explored in this book are primarily *positive* ones: the role of special effects in building shared worlds, reminting texts and generating authorship, moving as circulatory agents, and building characters and performances that expand transmedially. In this view, special effects comprise a distinct class of imagery whose manufactured and capital-driven iconographies, yoked to fictional frameworks, grant them extraordinary reach and power. Special effects, in short, *make things possible*, and the things they make possible have worked over time to generate sprawling yet coherent franchises and the unusual characters that populate them. They do this through complex flows and circulations with short shelf lives, contributing to an overall acceleration of the evolution of visual culture in a digital era.

Chapter Preview

The cases examined in this book take place during periods when special effects and blockbuster franchises found new relationships with each other, moving forward in a mutual process that cannot be reduced to simple cause and effect. Drawing on popular and industrial documentation of special-effects manufacture, the following four chapters explore these stages in more or less chronological order, treating them as four slices through a complex, multivariable process by which the contemporary transmedia landscape was collectively forged.

Special effects and world-building are the focus of the first half of the book. The recent emergence of imaginary-world theory has added an important and timely tool to the arsenal of film and media studies—as with special effects studies, it is no accident that the language of “worlding” in videogames, experimental art, and animation has developed in step with how our media behave.⁴⁷ Considered as a matter of illustrating and giving form to unreal settings, cinematic special effects are not the only way to render imaginary worlds: videogame engines generate in realtime whole environments, from surface textures down to physics, while Dungeons & Dragons players summon a different sort of fantasy environment, one animated by cultural rather than technological ritual, in a merging of narration and roleplay. Symbolically conveyed in type, sequentially drawn in graphic novels, or colorfully painted as a pulp paperback cover, some worlds of science fiction and fantasy were mainstays of twentieth-century culture, often embodied in hero characters—Conan the Barbarian, Superman, the Lone Ranger—as recent studies in “transmedia archeology” have shown.⁴⁸ One may view the continued presence of these worlds and characters today as evidence of how flexibly forces of franchise have intertwined themselves with industries of illusion.

But while I argue for the inherently transmedial nature of post-1970s special effects, I do so from the vantage point primarily of film and television, the dominant moving-image media of the decades leading up to the flowering of the contemporary fantastic-media franchise. The first two chapters are thus a centripetal study of how the first modern special-effects-dependent storyworlds were forged, one on broadcast and syndicated television amid an avid fan movement, the other a feature film originating largely from outside the Hollywood system. Both chapters share an interest in design and designers as underreported agents in special-effects world-building; in authors and authorship within special-effects-dependent productions; and in negotiations between fans and producers around the decision-making and direction of franchises as they grow.

Chapter 1, “That Which Survives: Design Networks and Blueprint Culture between Fandom and Franchise,” explores the initial genesis of *Star Trek* in the 1960s, expanding on Derek Johnson’s concept of “overdesign,” or the production-side profusion of detail underpinning an imaginary screen world—in this case, *Trek*’s twenty-third-century “future

history”—that provides a template for shared creative collaboration.⁴⁹ Although the story of creator Gene Roddenberry’s “Wagon Train to the stars” concept and the series “bible” that guided scriptwriters in crafting their teleplays is well known, less attention has been paid to how the contributions of multiple designers coalesced to build what was essentially an open-source universe. In the 1970s, the fandom around *Star Trek* elaborated on that storyworld through the creation of reference materials such as blueprints and technical manuals. This grassroots movement, paralleling official efforts to relaunch the franchise in the form of a new TV series and feature film, reflected that open-source ideal but came into conflict with official rights holders, suggesting an interplay of forces around the expansion and continuation of franchise storyworlds.

Those concerns recur in the preproduction and making of *Star Wars*, the focus of Chapter 2, “Used Universes and Immaculate Realities: Appropriation and Authorship in the Age of Previsualization.” Exploring writer-director George Lucas’s status as visionary creator of *Star Wars*, this chapter documents the contributions of production artists and visual-effects designers such as Ralph McQuarrie and John Dykstra to suggest a collaborative model similar to *Star Trek*’s. But it goes further by considering how Lucas and his team remixed a vast catalog of generic influences ranging from *Flash Gordon* serials of the 1930s to World War II films, using special effects not only to invent a fantastic fictional space but to forge originality from appropriation—a kind of transformative labor occurring at the producerly rather than fannish level. The chapter tracks this logic through the later technological and commercial evolution of the *Star Wars* franchise, examining how cases such as the remastered Special Editions of the late 1990s, the Prequel Trilogy of the early 2000s, the recent acquisition of Lucasfilm by Disney, and the current creation of new installments, all draw on a “previz mind-set” which, despite its strong associations with the digital, can be more logically sourced to developments in analog preproduction that occurred in the 1970s.

If the first two chapters look at special effects as creative tools—underpinning the construction and proliferation of fictive worlds on the one hand and rebranding existing texts into original properties on the other—Chapters 3 and 4 consider special effects as dynamic agents possessing their own unique itineraries within and among different media.

Chapter 3, “Chains of Evidence: Augmented Performance before and after the Digital,” investigates screen acting in a technology-dominated cinema, raising questions about where—in the age of digitally assisted characters such as Gollum and Benjamin Button—the human actor ends and special effects begin. Special effects have long been used not only to augment actorly turns like Boris Karloff’s in *Frankenstein* (James Whale, 1933) and Christopher Reeve’s in *Superman* (Richard Donner, 1978) but to channel expressive traits from animators and technicians onto a range of drawn, constructed, and remotely operated bodies on screen. The Middle Earth trilogies *Lord of the Rings* and *The Hobbit* serve as case studies in both the star turns and stunt labor of augmented performance, connecting the earliest experimentation in stop-motion effects to the recent emergence of digital actors to show that similar processes and semiotic codes underpin these seeming technological opposites.

The most famous recent example of this phenomenon is bullet time, a visual effect appearing throughout the *Matrix* trilogy. As explored in Chapter 4, “Microgenres in Migration: Special Effects and Transmedia Travel,” bullet time spread from film to film (and into television ads, videogames, and cartoons) through quotation, parody, and unauthorized appropriation. While transmedia storytelling, of which the *Matrix* franchise is often cited as a canonical example, emphasizes the coordination of story elements across extensions in videogames and web comics, the focus in this chapter is on larger economies of image replication. Charting the history of the special-effects techniques employed to slow down time with a moving camera—methods eventually consolidated in the supposedly unprecedented “breakthrough” of *The Matrix*—and the afterlife of bullet time as a much-lampooned cliché that eventually became an accepted part of visual culture’s grammar, the chapter ultimately argues for an expanded understanding of the breakdown and recombination of generic elements through a complex interplay of technology, fandom, and producerly interests.

In all, the four chapters and the trends they highlight hinge on special effects and the specific formations of labor that generate them, each illuminating more comprehensive concerns of film and media studies: negotiations between fans and producers; authorship within the studio system; the emergence and evolution of genres; and the shifting codes of screen performance that generate dramatic characters. In this broader

view of special effects as more than merely a series of tricks embedded in otherwise “unspecial” media, special effects reveal themselves as sites of profoundly transmedial activity, blending old and new in a cauldron of inherited practices and innovative methods while setting the agenda for emergent forms of production and circulation of popular texts and objects.

Seeing past the state of the art, then, is crucial to comprehending special effects, in both the forms they have assumed and will assume in the future. Special effects are always heightened, excessively noticeable elements of moviemaking; even their “invisible” uses are inevitably highlighted in the discourses that accompany a film, intriguing us after the fact with an account of how they were achieved. Such moments should be seen not as extrinsic to the special effect but part and parcel of its larger work—a further extraction of its value down the line. There exists a contiguity, that is, between the “effects” of special effects onscreen and off, summoned into existence as much by the explanatory and celebratory discourses surrounding them as by the material histories of design and manufacture on which those discourses draw. Despite this, film and media studies has insisted for the most part on treating special effects in the narrowest slice of their operations: the moment of onscreen display and the quantum state of indeterminacy they induce in the viewer, in whom indeed the questions of narrative versus spectacle, mind versus body, reality versus simulation may momentarily battle. But our traditional perspectives on these encounters—severed from the network of knowledge that is the gift and curse of contemporary media spectatorship (so informed and interpenetrated by technical knowledge, publicity discourses, as well as stardom, genre, and auteurist understandings of yore)—ignore the work done by special effects in today’s networked and franchised media culture, which works to ensure that any encounter with a text is conditioned by familiarity with its forebears and siblings. Ironically, as theorists we must learn to look beyond the attention-getting glimmer of special effects to access the full truth of their existence.

