Robert Baird

The Startle Effect
Implications for Spectator Cognition and Media Theory

Lewton particularly enjoyed devising moments in his films which would cause audiences to gasp in terror. His name for these moments of sudden shock was “busses.” The term derives from the Central Park sequence of Cat People.

—Joel E. Siegel, Val Lewton: The Reality of Terror

Gasping in terror: Alien
My wife is often startled when the phone rings. The phone doesn’t bother the kids or me, but all of us have, at one time or another, found ourselves alone in a room only to turn and be startled by someone hovering behind us. My son Sean, like most respectable eight-year-olds, can, to his great pleasure, startle his older sister. There are rarer and stranger startles. Once, walking across a parking lot in the middle of the day, I was startled by what turned out to be a leaf. It wasn’t a dangerous leaf, but, pushed by the wind, it made an uncanny scuttling sound behind me. The sound was odd enough and “out of place” enough to startle me. Garden-variety startles provide an affective punctuation to various folk entertainments such as hide-and-seek, surprise parties, spook houses. One confidante tells me that upon leaving Madame Tussaud’s in London she once saw visitors who were startled by a motionless “wax figure” that suddenly moved: all a bit of fun orchestrated by the management. More typically, I once saw a horror film with a friend who was startled so frequently and forcefully that I worried he would pull a muscle. Since, at the time, I was writing a dissertation on cognition and the horror film, I did not let these and other startles pass, but considered how a leaf, or a phone, or a film can startle us, and whether the mere fact of startles and/or a theory of their function might add to or challenge current thinking about the mind and its relation to real and virtual space.

Many laymen and not a few philosophers and psychologists have been content to relegate startle to the category of dumb reflex, little more dynamic than a sneeze or a knee jerk. That film startles occur only during a particular scene type should alert us that something complicated and odd is occurring. Indeed, I believe film startles reveal the fundamental characteristics of cinema spectatorship, offering the most pointed opportunity for addressing and explaining the age-old paradox that fictions and representational spaces can stimulate intense emotional responses in spite of an awareness of fictionality.

Millions have been startled while watching threatening film scenes. We can pinpoint the frames in Cat People (1942) where one of film’s first startles—a public bus of all things—bursts into frame; we can study the exact moment in Jaws (1975) when Hooper, while scuba diving, is startled by a corpse popping through a shattered boat hull; we can inspect the infamous startle in Wait Until Dark (1967) when Alan Arkin’s psychotic killer (supposedly incapacitated) leaps, Olympic-like, after Audrey Hepburn’s blind housewife. My study of over 100 American horror and thriller films from the early 30s to the present reveals formal refinements and increased usage of this effect. For instance, 1942’s Cat People deploys two startle effects, while Paul Schrader’s 1982 remake offers eight, a typical example of the hypersensationalization of the post-Psycho horror/thriller film.

David J. Skal, echoing others, claims that the birth of cinema itself was an occasion for audience startles:

In America, more direct and visceral means were favored to hold and startle an audience—locomotives hurtling toward the screen, for instance, or a bandit firing his gun directly into the camera’s eye (both effects were employed in 1903 by Edwin S. Porter in The Great Train Robbery). Quaint though these techniques may seem today, they once had the power to make audience members faint.

Examples such as these serve as apocryphal encapsulations of the birth of cinematic sensationalism, and, according to David Bartholomew, share something with horror:

Its origin [horror], indeed, is the origin of all moving pictures, going right back to the Lumière brothers’ 1895 exhibition of A Train Entering a Station, a short documentary sequence to which early audiences reacted with a frenzy, ducking away from the seemingly onrushing train on the screen and fleeing the auditorium in fear. Of course, the Lumière’s little film was not a horror film as we’ve come to know it, but it provoked fear and psychological unease in its audiences (who had not yet learned how to “look” at movies), and that is precisely how the horror film has always functioned historically.

These familiar stories of early spectator naivete seem always to imply that more modern, media-savvy viewers can resist manipulation. No one today, after all, runs from or faints before hurtling movie trains, or flinches from camera-directed gunplay. However, viewers, even

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filmmakers and media critics, can still be startled by film. The origin of this still viable startle effect is recognized as 1942, in the famous bus scene from Val Lewton and Jacques Tourneur’s B-movie surprise success, *Cat People*, where Alice (Jane Randolph), being followed by something from screen left, is surprised by a bus barreling in from screen right. Dennis Fischer offers a typical analysis of *Cat People’s* startle effect: “This type of scene with a slow buildup and sudden release became known as a ‘bus,’ and was a component in many horror films thereafter. The idea was to get the audience to expect something and then catch them totally off guard from another direction.”

Ironically, the first horror and thriller films of the sound era, a good ten years before Lewton, did not fully exploit the startle effect. The massively popular *Dracula* (1931) offers no end of Gothic mise-en-scène. The Count glides about, a highly visible, stately menace, never once making a startling move or entrance. This is a bit odd, for we know that the theater made use of the startle response in earlier outings. A 1927 review from the *Times* on the opening of *Dracula* in London’s Little Theater suggests just how sensational the play was:

What then conjures up a memory of the sleepless torment of an earlier evening? The noises chiefly . . . the noises are quite the sole contribution to alarm. If only you shout loudly or strangely enough, and if only you contrive to make the sound unexpected, somebody is sure to be terrified. In that respect, at least, this piece displays a sure sense of the theater. There is very little of Bram Stoker in it. But most of us jumped in our seats at least once in every act.

Meanwhile, back in the colonies, the American production of *Dracula* was touring to great success and likewise suffering criticism for its sensationalism—this from the *New York Mirror*:

To many the eerie horrors of this shocker suggested but the impotent boos of a child dressed in a bedsheet. One jumps instinctively because of the noise and clamor of the procedure, but there is still a deep set realization of the juvenility and fallaciousness of the youngster’s prank.
Like later deprecations of film startles, theater critics made it quite clear that startles were, in some manner, antithetical to art and culture. Yet startles, surely, whether theatrical or cinematic, are not without virtue. Their widespread use in the Gothic tradition suggests some value, if not for critics, then at least for artists and patrons. In this vein, the two Dracula stage plays didn’t just resort to an occasional startle—they systematically deployed them—and with apparent glee. Skal’s annotated edition of the two major productions of the Dracula stage play include numerous stage directions that imply potential startle effects (12 for the English play; 16 for the American). Startling sounds included a number of offscreen bursts: gunshots, terrible screams, wolf-like howls, the pounding on and tearing down of doors, and “maniacal laughs” from Renfield. Rapid visual movement was achieved through quick entrances, flashshots, and trap doors.

Relative to theater, then, Hollywood was atypically slow in developing the sensational potential of the startle effect, but, of course, theater had centuries of practice to draw from. Unlike the theatrical startle (where sheer loudness can function much as it does in real space), the modern film-based startle relies heavily on precise manipulations of editing and camera position, neither of which are available to the stage play. The simple historical lesson is that, ironically, the startle effect was not fully exploited in cinema until a decade after horror’s “first wave,” and then by Val Lewton, a producer frequently cited as the most literary and cultured director ever to work in horror. Lewton included and modified startle effects in all nine of his horror films, regardless of who was in the director’s chair: Jacques Tourneur, Mark Robson, Robert Wise. Lewton’s sensational effects were soon copied by other filmmakers. An extended set piece from Lewton’s The Seventh Victim (1943), which contains five startle effects within a few minutes, so impressed Carol Reed that he adapted it for The Third Man (1949). Apparently Lewton’s bus was worth repeating, and, like certain magic tricks, became an audience favorite.

Malignéd as mindless and a hallmark of B-movies and exploitation fare, the film-based startle effect can actually be found in all manner of horror and thriller films, from blockbusters like Rosemary’s Baby (1968), The Exorcist (1973), Jaws, Jurassic Park (1993), and Independence Day (1996) to thrillers like Jennifer 8 (1992), The Client (1994), and Blink (1994). The effect can also work on the television screen, in made-for-TV films such as Salem’s Lot (1979), and in series such as “The Night Stalker” (ABC, 1974-75), “Tales from the Crypt” (HBO, 1989), and “The X-Files” (Fox, 1993-).

The traditional view is that startle represents the most extreme form of sensationalism, a stark contrast with the ideals of art and thought. Here is Stanley J. Solomon:

Shock all too frequently springs merely from surprise, generated equally by a murderer leaping from a dark alley with knife in hand, and a child jumping from behind a wall and yelling “Boo” . . . The horror film, then, cannot be judged on its surprises unless the surprises are integrated into a meaningful pattern of horror. . . . Sheer sensationalism, the standby ingredient of the genre, is of course merely an avoidance of art and thought. 11

The contempt and neglect of startle has hidden something potentially profound. A bus arrives in Cat People and viewers are startled; a bus arrives in The Graduate (1967) and viewers smile.

The Threat Scene and the Formal Conventions of the Startle Effect

The core elements of a film startle effect are (1) a character presence, (2) an implied offscreen threat, and (3) a disturbing intrusion into the character’s immediate space. This is the essential formula (character, implied threat, intrusion) one finds repeated hundreds and thousands of times since Lewton’s first bus effect.12 Lacking character, threat, or intrusion, the possibility of startle appears negligible.

It is informative to reflect on films that should generate startles but that don’t. In one category we have loud, violent, and frightening films like those from Quentin Tarantino. For all their mayhem, Reservoir Dogs (1992) and Pulp Fiction (1994) do not typically lead to startles, probably because offscreen space is not sufficiently evoked. A second relevant category of films are those that mount what I call “mock threat scenes,” where the viewer watches a character teasingly feign a startle or attempt to startle a nearby character, as in Jurassic Park, when Dr. Grant (Sam Neil) horrifies the young children he is shepherding through the park by pretending to be shocked by a massive electrified fence. In an earlier mock startle from The Haunting (1963), Luke (Russ Tamblyn) annoys his fellow paranormal investigators during a spooky lull inside the old Hill House by leaping, yelping in pain, and claiming a statue stepped on his foot. Both films, of course, are notorious for startle effects that do work. Then there are
parodic threat scenes/startle effects, as in Carl Reiner's *Fatal Instinct* (1993), a parody of classic film noir and big-budget Hollywood thrillers. Near the end of the film, gumshoe Ned Ravine (Armand Assante), alone in his big dark house, opens a bathroom medicine cabinet—a black cat screeches and leaps out. Contextualized amidst constant silliness, *Fatal Instinct*'s cat-startle, itself formally indistinguishable from effects which have startled viewers, likely has yet to startle any viewer on this planet.13

Along with the tone of a film or sequence, pacing appears crucial to generating film startles. By “pacing,” I refer to the speed at which a threat scene develops, a factor contingent upon rates of staging, camera and figure movement, editing. More complexly, pacing also consists of what we might label the viewer’s perceptual comprehension rate, the maximum rate he or she may recognize objects, their locations, trajectories, and velocities within the imaginary film space. Psychologist Robert Plutchik believes cognition evolved as a mechanism to predict the future.14 In this framework, startle appears to reflect microsecond failings to predict (perceptually anticipate) the identity, location, or status of a stimulus in a threatening context. We can tease out the significance of pacing to viewer surprise and startle by conducting a brief thought experiment. Let us take some infamously frightening threat scenes and potent startle effects, say from *Night of the Living Dead* (1968), *Repulsion* (1965), and *Suspiria* (1977), and play them for first-time viewers on a variable speed projector. It is quickly apparent that the startle effects from all these films are rendered impotent when sufficiently slowed. The results are even more revealing because, even when slowed, fear and disgust remain viable, if not amplified, during the presentation. Evidently scene pacing and spectator comprehension rate impact viewer surprise/startle. A comparison of a threat scene/startle effect in *Alien* (1979) with a derivative one in *Deep Space* (1987) will illustrate how pacing and tone renders some threat intrusions startling and others predictable, if not silly.

Near the end of *Alien*, Ripley (Sigourney Weaver), alone aboard the *Nostromo* with a deadly alien life form, decides to activate the ship’s automatic detonation system and escape in a shuttle craft. With only minutes to escape, Ripley races through the hallways to a shuttle, flame-thrower in one hand, a carrying-case holding pet cat Jonesey in the other. The electronic voice of Mother, the ship’s computer, warns of the ship’s imminent detonation as emergency lights flash, steam is vented, and the atomic reactor overheats. Ripley backs quickly down a hall, her flame-thrower covering her retreat. It is here that director Ridley Scott expertly manipulates framing by cutting to a close-up of Ripley’s sweaty, exhausted face as she leans against a bulkhead and carefully peers around a corner, white strobe flashes and red warning lights illuminating her. Scott achieves a visual frenzy corresponding to the dramatic moment. With the labyrinthine offscreen space of the *Nostromo* hallway hidden beyond the narrow onscreen close-up of Ripley’s frightened face, Scott changes the tempo of the scene, Ripley’s careful pause at the corner counterpointing her frenzied backtracking just moments before. As Ripley’s eyes come ever closer to the unseen space around the corner, the white strobe flashes are replaced by an incessant red glow from screen right. Here Scott mounts his startle intrusion. In a shot only one-and-a-half seconds long, the viewer shares Ripley’s point of view of the alien: head rearing and moving quickly, searching, perhaps sensing Ripley. The previously quiet music track erupts on cue with the alien image, an ominous bass and cello swell that matches the alien’s rising movement and then continues over Ripley’s horrified, frozen reaction. Realizing her access to the shuttle is blocked, Ripley returns to try to override the automatic detonation of the ship.

This effect is powerful for many reasons, not least of which is the film’s overall phenomenal trajectory, which successfully engages viewers in imagining one of cinema’s most dreadful offscreen threats (try to remember the alien before it was overexposed through sequels, comic books, and millions of toys). In contrast, Ripley is a sympathetic, even admirable character, and, by film’s end, the sole survivor and only remaining character for viewer identification. In addition, Scott manipulates pacing at the crucial moment of the threat intrusion, contrasting near motionlessness with frenetic movement, achieved through the juxtaposition of Ripley slowly inching toward the corner in close-up and the brief shock cut of the rapidly moving alien. This shock cut is not just a narrative surprise, but a formal one, a violation of the established pace of diegetic motion, editing, and shot duration.

*Alien* benefited from a large budget and a good script, from Ridley Scott’s experience producing slick television spots and dynamic feature films, and from a collection of crafts and effects personnel as good as any ever assembled for a science fiction or horror film. Fred Olen Ray’s *Deep Space* comes out of a different tradition. One rung below Roger Corman in the pantheon of low-budget filmmakers, Ray makes films for the exploitation and straight-to-video markets. As a low-
Alien:
Ripley slowly approaches a corner as she flees a Nostromo about to self-destruct.

The alien rears up and moves toward Ripley/camera.

Ripley frozen with fear, just before she flees.

budget copycat of Alien, Deep Space provides an excellent opportunity to compare the effect of tone and pacing on startle affectivity.

Deep Space is set not in space, but in a large American city, where character actor Charles Napier plays a tough cop out to stop a military-industrial weapon set loose on an unsuspecting populace. The weapon turns out to be a toothy, tentacle-hurling, low-budget variation of H.R. Giger’s alien design. It is this daunting beast that Napier must confront in a dark and deserted warehouse. Carrying a combat shotgun, a bandoleer of shells slung across his chest, and two pistols wedged between his belt, Napier enters the warehouse alone and is quickly startled by a band of lovely white pigeons, one of which perches on his shoulder until he carefully brushes it off. It is about this time that the viewer notes how well a fog-machine can dramatize the space of an enclosed warehouse. Continuing his search in the foggy moor of the warehouse, Napier discovers, like some misplaced basketball, the head of a security guard. As he backs away from the sight, Ray contracts the frame to a medium close-up, an unmotivated red light illuminating the actor. Napier continues to back up as the monster moves forward into the background of the shot (an obvious homage to Ripley’s hallway meeting with the alien on the Nostromo). Throughout, the electronic music meanders in the background with little sense of rhythm or dramatic tempo. With Napier in the foreground and the toothy one in the background, the monster gives a feeble roar and Napier an equally feeble reaction of horror: the fight is on.

Obviously Ray is sending up the genre and Alien, but Deep Space does include other scenes with vigorous startles. Since threat scenes are scene-level constructions, they canpowerfully and quickly establish a predominant tone of horror or comedy independent of a narrative’s overarching emotional tenor.15 The
ineffectualness of the final battle in *Deep Space* is not a result of the film’s overall context (there are other threat scenes in *Deep Space* that do trigger startles). Rather, as products of their immediate spatial, tonal, and formal contexts, threat scenes are, considering affect, highly local and independent structures. Locally, then, Scott keeps his alien in offscreen space as much as possible, while Ray parades his alien for all the world to see. Where one threat intrusion is masterfully manipulated to generate fear and startles, the other generates ridicule, largely because the alien, already weakly rendered, is shown excessively, its intrusion more lurching than abrupt. In the end, *Deep Space*’s slightly arch, less-than-horrific mood largely mitigates the possibility of viewer startle, a mood best exemplified by a one-liner Napier utters to his partner before squaring off with the film’s threat: “I’m going to kick a little monster ass.”

If tone is crucial to spectator fear, what other factors impinge on spectator surprise?

Nearly all viewers know that horror and thriller films might contain startle effects. How, then, can they be surprised by effects they know are coming? I suggest that the mind monitors space (including representational—film space) for the location, identity, and status of nearby objects. Similarly, Robin Horton proposes a “primary theory” of human cognition that transcends culture and is based, in part, on a continual need to make “two major distinctions . . . between human beings and other objects; and . . . between self and other.” There is an obvious utility to monitoring the flux of proximate objects, of which none are completely stable, predictable, safe. Location constantly evolves relative to a perceiver. Identity can change in the most fundamental ways: the living die; the dead move; the limb becomes a snake, the friend a murderer. The state of objects is in constant flux: the fixed breaks away and falls; the tumbling projectile comes to rest; life rots. Meanwhile, conscious attention is preoccupied with narrow and new concerns. Would consciousness be capable of deactivating such essential survival cognitions simply by recognizing the virtuality of a nearby space? Not likely, say Bryon Reeves and Clifford Nass, who argue in *The Media Equation: How People Treat Computers, Television, and New Media Like Real People and Places* that

Modern media now engage old brains. People can’t always overcome the powerful assumption that mediated presentations are actual people and objects. There is no switch in the brain that can be thrown to distinguish the real and mediated worlds. People respond to simulations of social actors and natural objects as if they were in fact social, and in fact natural. It seems an obstinate and defensive rationalism that would deny our experience of film space and film objects any of the phenomenological depth we bring to reality.

One last startle from *Alien* might help with an analysis of viewer surprise as a microsecond phenomenon. After Kane (John Hurt) dies from the violent birth of the infant alien, Ripley, Parker (Harry Dean Stanton), and Brett (Yaphet Kotto) go searching for the beast in the massive *Nostromo*. The search party carries a light, a large net, a six-foot electric prod, and a jerry-rigged sensor. The mise-en-scène is classic dungeon darkness and gothic gloom, the literal bowels of this massive ore-mining ship. Following the readings from her motion-tracker, Ripley stops before a row of squat metal lockers. She whispers to her hunting partners, “Parker, Brett, it’s in this locker.” The three prepare to open the locker door, and Ripley even gives a countdown: “All right, Parker, when I say . . . right now.” From a low-angle three-shot of the tense crew members, the startle effect is timed to a shock cut of an extreme close-up of Jonesey the cat, mouth agape, scratching and shrieking inside the locker; a reaction shot of the three crew members quickly follows: they are jerking downward, attempting to capture the terrified cat, which Brett lets go because “It is only a cat.” The sound burst that contributes to this startle effect is synchronous with the shock cut of Jonesey and is a symphony of discordant overlapping sound effects: cat screeches, metal hinge movements, clatter of equipment, actor exclamations. Although completely telegraphed, and the oldest trick in the book (the cat-in-the-closet routine parodied by Reiner), the startle is powerfully affective. The conclusion we can draw, once again, is that conscious reason and a familiarity with genre conventions are poor methods for defusing the involuntary startle response system, a system keyed to momentary disturbances. Indeed, this cat-in-the-box scene should be no general or global surprise coming, as it does as the eleventh threat scene in *Alien* and as the eighth startle.

How does surprise empower *Alien*’s Jonesey startle? Although first-time viewers could have anticipated the locker opening as a likely startle moment, they would have been in suspense over the outcome of this upcoming startle effect: Will the locker be empty or contain something? Will the something be dangerous or benign? If dangerous, what will the threat do to the
Alien:
The motion-tracker indicates something moving inside the locker.

Ripley, Brett, and Parker inch closer.

The cat reacts in a frenzy of movement.

Ripley, Brett, and Parker startle in unison.
crew members? Comparing affectively charged startle effects with weaker ones exposes how the weaker effects may develop too slowly to surprise competent adult viewers. Sticking with the example at hand, first-time viewers very likely are surprised by the intensity of the visual and auditory stimulus of the Jonesey startle. The shots preceding the shock cut of Jonesey range from 30 to 5 seconds—the shock cut is only about 1 second. The viewer’s overall sense of a scene’s speed is effected by cutting rate as well as the degree and type of movement of objects within the frame. In her shock cut, Jonesey is literally in a frenzy of motion—her movements, for a first-time viewer, would almost resist coherent cognition, a bit of perceptual overload accentuated by the extremes of the shot scale: we see only the cat’s head and forepaws. Also, at this point in the narrative, first time viewers are unsure of the ontology of the rapidly evolving alien organism—it might become anything. This surprising visual sensation of Jonesey is coupled with auditory surprises. As I noted, the sound burst for this startle is a complex composite of various sounds, all of which, presented quickly, register, but as a phenomenal bit of caterwauling, made the more surprising by the preceding sound level that was set quite low.18

Implications of Startle for Theory

A number of studies support the finding that “the vigor of the startle reflex varies systematically with an organism’s emotional state... specifically] the startle response (an aversive reflex) is enhanced during a fear state and is diminished in a pleasant emotional context.” Researchers have come to this conclusion through the method of showing subjects slides (that is, representations) previously classified as pleasant, neutral, and unpleasant.

pictures of violent death, snakes, bloody wounds or burns, disasters, aimed guns, medical injection, and angry, destitute, or starving people; neutral slides were generally common household objects, such as a hairdryer, a book, and shoes; positively valent pictures included opposite-sex nudes, romantic couples, babies, cuddly animals, sports scenes, and appetizing food.19

Subjects are then startled with sound and light bursts while viewing images from each of the three categories. Amazingly, startles are not only strongest to negative images, but also weakest to positive images, with neutral images falling between negative and positive, a correlation that is “independent of measures of orienting, arousal, and interest in the materials.”20 Some researchers hold that positive images inhibit the basic level of startle response.

Other experiments have shown startle amplification even without slides or video images while subjects recall and imagine negative-rated sentences, such as: “I tense as THE NURSE SLOWLY INJECTS THE SHARP NEEDLE INTO MY UPPER ARM, and beads of sweat cover my forehead.” And, similarly, positive-rated sentences—“I AM RELAXING on my living room couch LOOKING OUT THE WINDOW ON A SUNNY AUTUMN DAY”—lead to less powerful startle blinks than either negative or neutral sentence imagery.21 The significance of this study should not be lost on humanists, nor rejected out-of-hand by those threatened by scientism or the wires and electrodes of experimental psychology. What is being exposed here is the power of the imagination, its capacity for visualization, and a linkage to affect that bypasses conscious reason.

In a major synthesis of theories of film spectatorship, Judith Mayne argues that much of film theory stems from two equally “extreme positions”—either a version of “apparatus” theory in which the viewer is seen as fully determined by the narrative film, or a reconsideration that sees viewers as active and resisting consumers of films. For example, Mayne contrasts Raymond Bellour and the Camera Obscura approach with Stuart Hall and cultural studies theorists like John Fiske. To Mayne,

Both positions ascribe an unqualified power to the text, on the one hand, and socially defined readers/viewers on the other. The problem in each case is that the activity of making meaning is assumed to reside in one single source—either the cinematic apparatus, or the socially contextualized viewer. To be sure, variations are allowed in either case, but they are never significant enough to challenge the basic determinism of the model in question.22

All the significant theories of film studies rest, ultimately, on simple models of causality, where a single agent serves as the determining force, whether the artist of auteurism, the patriarchy of feminism, the art object of formalism, the basic mental operations of cognitive psychology, the capitalism of Marxist theory, or the psychological conflict between desire and control at
the center of Freudianism. As writers and readers we quite easily reduce 300-page books and entire careers to a “basic determinism,” an expression of causality as simple as this causes that. Even nuanced works that explore dynamic, multi-causal relationships ultimately endow one agent as the primary causal force.

Startle is highly significant in this context. On first glance it appears an outstanding example of a biologically determined, universal effect, with little to do with culture, capitalism, or media apparatus. Not surprisingly, in Post-Theory, Noël Carroll uses startle to challenge the contemporary theoretical assumption “that every level of cinematic reception is fraught with political and ideological repercussions.” Carroll argues:

... it strikes me as incontrovertible that filmmakers often play upon what psychologists call the “startle response,” an innate human tendency to “jump” at loud noises and to recoil at fast movements. This tendency is, as they say, impenetrable to belief; that is, our beliefs won’t change the response. It is hardwired and involuntary. Awareness of this response enables theorists like me to explain the presence of certain audiovisual patterns and effects in horror films, without reference to politics and ideology. Indeed, insofar as the startle response is impenetrable to belief, it could be said to be, in certain respects, beyond politics and ideology. Moreover, such examples indicate that there is a stratum of theoretical investigation at the level of cognitive architecture that can proceed while bracketing questions of ideology.23

Similarly, David Bordwell argues that certain film effects such as startle are not utterly arbitrary and socially constructed, but are—adapting Ernst Gombrich—“sensory triggers”24 that are more indebted to nature than effects which rely on higher, socialized forms of learning.

The powerful biological determinism of startle (its hardwired status) is clear from Landis and Hunt’s studies in the 1930s. Using high-speed cinematography, the two psychologists recorded New York City policemen training at the firing range: “Every subject showed an eyelid response to every shot. No matter how familiar the men were with revolver practice, no matter how well trained they were, the lid reflex was present in every case” (The Startle Pattern, 36-7). Marksman, of course, do not want to startle while carefully aiming: “The men were not conscious of the blinking, head movement, and facial response and in a few cases emphatically denied the possibility of such a response. Convinced only by a demonstration of the film, they were quite surprised to find that they ‘made faces’ when the revolver was fired, despite their years of training” (The Startle Pattern, 37).

But startle is much more complex and interesting than dumb, hardwired reflexes like the sneeze and the knee-jerk. Even Landis and Hunt, who recognized and described a general startle pattern, noticed that no two startle responses were exactly alike. The nearer the onset of the original response (speaking of microseconds), the more innate, “hard-wired” the response; conversely, the further from onset, the more learning, context, and personality influenced behavior.

Ronald Simons, one of the few to write a book-length study of startle, holds that startle “is determined by a host of social and cultural factors specific to the ongoing life of the individual affected.”25 Beyond individual variation in startle, Simons describes a curious Indonesian syndrome called latah, where a minority of individuals in that culture exhibit, upon being startled, “violent body movements; assumption of habitual defensive postures; striking out; throwing or dropping held objects; shouting; repeating of words just said, thought, or attended to; naughty talk” (233). Similar culture-based responses by those unusually sensitive to startles, dubbed hyperstartlers, have been found around the world, in Japan, the United States, Siberia, Sweden, Thailand, Yemen, and the Philippines. Simon rejects cultural relativist theories that seek to explain latah as solely a Malaysian cultural result. Simons holds, and I believe he’s right, that latah and its cousins are founded on the universal startle response, but that particular cultures offer more or less fertile conditions for transforming this response into unique social practices.

In the last century, theorists of one camp or another have sought to enshrine nature or nurture as the dominant, even singular, determining force of human activity. The nature/nurture opposition, unfortunately, is the most ubiquitous and vigilantly defended either/or fallacy of our age. In seeking to balance film studies’ widespread embrace of social determinism at the expense of nature, David Bordwell reminds: “It is perfectly possible for a phenomenon to be culturally constructed and at the same time to be very widespread, or even universal, among human societies.”26 Startle, at first glance an outstanding instance of genetic determinism, becomes, with a second glance, a rich instance of cultural and personal elaboration. Eschewing foolish consistency, startle is at once genetically hard-wired,
socially constructed, and personally expressed. Echoing this point, British clinical psychologists Robert Howard and Rodney Ford note that a century of study confirms the belief that startle is a “universal physiological phenomenon consisting of an initial rapid involuntary phase and a secondary phase which is under some degree of voluntary control.”

A film-based startle is a highly localized and pregnant example of the contradictions of cinema: of the muddle of nature and nurture, of the generic form and personal psychology. Any attempt to simplify this event is a hobgoblin born of selective infatuation with only one aspect of a parallel, pluralistic mind. Poststructuralist theory recognizes those deterministic perceptual and emotional functions that are beyond our direct, conscious guidance, but then enshrines them as the only psychological processes that matter. Unfortunately, as Mayne well notes, counter theories, whether from cultural studies or cognitive science, frequently assert viewer activity at the expense of film’s active role in determining affect and thought. Mayne cautions that spectator “activity can be just as vapid and indistinct a term as ‘passivity’” (159).

Startles show that part of the mind works from an ontological naiveté embarrassing to the rational intellect. “Part of the mind” is a crude way of saying that film-based startles are characteristic of a mind functioning in a massively parallel, modular process. The popular folk model of the mind assumes a division of mental faculties. Academically this folk insight has been channeled through either a variation of psychoanalysis (split classically between Id, Ego, Superego) or, more recently, through a type of cognitive parallelism or modularity.

Eddy Zemach has recently employed this divided-mind foundation to rebut Kendall Walton’s famous “pretend” theory of aesthetic response. Zemach argues that fear and pity derived from narratives are not “quasi” emotions, but the real thing, although mitigated by a rational reader/viewer who maintains separate mental “dossiers,” one of which, a “dominant” one, asserts its rational awareness of fictionality. Although we may fear the green slimes of film, and pity the Anna Kareninas of fiction, we do not act on these emotions: “For rational adults, emotion is never a cause of action; rather, it gives one a reason to act in a certain way. Reasons are weighed against other reasons: they are defeasible, so emotion need not lead to action” (43).

Regarding the startle response: viewers can be startled by film sound and motion in part because the systems that immediately attempt to judge sound and visual motion make no distinction between real and apparent motion, or real and amplified sound. Films can manipulate us, in part, by actually manipulating our environments, constructing energy fields we take, before reason, to be extensions of the physical world.

Who’s Afraid of Surprises

Startle has probably been neglected, to some extent, because no theory has given us the framework with which to view it as emblematic of something important about viewer psychology. In addition, startle may seem to most humanities-trained film scholars a subject of study reserved for social scientists and psychologists. But it is certainly more than a curio. As a humanities-trained film scholar, I don’t recommend our field begin conducting laboratory experiments (although it would certainly be useful to consult with those developing experiments that focus on film and media). However, if we continue to neglect the recent, amazing work in the social sciences and cognitive psychology that relates to and informs our concerns with media effects, we will maintain an insular and comfortable ignorance and fail both our individual curiosities and our collective responsibility to contribute toward intellectual discovery.

Who’s afraid of startles? I can playfully speculate. Poststructuralists might not fear startle specifically, but they are decidedly troubled with the larger concepts startle necessarily implies: biology, anthropological universals, and evolutionary adaptation that cannot be, in the end, fully dissolved or transformed in Culture. New cognitive rationalists and traditionalists might fear startle because it is, to a large degree, patently deterministic, an irrational expression of the mind that cannot be, in the end, reduced to free, conscious agency. Startle slept through the Enlightenment. For non-academics (most film reviewers and other journalistic guardians of the public good), startles are the ultimate form of sensationalism, artlessness, and mindlessness. The only groups not afraid of startle appear to be film viewers and makers, whose appreciation of the effect remains strong after 50 years. Why have startle effects become a common feature of the horror and thriller film genres? The why question is more difficult and diffuse than how startles can occur in film spectators. My own conclusion, not at all original, is that startles prove to us, in the very maw of virtual death, how very much alive we are. Much like the genres they are found in, startles engage our primitive psychophysologies, and, for an hour or so, mock and remember mortality. Perhaps, too, in revealing what we do not actively con-
control of our psychology, startle effects reaffirm the animalistic, the atavistic, and the irrational expressions which the horror and thriller genres have long exposed beneath decorum, utopianism, and reason.

Robert Baird has worked in Hollywood and taught and written about film at the University of Illinois, where he currently works at the Center for Educational Technologies. He is Webmaster for Roger Ebert’s Overlooked Film Festival (http://www.ebertfest.com) and the designer of an oft-praised Web site for North by Northwest (http://www.english.uiuc.edu/104/northwest).

Notes

1. According to the classic study carried out by Carney Landis and William A. Hunt—The Startle Pattern, (New York: Farrar & Rinehart, 1939)—the startle response consists of “the blinking of the eyes, head movement forward, a characteristic facial expression, raising and drawing forward of the shoulders, abduction of the upper arms, bending of the elbows, pronation of the lower arms, flexion of the fingers, forward movement of the trunk, contraction of the abdomen, and bending of the knees” (21). All of which may transpire in 0.3 to 1.5 seconds (SP, p. 31). Not all startle responses involve the full complement of physical reactions. At base, startle consists of the core features of the eye blink, the head movement forward, and the facial grimace.

2. In the same vein, Jenefer Robinson proposes that the startle effect can serve as a “model of emotional response” which “helps us understand the structure and function of emotional response in general” (54). Reversing philosophy’s infatuation with highly conscious and refined emotions, Robinson argues that any emotional response can be seen as an elaboration of the startle dynamic, “as a response that focuses our attention on (makes salient) and registers as significant to the goals (wants, motives) of the organism something in the perceived (remembered, imagined) environment” (6). “Startle” in The Journal of Philosophy, 92:2 (1995), 53–74.


8. Lewton’s horror films are, in descending order, based on total number of startle effects: The Seventh Victim (8 startles); The Leopard Man (1943; 4 startles); Bedlam (1946; 4 startles); Cat People (2 startles); The Body Snatcher (1945; 1 startle); I Walked with a Zombie (1943; 1 startle); Curse of the Cat People (1944; 1 startle); Isle of the Dead (1945; 1 startle), Ghost Ship, Lewton’s only other horror film, has long been out of circulation due to its contested authorship; reviews and plot descriptions of the rather sensational tale suggest, however, that the film contains startles. According to Edmund G. Bansak’s Fearing the Dark: The Val Lewton Career (Jefferson, N.C: McFarland, 1995), Lewton apparently got feedback from his first bus effect in Cat People: “When Lewton attended a sneak preview audience for the film, he sat in the back and witnessed an entire audience jumping in unison at the appropriate time” (133).


10. Playing the game of “cinematic firsts” is a bit dangerous, given how little of early cinema and records of early cinema spectatorship survive. I am certain that viewers were occasionally startled by films before Lewton’s work at RKO. For instance, a very few horror films of the 1930s (The Mummy [1932] and Island of Lost Souls [1933]) offer scenes where characters act startled by threats in contexts that might have made some viewers responsive. Even silent film might have startled viewers, especially since much of it was accompanied by in-house music and effects. Beyond these caveats, it remains that the early films I am familiar with seem to lack the formal manipulations—shock cuts, tight framing, close-up reaction shots, intense sound modulations, and rapid visual movement—which Lewton first employed. My point, then, is that Lewton formalized, even institutionalized, the startle for horror and thriller film in 1942 with his Cat People.

11. Stanley J. Solomon, Beyond Formula: American Film Genres (New York: Harcourt, Brace, Jovanovich, 1976), 112. The strength and persistence of the condemnation of startle effects can be seen in the defensive comments of some threat scene directors. On the Criterion edition laserdisc commentary for Halloween (1978), John Carpenter three times comments on startle effects in a dismissive manner: “You’re about to hear one of my musical stings that permeate the movie. I would say rather crassly but effectively.” Later, he characterizes his use of false startles based on breaking glass and a ringing telephone as, respectively, a “cheap trick” and a “kind of cheeseball trick.” While this self-criticism of startle might play well under the bright lights of academic and critical analysis, it does not lead, apparently, to any renunciation of the effect. More than a decade after Halloween, Carpenter’s In the Mouth of Madness (1995) includes even more startle effects than does his Halloween. Indeed, the sound track for Madness betrays a veritable celebration of the sonic aspects of startle, employing intense and discordant sound bursts as loud and dynamic as any. The profits of this cheap trick apparently exceed the cost of any critical tax levied against it.

12. Some rare and intriguing deviations do exist. See The Hidden (1987) for a threat scene where a dog serves in the identificatory protagonist position of a startle effect. Filmed at a dog’s-eye level, a cute mutt approaches a female stripper who has just fallen to her death in an alley. The corpse’s eyes (an alien life form occupies her body) pop open (startle cue) and the alien/stripper lunes for the dog. The obvious implication, proven by countless outings by Lassie and Rin Tin Tin, is that humans can strongly identify with dogs and other domesticated animals.
13. A true threat is not necessary to generate a startle response. What is needed is only the possibility of a threat, the intimation of something dangerous offscreen. In fact, in many instances, the offscreen threat turns out to be comically unintimidating: a ringing telephone in The Exorcist; a cuckoo clock striking the top of the hour in the original Invasion of the Body Snatchers (1956); the ubiquitous domesticated feline (Jonesey the cat, twice used as a false startle in Alien); the ever watchful guard dog (The Seventh Victim, Candyman [1992], The Hills Have Eyes [1978], The Howling [1980]). Other animals that have been enlisted for false threats: an owl in Cat People (1982), an excited baboon in The Fly (1986), a bird in I Walked with a Zombie, a leop- ard in The Leopard Man, a raccoon in The Client, a squirrel in Species (1995), and, my favorite, a little bunny in The Spiral Staircase (1946). Besides the extensive catalogue of false startles based on flora and fauna (a tumbleweed in The Leopard Man), there is the widely used example of the friendly blindsider startle, the old tap-on-the-shoulder routine (The Exorcist, Jaws, Halloween, The Blob [1988], Aliens, Invasion of the Body Snatchers [1978], Fatal Attraction [1987], Knight Moves [1992]). Notice that most false startles are dominated by anthropocentrically significant agents: humans and animals. These categories are, of course, potentially threatening in ways vegetable and mineral are not.


18. Most startle effects rely on a sound bump, a sudden burst of sound effects, dialogue, and/or music. While many startle effects rely on symphonic bursts of sound, a few single element sound bursts can be heard, like the powerful Foley bump at the end of The Stepford Wives (1975). Katharine Ross slowly climbs the stairs in her own home, searching for her children, believing her husband to be conspiring with the local Men’s Club to manufacture better women, and is startled by her husband (Foley burst) who has snuck up behind her. Music, ominous and discordant, unquestionably contributes to the fear state that prepares the way for startle responses: Bernard Herrmann’s Psycho-shower screeches, John Williams’ shark motif from Jaws, “Tubular Bells” from The Exorcist. But music can do more than set the mood. It can serve as the primary or sole auditory stimulus for startle. A massive symphonic music burst in Roger Corman’s House of Usher (1960) heralds Vincent Price’s unexpected entry into the film. In Repulsion, Polanski uses a solo music burst in a startle effect that turns on the discovery of a skinned rabbit corpse inside Deneuve’s handbag. While startle effects obviously depend on the sheer loudness of sound bursts, I suspect that the inchoate, disharmony of many sound effects (exploited by odd instruments and synthetic sound combinations) stimulates anxiety in viewers who are attempting to maintain some sense of and orientation to a film’s aural setting.


