Psychocinematics

EXPLORING COGNITION AT THE MOVIES

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Preface

We relish a good movie as it transports us into a plot stirring our sensations, thoughts and feelings. Through movies we experience life on distant planets, confront unforeseeable dangers, and at the end enjoy the pleasures of a job well done. Since film's early inception filmmakers have "experimented" with the medium and discovered novel ways of driving our sensations, sparking our imagination, and instilling emotions. I suspect we laugh, cry, and feel fear more often as we watch movies compared to any other form of entertainment. How do filmmakers engage our attention? How do they bring a story to life? How are our emotions evoked through empathetic engagement with the characters?

The contributors of this book consider these questions and in particular address the viability of a scientific approach to our movie experience—or what I have coined psychocinematics. Until recently, only a handful of scientists have conducted experiments on the psychology of movies, though for close to a century philosophers and film theorists have delved deeply into the mind of the moviegoer. In particular, scholars engaged in cognitive film theory have set the philosophical foundation for psychocinematics. In this volume, philosophers, film theorists, psychologists, and brain scientists have come together to offer their perspective of a scientific approach to our understanding of the way movies move us.

For the scientist, an understanding of movies can go further than describing the aesthetic nature of this engaging art form. As scientific tools, movies drive cognitive processes in a more naturalistic manner than the typical stimuli used in psychological research (usually pictures or words). Recently, movies have been used to investigate the psychological (as well as biological) underpinnings of early visual processing, of eye movements as guided by attentional focus, of the way we structure events, and of emotional engagement. Psychocinematics offers a means of understanding psychological processes in a dynamic manner as they unfold in time. A primary motivation for bringing together these film experts is to encourage psychologists and brain scientists to consider movies as a potent tool for unleashing mental processes in a more natural way.
HOLLYWOOD STORYTELLING AND AESTHETIC PLEASURE

Todd Berliner

HOLLYWOOD CINEMA, as film commentators often say, is concerned primarily with telling stories. This fact might lead one to understand that the pleasure of Hollywood narrative comes from watching good stories. That understanding is inadequate. The pleasure of Hollywood narrative comes not just from good stories but from good storytelling.

Storytelling—or, more technically, “narration”—is the process by which an artwork selects, arranges, and renders its narrative information in order to stimulate the perceiver to perform cognitive activities (Bordwell, 1983, p. xi). Narration arouses what could be described as a controlled act of imagination in which the perceiver mentally constructs a story based on cues from the work of art. Pleasure derives from the mental activities that narration stimulates, the result not just of watching stories but of constructing stories in one’s mind. The perceiver’s story construction process entails unifying separate elements of a narrative. Cued by the interplay between elements that encourage narrative unity and elements that resist it, the perceiver endeavors to construct a story that is coherent and logical.

Hollywood cinema generally makes the viewer’s story construction process fairly easy, and fluently processed artworks have been shown to lead to pleasing aesthetic experiences (Reber, Schwarz, & Winkielman, 2004; Zajonc, 1968). However, easy processing does not account for the intensity of the pleasure people gain from Hollywood storytelling. Viewers do not just experience Hollywood movies in a pleasant way. Viewers are often passionate about Hollywood movies, their engagement active and exhilarated. In the pages that follow, I set out to demonstrate that exhilaration results when Hollywood narratives strain our efforts to unify their features, intensifying aesthetic pleasure by making the story construction process more energetic.

In order to understand the aesthetic pleasures of Hollywood narration, we should examine first the features that encourage the viewer to construct unified stories. Most commentary about Hollywood storytelling—from film scholars, aesthetic theorists, and authors of screenwriting manuals—has focused on such unifying features, which regularly lead to the calm pleasures associated with fluently processed artworks. However, to explain the
exhilaration people often feel when experiencing Hollywood movies, we must also examine the ways in which Hollywood movies obstruct efforts to unify their narratives, thwarting conceptual understanding by complicating the viewer's story construction processes. Such complications intensify our cognitive activity and lead to more exhilarating aesthetic experiences. By studying Hollywood's propensity for both narrative unity and disunity, my goal is to offer a more complete account of the aesthetics of Hollywood storytelling than has yet been offered in the disciplines of film studies and aesthetics.

Toward Narrative Unity

A unified narrative develops according to an internally consistent story logic, its various features fully connected and interrelated to form a seemingly organic whole. The principle of unity in art dates to Plato and Aristotle and has governed much criticism of the arts, particularly in the evaluation of forms that follow classical principles of narration, such as Hollywood cinema. A disunified narrative, by contrast, contains gaps, discontinuities, improbabilities, incongruities, or other elements out of harmony with story logic. We expect disunity in avant-garde narratives, such as those in surrealist cinema, but when it comes to Hollywood, we generally expect to find narrative unity.

Hollywood cinema, scholars have noted, is committed to a clear, unambiguous, coherent, and unified presentation of story information, its separate parts working together toward a harmonious narration of events. Largely because of its commitment to formal unity, Hollywood cinema has been called a "classical" art form. Bordwell uses the term "classical Hollywood" to refer to a set of filmmaking practices that promote narrative and stylistic unity. Adopted by Hollywood during the early years of studio filmmaking, such practices, Bordwell (2006) argues, persist in contemporary American cinema (pp. 4–17). Indeed, several film scholars (Bordwell, Staiger, & Thompson, 1985; Buckland, 2006; Carroll, 1988; Perkins, 1993) regard unity as a chief organizing principle of mainstream filmmaking. Perkins (1993) says that a film's credibility "depends on the inner consistency of the created world ... [which] must obey its own logic. There is no pretense, whether it be Significance, Effect or the Happy Ending, sufficient to justify a betrayal of the given order" (p. 121). Advice from Hollywood screenwriting manuals invariably accords with scholars' observations on this point. "Everything in the story should contribute to its structural unity," L. Herman (1965, p. 39) writes, an admonition echoed in manuals dating back to 1917 (Cf. Ball, 1917, pp. 38–40; Cowgill, 1999, p. 80).

Hollywood has adopted storytelling principles that make its movies easy to process, and, as several empirical researchers have shown, processing fluency correlates directly with positive aesthetic evaluations. Subjects have shown preferences, for instance, for familiar objects (the "mere exposure effect") and easily identified objects (Zajonc, 1968); prototypical and average objects (Langlois & Ruggman, 1990; Martin & Moore, 1988; Rhodes & Tremenew, 1996; Whitfield & Slatter, 1979); objects that show figural goodness, figure–ground contrast, and symmetry (Koffka, 1935; Shepard, 1994); and objects with enhanced clarity (Whittseya, Jacoby, & Girard, 1990) because of the efficiency, speed, and ease of processing (Whittseya, 1993).

Hollywood narration enhances processing fluency by making the connections between narrative elements inordinately clear. Carroll (2004) attributes Hollywood's "easily graspable clarity" first of all, to "pictorial recognition" (p. 487). Unlike literature and other art forms that rely on symbol systems that require independent mastery, movies are image based and therefore "rely on a biological capability that is nurtured in humans as they learn to identify the objects and events in their environment" (p. 487). Second, according to Carroll, Hollywood movies use editing, variable framing, and other devices that precisely control viewer attention (p. 490). Finally, Hollywood narration follows a question-and-answer structure that makes stories easy to follow and satisfies the viewer's desire for understanding: Scenes and events in Hollywood movies either raise questions or answer them; many do both (p. 494).

Scenes and events in Hollywood movies are conjoined, moreover, by means of causality, the principle that one event brings about another. In a classical narrative, events are linked not arbitrarily (x and y) or chronologically (x then y) but causally (x therefore y). According to Chatman (1978), causally linked events are "hinges" in a narrative structure and "cannot be deleted without destroying the narrative logic" (pp. 45–48, 53–56). One Hollywood screenwriting manual says flatly, "There should be nothing [in a screenplay] which is not clearly caused by what precedes and nothing which is not clearly the cause of what follows" (Cowgill, 1999, p. 2; cf. Marion, 1957, p. 94). Classical narratives are often called "linear" because one story event leads to another in a sequential progression toward narrative closure, when the cause–effect sequence completes its course.

Narrative clarity and causality make the perceiver's process of constructing a coherent story relatively effortless. Rarely does Hollywood narration make causal connections obscure, and Hollywood movies tend to avoid ambiguity and story information extraneous to the narrative's causal progress. According to Carroll (2004), events in Hollywood movies are automatically intelligible and highly organized. "Movie actions evince visible order and identity to a degree not found in everyday experience. This quality of uncluttered clarity gratifies the mind's quest for order" (p. 492). Hollywood movies offer streamlined stories designed to exclude the extraneous noise that makes ordinary experience so much more mentally taxing.

Bordwell has identified several components of Hollywood narration that further enhance narrative unity and processing fluency. First, a dual plotline structure—which promotes narrative parallels and causal linkages—encourages connections between separate elements in a narrative, particularly at the moment of climax, when the two interdependent plotlines frequently resolve at the same moment through the same character actions (Bordwell, 1985, pp. 157–158). Second, a goal-oriented protagonist, struggling to overcome overt obstacles, motivates narrative progress and reinforces causal connections. Third, deadlines and definitive resolutions provide narrative closure that contains the narrative by finishing it off. "The ending becomes the culmination of the spectator's absorption," Bordwell says, "as all the causal gaps get filled" (Bordwell et al., 1988, p. 17). Finally, scenes in Hollywood movies, Bordwell (1985, p. 158) notes, are also clearly demarcated by Aristotle's unities: unity of time (scenes have a continuous duration), space (a definable locale), and action (a distinct cause–effect phase).

Together, the foregoing principles of classical Hollywood narration make the viewer's process of narrative unification easier than with forms that are less clear and harmonious. Such easily processed artworks are, according to Reber et al. (2004), inherently and spontaneously pleasant.
Limitations of the Unity Theory

Unity, however, is only half of the story. Highly unified artworks do not excite enough mental activity to generate the intense aesthetic pleasure that people often gain from Hollywood movies. As Bazin (1985) and Bordwell (2006) have noted, Hollywood cinema, although fundamentally classical in construction, is still flexible enough to absorb elements that violate strict classicism. Films such as The Big Sleep (1946), The Killing (1956), and Vertigo (1958), for instance, although wedded to classical storytelling principles, contain features that thwart viewers' expectations for unity—features that add variety, complexity, and difficulty to viewers' experiences. The unity theory of classical Hollywood narration accounts for the mass accessibility and inherent pleasurability of Hollywood storytelling but not the intensity and elation people feel when experiencing Hollywood movies they love. Nor does it account for the aesthetic pleasures afforded by those features of Hollywood cinema that resist unity and fluent processing. We need, in other words, a more complete theory of the aesthetics of classical Hollywood narration.

Psychologists Armstrong and Detweiler-Bedell (2008) help us develop such a theory when they offer a distinction between two types of objects and the separate aesthetic pleasures afforded by each of them. They propose that processing fluency “explains the mild pleasure associated with simple or familiar objects” (p. 305), whereas powerful aesthetic experiences “require more prolonged, effortful processing as an object initially resists but then begins to yield to the mind’s attempt to understand and unify its features” (p. 308). Unlike “pretty” objects, which they associate with calm pleasures, “beautiful” objects, they argue, “resist fluent processing, thwarting conceptual understanding while nevertheless offering the prospect of such understanding” (p. 309). Beautiful objects excite what they term “exhilarated pleasure.” “Beauty,” they say, “is the exhilarating feeling that something complex, perhaps to the point of being profound, might yield to understanding” (p. 312).

The authors’ distinction between pretty and beautiful objects may not withstand scrutiny: I suspect that each of us could identify simple and highly unified works of art that we regard as powerful and beautiful, as well as strenuously processed artworks that we do not. Furthermore, although the authors cite numerous empirical studies in support of their “prettiness” thesis, they offer little empirical support for their argument that objects that resist fluent processing excite “exhilarated pleasure.” But their distinction points us to two correlative propensities in art objects—for unity and for disunity—and to the separate pleasures that tend to result from each of them.

Hence, although we have, from film studies, a theory of the aesthetics of unity in Hollywood narration and, from psychology, a wealth of empirical studies that support the theory, we do not yet have a theory that accounts for the aesthetic pleasure afforded by disunity in Hollywood narration. In the pages that follow, I present such a theory and support it with empirical research, particularly in the areas of insight and incongruity. The theory of narrative aesthetics proposed here sets out to demonstrate that Hollywood narration balances its propensity for unity with a correlative propensity for disunity in the form of gaps, discontinuities, incongruities, and other elements that do not operate in strict harmony with story logic. The theory sets out to explain the ways in which Hollywood narratives generate exhilarating aesthetic experiences by cuing viewers to resolve story information that resists viewers' efforts at resolution.

Toward Narrative Disunity

When I build something, I often take it to the very edge of its collapse, and that’s a very beautiful balance.

—Andy Goldsworthy, from Rivers and Tides: Andy Goldsworthy Working with Time (2001)

Although we attribute unity and disunity to a narrative itself, we ought not to think of them as inherent properties of artworks. The perceives creates narrative unity by joining separate elements within a work of art. Disunity, in turn, results when we fail. A notorious narrative disunity comes from Citizen Kane (1941), a story about a reporter’s search for the meaning of Kane’s dying word, “Rosebud,” a word uttered when no one else was in Kane’s room to hear him utter it. The violation of story logic, inasmuch as anyone notices it, is an aesthetic defect potentially so damaging that, when Orson Welles was told of it, he is reported to have said, “Don’t you ever tell anyone of this” (Ryan, 2009, p. 66). A narrative disunity, such as the one in Citizen Kane, occurs whenever we can't make story information cohere.

Hollywood narration, however, employs disunifying elements that heighten aesthetic pleasure. Artworks that merely present stories—without stimulating perceivers to construct stories—give perceivers nothing to do. Elements that interfere with narrative unity intensify the story construction process by making the effort more athletic: the more interference, the more mental activity required to unify a story. Such elements make an artwork more challenging and also, as we shall see, increase its potential to exhilarate our aesthetic response.

Stressing the value of unity in Hollywood narration, film scholars and the writers of screenwriter’s manuals have not fully recognized the role that disunifying elements play in Hollywood aesthetics. Bordwell (1985) goes the farthest toward recognizing the importance of disunity when he discusses the various devices Hollywood movies employ to complicate viewers’ story construction processes. Chief among these are retardation devices, which delay story completion, establishing causes without immediately revealing their outcomes. “Retardation devices,” Bordwell (1985) says, “being unpredictable to a greater degree, can introduce objects of immediate attention as well as delay satisfaction of overall expectation” (p. 165). Retardation devices cue viewers to fill in gaps in the narration, as viewers hypothesize events that the narration has so far left unspecified. Alternatively, plots can supply “masses of material” or misleading material that also complicates the viewer’s ability to resolve the story (p. 52). The plot’s rapid rhythm, he furthermore notes, impedes reflection and boredom. Finally, the variety of scenarios presented in a typical Hollywood movie prevents narration from becoming monotonous (p. 165).

Such typical devices ensure that a Hollywood movie is not all one note—that within its highly unified format, there is sufficient delay, momentum, and diversity in the plot patterning to inhibit easy story construction and maintain viewer interest. However, one also finds, in some Hollywood movies, incongruities in the narration that obstruct story logic, flat out violate it, or else cause viewers to fundamentally revise it. Such incongruities, I propose, do not inevitably cause aesthetic defects, such as the one in Citizen Kane. In fact, under certain circumstances, they benefit Hollywood movies. Skilled Hollywood storytellers can use the seeming flaw in an otherwise unified narrative to a movie’s advantage. Examining some celebrated Hollywood movies
Incongruity, Abduction, and Insight

Before we look at some aesthetically pleasing story-logic violations in Hollywood cinema, we must first understand perceivers' mental processes when encountering incongruous narrative information.

Such processes normally rely on a "fuzzy" type of reasoning that logicians and philosophers of science call "abduction" or what Lipton (2004) has called "inference to the best explanation." Abductive reasoning involves pondering evidence or problems and conjecturing a provisional explanation for them. The perceiver observes a fact incongruous with expectations (e.g., My car door has a huge scratch) and creatively infers a plausible cause (That juvenile delinquent next door must have keyed it). Abduction accounts for how people form hypotheses about the world based on hunches, and philosophers of science, such as Charles Peirce, have employed the concept of abduction to explain how scientific discoveries take place. "Its occasion is a surprise," Peirce says. "That is, some belief, active or passive, formulated or unformulated, has just been broken up" (Peirce Edition Project, 1998, p. 287).

Abduction is regarded as a "fuzzy" type of reasoning because it is approximate and less reliable than deduction and induction. Deduction, by contrast, is precise or "crisp" reasoning, in which conclusions necessarily follow from general principles, as in the syllogism: (1) All men are mortal. (2) Socrates is a man; (3) therefore, Socrates is mortal. Induction is the process of inferring probable causes and principles through testing and scrutiny. Unlike its more reliable counterparts, abduction can readily lead to false inferences and logical fallacies, such as post hoc ergo propter hoc ("after this, therefore because of this"). However, abduction also enables a perceiver to make creative connections unavailable through more strict sorts of reasoning. Making connections through abduction doesn't demand rigor or scrutiny. The process enlists our imaginations most of all: It relies on our ability to form new concepts, uninhibited by practical constraints.

Cognitive psychologists term the sudden apprehension of a solution to a problem insight—an "aha" moment in which a creative solution suddenly comes into consciousness as the perceiver understands relationships among elements in a new way or breaks free of unwarranted assumptions (Mayer, 1992; Smith, Ward, & Finke, 1995). Although the underlying cognitive mechanisms of insight remain mysterious, research suggests that apprehending solutions to "insight problems," such as anagrams, relies mostly on unconscious "special processes," rather than the inductive or deductive reasoning processes required to solve "non-insight problems," such as algebra (Bowden, Jung-Beeman, & Kouriou, 2003; Knoblich, Olsho, Haider, & Rhenius, 1999; Metcalfe & Wiebe, 1987). There is abundant scientific evidence for the existence of this moment of sudden apprehension (Kaplan & Simon, 1990; Metcalfe, 1986), and further evidence for the pleasures—joy, satisfaction, and other positive emotions—that attend it (Gick & Lockhart, 1988; Gruber, 1995; Jung-Beeman, Bowden, Haberman, Frymai, & Arambel-Liu, 2004; Seifert, Meyer, Davidson, Patalano, & Yamin, 1995; Sternberg & Davidson, 1995). Indeed, although my hypotheses concerning narrative incongruity may be tendentious, my point about insight is not. Insight—the moment when incongruous information suddenly fits—has been reproduced experimentally, and we have all enjoyed its attendant pleasures. Storytellers frequently induce the experience of insight, and studying the moments in which they do can help us understand some of the pleasures of narrative.

Given our understanding of incongruity, abduction, and insight, I propose that the process of resolving an incongruity sparked by a narrative follows these three stages:

1. The narration cues the perceiver to form a hypothesis about a story.
2. The narration surprises the perceiver by presenting information incongruous with the hypothesis.
3. Using abductive reasoning, the perceiver improvises an impromptu new hypothesis in order to resolve incongruous concepts and restore consistency to a set of beliefs.
Stage three is the thrilling moment of insight when what was improbable, inconsistent, or unimaginable suddenly seems inevitably right, and it sparks the pleasure that is of primary concern here.

Incongruity-Resolution and Aesthetic Pleasure

Humor and laughter studies provide the most comprehensive body of research, and perhaps the only empirical research, on the aesthetic pleasures of resolving incongruity. Most scholars of humor and laughter ascribe to some version of Incongruity Theory. The theory dates to Aristotle’s *Rhetoric* and was further developed by Kant (1743), Beattie (1759), Schopenhauer (1844), and others. It holds that humor results from the recognition of a violation of the patterns of an orderly world and that laughter, as Morreall (1981) describes it, is a “reaction to something that is unexpected, illogical, or inappropriate in some other way.” For Morreall, something is incongruous “relative to someone’s conceptual scheme” (pp. 15, 60–61).

Incongruity Theory has been elaborated and refined, most notably as Incongruity-Resolution Theory (advanced separately by Jones, 1970; Shultz, 1972; and Suls, 1972) and Appropriate Incongruity Theory (O’Riordan, 2003). Incongruity-Resolution Theory proposes that humor arises when the perceiver meets with an incongruity and is motivated to resolve it. The perceiver laughs upon the sudden apprehension of a solution to a humorous kind of “insight problem.” Consider the Woody Allen joke, cited by Suls (1983), in which a group of prisoners escape, “twelve of them chained together at the ankle, getting by the guards posing as an immense charm bracelet.” Listeners resolve the incongruous punchline about prisoners posing as a charm bracelet when they apprehend that a chain gang, as Suls says, does “in an odd way resemble a charm bracelet” (p. 42). Appropriate Incongruity Theory makes essentially the same point but emphasizes the perception of an “appropriate relationship” between concepts or categories that perceivers normally consider incongruous (prisoners and charm bracelets).

A wealth of empirical research supports Incongruity-Resolution Theory, legions of ethnographic and controlled psychological studies, many of them conducted by Shultz and his colleagues in the 1970s. As one example, Shultz and Horibe (1974) found that children considered verbal jokes to be funniest when the jokes had both an incongruity and a resolution (e.g., “Why did the cookie cry? Because its mother had been a wafer so long”) and less funny when the jokes had an incongruity and no resolution (“Why did the cookie cry? Because its mother was a wafer”) or a resolution and no incongruity (“Why did the cookie cry? Because he was left in the oven too long”). Shultz also identified incongruity and resolution features in the large majority of Chinese jokes, riddles from nonliterate cultures, and Japanese riddles and folktales (Suls, 1983, p. 47).

Note, however, that the perceiver’s resolution of incongruity is not necessarily complete or even logical. The “wafer”/”away for” resolution, for instance, hinges on the perception of a nonmeaningful similarity among incongruous entities, the result of a homophonic coincidence, not any logical relation between wafers and absences. Incongruities in a humorous context encourage perceivers to entertain playful and improbable connections among incongruous story information, liberated from the limitations of crisp logic and close scrutiny. Such connections instinctively lead to laughter, which Schaeffer (1981) calls “a vacation from the workaday economy of the mind” (p. 24). For Schaeffer, laughter gives free expression to creative mental processes that serious situations and “our practical investment in the process of reason” inhibit and treat as dysfunctional (p. 24).

**BEYOND MIRTH: INCONGRUITY-RESOLUTION AND NARRATIVE PLEASURE**

I introduce Incongruity-Resolution Theory here not to advocate for it¹. I am proposing not a comprehensive account of humor but rather that one aspect of humor appreciation—the spontaneous resolution of incongruous information—helps us understand how our minds respond to and enjoy the incongruities we encounter in narratives. Although it may seem strange to think of jokes as equivalent to extended narratives, both jokes and narratives prompt conceptual incongruities whenever they violate the patterns of an established order. Indeed, most jokes are narratives: If a narrative, as many narratologists define the term, is merely a chain of events in a cause-effect relationship (Chatman, 1978, pp. 45–46; Richardson, 1997, p. 106), then the brief joke, “A skeleton walks into a bar and orders a beer and a mop,” is as much a narrative as *The Brothers Karamazov*. A conceptual incongruity, whether prompted by a joke or an extended sequence of events, cues perceivers to search for a resolution that restores consistency to their beliefs.

The most useful distinction we can make is that jokes are a different genre of narrative than *The Brothers Karamazov*, because comic genres allow for a measure of ludiciousness and playfulness inappropriate to serious works. Comic genres provide a context and a pretext for incongruous narrative information. Indeed, we tolerate incongruities in jokes and comic narratives that we would regard as irresolvable were we to encounter them in a more serious context. However, we ought not to make too much of the generic difference, because it amounts to a difference of degree, of contextual expectation, and of the particular affect that attends incongruity-resolution. Conceptual incongruities prompted by narratives that are comic or serious, short or long, stimulate the same three-stage mechanism I indicated earlier, and mirth is only one manifestation of the pleasure of resolving incongruities. “We enjoy incongruity in other ways than by being amused,” Morreall observes (1987, p. 204).

Resolving incongruities may result in mirth or the mere delight of making connections between elements in a narrative that resist resolution or understanding. (Research suggests that whether incongruity provokes mirth depends mostly upon contextual cues [Alden, Mukherjee, & Hoyer, 2000; Cundall, 2007; Ivanenko & Pexman, 2003].) Recall that the standard tropes of both humorous and nonhumorous literature—rhyme, metaphor, metonymy, paradox, pun, oxymoron, irony—have at their root an appropriate or resolved incongruity. Whether we consider incongruities prompted by jokes, word play, or extended serious narratives, the perceiver’s process of resolving incongruity has the same potential to inspire insights and playful mental associations freed from the governance of crisp reasoning and close scrutiny.

¹ Some researchers find Incongruity Theory inadequate in explaining humor. The two other leading theories of humor are Superiority Theory and Tension-Relief Theory (Morreall, 1981).
Indeed, research suggests that pleasure in humor correlates positively with the degree of incongruity, provided a resolution is somehow available. Jones (1970) found that a group of subjects' rating of the funniness of cartoons was a positive linear function of another group's rating of the cartoons' degree of incongruity. Decker and Buttram (1991), Hoppe (1976), and McGhee (1976) each found an "inverted-U" relationship between incongruity and humor, such that humor increased relative to the degree of incongruity and then began to decline. Such research suggests that the greater the strain on our ability to resolve incongruous information—so long as the strain does not overburden our efforts at resolution—the greater we enjoy it. Greater levels of incongruity require more effortful processing, but the result can be exhilarating, as the perceiver attempts to unify features that resist resolution but that nonetheless offer the prospect of resolution.

IMAGINATION AND COGNITIVE PLAY

The novelty afforded by an encounter with incongruity excites a free play of ideas, as we attempt to resolve, through our imaginations, inconsistent elements of a narrative. Armstrong and Dretweiler-Bedell (2008) describe the cognitive processes as follows:

Instead of protecting one's knowledge against the threat of inconsistency, one welcomes novelty for its promise of yielding to understanding. In ordinary cognition, a person smoothes uncertainty with a familiar concept to avoid confusion. During free play, a person contemplates a novel stimulus, while holding prior understandings at bay, to expand his or her knowledge structures. (p. 312)

The effort to resolve elements that resist resolution exercises our cognitive agility and creative problem-solving capacities, as we attempt to understand objects that elude understanding. Indeed, such objects may be impervious to precise logic and ordinary practical reasoning, in the way that the "a wafer"/"away for" pun is impervious to precise logic and ordinary practical reasoning. Incongruities in a narrative can prompt us to perform, with lackadaisical judgment, dexterous feats of imaginative thinking.

But are all of these encounters with conceptual incongruity—in jokes, whodunits, screwball comedies, casting against type, and Citizen Kane—really the same sort of thing? We wouldn't call the incongruities in whodunits and screwball comedies violations of story logic. Indeed, such incongruities constitute the story logic of such genres. Still, from the viewpoint of a perceiver attempting to resolve a conceptual incongruity, all such encounters excite the same cognitive activity. Perceivers will find it relatively easy to resolve some incongruities (such as mismatched romantic partners in screwball comedies), whereas other incongruities (such as the one in Citizen Kane), once perceived, seem utterly irresolvable. An irresolvable incongruity will readily damage a narrative, just as Ryan suggests. Citizen Kane's failure to provide a resolution to its narrative incongruity accounts for why critics, and apparently Welles himself, regard it as a flaw in the narrative and a threat to aesthetic pleasure. But had Kane enabled an "aha" moment of insight that managed to resolve the incongruity, then it would have been a source of pleasure, rather than an aesthetic defect.
TWIST FILMS AND MYSTERIES

As a counterexample to Kane, consider The Sixth Sense (1999), which, toward the end, creates a momentary, but radical, conceptual incongruity when it reveals that a primary character, who we had always assumed to be alive, has in fact been a ghost for most of the movie. The revelation threatens the unity of the story and creates a brief rupture in story logic, until we can—through our own imaginative activity, guided by prompting from the movie—repair the rupture with new concepts that restore coherence to the story. In that respect, the movie works just like a joke. And judging from reviews, blogs, and commentary about the movie on the Internet Movie Database, the moment of insight, when we reimagine the story through the lens of our new hypothesis, creates tremendous aesthetic excitement. The twist was so successful that director M. Night Shyamalan made it his artistic signature. "Twist films," in which viewers reimagine an extended story line in light of an incongruous revelation, have been an available format in Hollywood narratives since the studio era (Woman in the Window [1944], Stage Fright [1950], Witness for the Prosecution [1957], Psycho [1960], What Ever Happened to Baby Jane [1962]) and have grown increasingly popular and complex since the 1990s (The Usual Suspects [1995], The Game [1997], Fight Club [1999], Memento [2000], A Beautiful Mind [2001], The Others [2001], The Machinist [2004], The Prestige [2006], Shutter Island [2010]). Whether experiencing jokes, whodunits, twist films, or any other kind of narrative, aesthetic excitement, I propose, results whenever the perceiver discovers a resolution that repairs incongruities in the plot patterning.

Crime and mystery films can help us understand more of the pleasures associated with narrative incongruities. Such movies often leave temporary gaps in their stories, gaps that stimulate curiosity and encourage the viewer to imagine answers to questions posed by the narration. Gaps prevent viewers from confidently reconciling story information because of a break in the cause-effect chain. Mystery films regularly withhold for a time crucial causal information and cue viewers to try to repair the breach imaginatively. For instance, And Then There Were None (1945) withholding from us the knowledge that one of the apparent murder victims is not really dead. We eliminate him from our list of suspects yet have difficulty unifying the narrative because the remaining suspects also seem innocent. Incongruities in such movies establish an atmosphere of mystery and create intriguing puzzles for viewers to solve. Motivated by incongruities and moderated by plot cues, our abductive reasoning processes entertain a variety of guesses that attempt to restore continuity to the story.

Under normal circumstances, Hollywood mystery films ultimately reveal missing causal information and enable coherent resolution, but sometimes they don't. The most certain way to prevent an audience from figuring out a story is to make it impossible to do so. The notorious example from classical Hollywood is The Big Sleep (1946), with its perhaps irresolvable puzzle of double-crosses, cover-ups, and murders, deliberately forsaking narrative logic, Thomson (1997) says, so that 'fun' could be pursued" (p. 44). Director Howard Hawks said about the movie, "I never figured out what was going on.... After that got by, I said, 'I'm never going to worry about being logical again'" (McBride, 1982, p. 9). We see the same tendency toward irresolvable mystery in some other Hollywood crime stories. Hitchcock's narratives sometimes contain permanent incongruities that add mystery or complication to his movies. Vertigo (1958), for instance, has not only a wildly implausible story (involving a husband's convoluted efforts to cover up his wife's murder), but one event makes almost no sense in retrospect. After Scottie (James Stewart) watches Madeleine (Kim Novak) enter the lobby of the McKittrick hotel and appear in the window of one of the rooms, the manager in the lobby insists that Madeleine hasn't come into the hotel that day. Together Scottie and the manager inspect the room, from which Madeleine has apparently vanished. Ultimately, Vertigo never clarifies the scene or the mechanics of the ruse, even after most of the story's other mysteries have been explained.

This type of narrative incongruity may seem a far cry from the ludicrous ones in jokes, but Vertigo's incongruities prompt the same creative problem-solving processes and have the same potential to spark abductive guesses as we attempt to restore consistency to the story. Here, incongruity does not lead to humor (although we could see how it might, if contextual cues were different). Instead, incongruity adds a puzzling strangeness to Madeleine's behavior that accords with the film's mood and themes at that point—prompting viewers to imagine a provisional resolution somewhere in the realm of the supernatural—but that ultimately makes no sense when the movie switches from a ghost story to a crime story. Hence, pleasure here results not from finding a logical resolution for seemingly incongruous narrative information, as is the case with The Sixth Sense, but rather from the exhilarating prospect that a complex artwork might yield to understanding.

Vertigo complicates a narrative that would seem more straightforward without its incongruities. "Complicate" is the appropriate word here because, rather than constructing an intricate chain of events, some movies contain incongruities that make their stories only appear intricate. By inserting incongruous story information that viewers cannot reasonably resolve, a movie can give the impression of intricacy—inspiring our problem-solving processes—when in fact its story logic cannot withstand scrutiny. Consider The Killing (1956), which seems determined to make story comprehension difficult, sometimes with nonchronological narration and other times with story convolution and incongruity. For instance, at one point, the lead caperist, Johnny (Sterling Hayden), puts a gun in a guitar case, transfers the gun to a flower box, puts the flower box in a bus station locker, and puts the key to the locker in the mailbox of another caperist, Mike (Joe Sawyer), who picks up the key and uses it to retrieve the gun, which he puts in another locker at the race track where the heist will take place and where Johnny, after staging a distraction, picks it up again. The convolutions complicate the caper and inhibit viewers from questioning why Johnny didn't simply give Mike the gun (or the key) sometime before. In fact, the movie never explains why Johnny must arrange for Mike to obtain the gun at all, if Johnny will only pick it up again himself later on at the track. Although scholars have described Hollywood as an "excessively obvious" cinema (Bordwell et al., 1988, p. 3), Hollywood movies such as The Big Sleep, Vertigo, and The Killing intermittently plant narrative incongruities that inhibit coherent story construction and jeopardize, or flat out violate, causal logic. Their narration prompts viewers to improvise hypotheses that, although vague and ill formed, restore consistency to the story.

So wouldn't these narratives have been improved if they ultimately made better sense? I propose they would not. A story that makes perfect sense potentially sacrifices the atmosphere of mystery and labyrinthine complexity so central to crime and mystery stories. Mystery and complexity sustain our interest in such stories, as well as our sense that the stories contain difficult problems that demand attention. Confronted with a mass of story information that context says must make sense but reason and scrutiny say do not, viewers likely have
a persistent feeling that more remains to be understood than their minds can readily grasp. The experience is exhilarating because our minds seek to gain new understanding through a free play of ideas. For Armstrong and Detweiler-Bedell (2008), such experiences are the definition of beauty, which results from the mind's prospect of "understanding particularly challenging stimuli when the potential to realize such understanding ... is tangible but distant" (p. 312). Schaeffer (1981), discussing humor, describes the experience similarly: "In the after-experience of incongruity, we know and feel that something significant has occurred in our mind, but we do not know exactly what it is. We have a sense that we know more than we know, and we preserve this uncertain feeling as a means of arousing and sustaining our curiosity for the search" (p. 10). Even after such narratives have completed, they linger because some of their elements do not obey strict causal logic and remain mere potentials for understanding. I have still not entirely figured out the story of The Big Sleep, but, as I watch the movie and contemplate it afterward, I persist in the secret mad hope that this time I will. A sense of narrative unity persists because of the mere prospect of causal logic. If that prospect is permanently ruined, The Big Sleep becomes an aesthetically damaged classical narrative. But a cleverly concealed narrative incongruity—a cause-and-effect sequence that takes time, deduction, and scrutiny before it crosses over into utter improbability—enables a story to preserve, at least for a time, an atmosphere of mystery or complexity without allowing strict reason to clear things up and ruin the mood.

Individual Differences and the Pleasures of Storytelling

According to the theory of storytelling aesthetics presented here, narratives create aesthetic pleasure by cueing viewers to resolve separate story elements. Hollywood generally makes the resolution process fairly easy by wedding narration to time-tested and reliable storytelling principles, especially principles of clarity and causality, that increase the viewer's processing fluency and result in calm pleasure. However, some Hollywood movies exhilarate our aesthetic experience by straining our ability to resolve their stories. Pleasure is most exhilarated when cognitive activity is athletic and resolution distant but still tangible. As long as a movie does not put too much strain on our cognitive resources, reasoning ability, or imagination that we are unable or unwilling to resolve the movie's narrative elements, then pleasure is likely to intensify with the degree of difficulty at resolution.

The preceding pages present empirical support for the theory, particularly from the areas of processing fluency, insight, and incongruity-resolution; however, experimental psychologists could further test the theory by studying the points at which different subjects, and subjects under different conditions, find resolutions to insight problems. Furthermore, aside from humor research, there is little direct empirical research on the pleasures associated with insight. Psychologists could readily use the experimental designs of humor research to study emotions, other than mirth, that might result from incongruity-resolution.

Some revealing experimentation, however, has already been conducted in these areas, and my theory of storytelling aesthetics helps explain the resulting data and, moreover, some common experiences relating to challenging and fluently processed narratives. The theory, for instance, helps explain why different people enjoy narratives with different levels of complexity, incongruity, or other factors that increase the strenuousness of the story construction processes. Some viewers seem willing or able to resolve narrative elements that other viewers regard as improbable, nonsensical, or otherwise irresolvable. For instance, empirical researchers have found that subjects with high scores on a conservatism scale preferred artworks that are more simple and representational, whereas liberals preferred more complex and abstract art (Wilson, Ausman, & Mathews, 1973). Numerous researchers have shown that people with more experience with art prefer more complex, unpredictable, and difficult-to-process artworks (Hare, 1974; McWhinney, 1968; Smith & Melara, 1990; Walker, 1980). As people gain expertise in an art form, they begin to group units of memory (called "chunks") into patterns of information, enabling them to quickly encode, store, and retrieve information and reducing the level of cognitive activity required to process an individual artwork (Chase & Simon, 1973; Simon & Gilmartin, 1975). Hence, the same artwork demands more cognitive activity from novices than from experts in the form. In order to achieve a level of mental activity that is exhilarating, experts require more difficult-to-process entertainment—complex or incongruous entertainment that challenges their ability to master the artwork. Experts at whodunits, for instance, are liable to enjoy Gasford Park (2001) more than novices, since the movie relies on viewers' intuitive understanding of the genre. Gasford Park's assumption of whodunit expertise enables the narration to take complex detours, outside traditional generic trajectories, that resist fluent processing even for the expert.

My theory of narrative aesthetics also helps us understand why we might be in the mood sometimes for a David Lynch movie and at other times for a simple romantic comedy. Even film experts sometimes seek entertainment from nondemanding art, dependent largely on the brain's processing capacity at the time. One revealing study found that people preferred to listen to more simple music if researchers limited subjects' available processing capacity (Konecni & Sargent-Pollock, 1976). The researchers gave subjects a mandatory task that demanded attentional resources and offered subjects a choice of listening simultaneously to either a simple or complex melody. They found that "the greater the spatial capacity (the smaller the likelihood of an overload), the greater the proportion of complex-melody choices, given that the two types of melodies were initially liked about equally" (p. 354). This finding also helps explain Americans' resistance to foreign language films, because reading subtitles adds nothing to a movie's aesthetic enjoyment and instead threatens to reduce enjoyment by adding to our cognitive load. So when we say, "I'm in the mood for something lighter," we are really saying, "My brain does not have the processing capacity right now to enjoy such strenuous entertainment." Context (whatever else is going on in our brains at the moment) helps determine the kind of art we are in the mood for. When we are cognitively fatigued, the environment is distracting, or our brains are already taxed with other activities (such as worries), then we are less likely to have cognitive resources to devote to art, and more fluently processed artworks become more attractive.

Finally, the theory helps explain why a good story is not sufficient to create pleasure. Narrative pleasure relies on good storytelling—the process by which an artwork cues the perceiver to resolve story information. Because narrative pleasure results in part from the perceiver's story construction processes, the narrative cues (those aspects of the artwork that encourage and intensify story building), not just the story itself, determine our enjoyment. The 1931 The Maltese Falcon with Ricardo Cortez has a story practically identical to that of the 1941 remake with Humphrey Bogart, yet the first movie is almost forgotten, whereas the remake—which tells the same story in a different way—is among Hollywood's most celebrated achievements.
For a more ideal example, consider how less pleasurable Memento would be were the same story told in chronological order. A chronological Memento, which is available on DVD, removes from the viewer’s experience the most athletic story resolution processes. Although more easily processed, the chronological Memento is a much duller movie.

One finds, throughout Hollywood’s history, inventiveness in the ways filmmakers strain viewers’ story construction processes and thwart narrative resolution: incongruous representations of characters in The Searchers (1956) and Chinatown (1974), highly improbable events in North by Northwest (1959) and Silence of the Lambs (1991), divergent plotlines in Grand Hotel (1932) and Nashville (1975), causal gaps in The Big Sleep and 2001: A Space Odyssey (1968), stories told in nonchronological pieces in Citizen Kane and Pulp Fiction, and thwarted narrative expectations in Mildred Pierce (1945) and Psycho (1960). Consider Magnolia (1999), which strains story logic and plausibility when all of the main characters simultaneously sing the same song in different settings, when a policeman’s gun falls a few feet from him hours after he lost it, and when frogs descend from the sky. At such moments, Magnolia challenges, in an audacious way, our ability to resolve incongruous story information. But as long as the movie has not made resolution too onerous, then it has enabled us a thrilling moment of imagination and insight as we try to make sense of a story that scrutiny and logic would not help us understand and might even prevent us from understanding.

Many of the Hollywood films that fans feel most exhilarated about, such as the ones indicated in the preceding paragraphs, present bold narrative incongruities of the sort that most Hollywood filmmakers avoid. The films take risks, and exhilaration results when they seem liable to fail in some daring and extraordinary way. The films do not venture out so far beyond Hollywood classicism that they sacrifice its stability and accessibility, but, in the context of mainstream American cinema, they show surprising audacity. Married to classical Hollywood storytelling principles, whose clarity, unity, and uniformity they both rely on and resist, such films seem at the same time formally stable and also on the verge of collapse. Aesthetic pleasure emerges out of that beautiful balance.

References


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