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Film, Relay, and System: A Systems Theory Approach to Cinema

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A SYSTEMS THEORY APPROACH TO CINEMA

by

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ABSTRACT

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Film theory is replete with references to systems, yet no theory has emerged to provide a cohesive explanation of how cinema, as both technology and institution, operates as a relay system. Interdisciplinary in nature, my dissertation proposes a systems theory of cinema deriving largely from the work of social scientist Niklas Luhmann. Systems theory is especially productive for the ways that it intervenes at crucial sites of conflict and irresolution within film studies. With its emphasis on nonhuman agencies, systems theory calls for reappraisal of the significance of the human to the cinema apparatus—a significance long assumed to be simply a given. With its claim that the reasoning adduced by an "observer" is never in fact the logic of the "observed," systems theory has major implications for thinking about the role of narrative in film and film theory. And with its stress on contingency, systems theory can be seen to upset the terms of debates within the field about cultural and technological determinism, and to provide further grounding for recent work on contingency and cinematic time.

Chapter one examines a defining staple of early cinema, the chase film, as a quintessential example of the construction of movement, in the evolution of film editing, via a chain of interlinked segments that relay—and tend to abrogate—human figures.

Chapter two focuses on a film conceived by Rube Goldberg at the transition from silent to sound cinema, with particular attention to how the coming of sound complicates the visual relays characteristic of silent slapstick's gag structures. Chapter three examines the dynamism of the long take in classical and post-classical cinema, emphasizing the gradual and incremental disclosure of elements by the camera and revealing the cinema recording process itself as a type of Goldbergian contraption. The last chapter reflects on the "computerization" of film and media, showing that systems theory provides a useful avenue to thinking about the continuity between analog and digital cinema due in part to an unusual but rich and suggestive conception of the notion of "medium."

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Introduction

Film theory is replete with references to systems: the textual system, studio system, star system, camera system, projector system, sound system, Technicolor system, language system, ideological system, narrator system, classical Hollywood system, genre system, stylistic system, sign system, Hitchcockian/Sirkian systems, narrative system, suture system, and so on. This profusion indicates the profound importance of systems to cinema; yet no theory has emerged to provide a cohesive explanation of how cinema, taken as a whole, operates as a system. In this dissertation, I propose a general theory of cinema as a system to address the lack of a model that would bring together functional aspects of a cinema system (what cinema "does"), on the one hand, and structural aspects of a cinema system (how cinema is organized), on the other. It is precisely this sort of conjunction that escapes the systems-as-concepts listed above, because they are all too individually separate and distinct; in this sense, they are more like subsystems. A general systems theory of cinema, however—by gathering together such specialized subsystems into a relational matrix—would have a significant conceptual advantage. Among other things, it could help to shift reference points from familiar recourses to ontology—"What is cinema?"—to less familiar questions of epistemology: How do we or can we know what cinema is (and what if we can't)?

My dissertation proposes a systems theory of cinema deriving largely from the work of Niklas Luhmann, and argues that the cinema system operates principally as a relay. Here, too, there are precedents in film theory, in the notion of the "relay of looks" often said to be a basis of cinematic construction. In this project, the argument that

cinema is a relay is based in part on observation of the literal workings of film technologies. A relay system is a type of machine that emerged from the field of "control" engineering in the late 1800s, as industrialization moved from the factory into spheres of everyday life. The term originates earlier in the history of industrialization, where a "relay system" was a process of moving night workers into position to replace day workers, to prevent loss of labor and to maintain expanded production—as discussed at length in Marx's *Capital.* Building from this origin, relay systems became machines designed to move raw materials along various kinds of conduits, from assembly line mechanisms to heating systems and toasters. Based on the model of the perpetual motion machine from the Renaissance forward, they were designed to keep entropy in check during the process of conveying "input" through the system until it emerged as "output."

The technologies of cinema are relay systems in this literal sense. Cameras and projectors move film through their respective mechanical systems. A celluloid strip shuttles through the camera to record a series of still images. The strip is then run through a film processor that transfers the images to a projectable filmstrip. This filmstrip is then threaded through a projector that, when set at a specified rate, transmutes the series of still images into an appearance of motion. Thus, a relay of a filmstrip generates a relay of still images, in tandem with a relay that takes place between the object of a camera lens and a strip of raw film. The still images are relayed from a projector to a screen, and from the screen to a spectator. While these aspects of cinema as relay are implied everywhere in film studies, they have yet to be treated as such in an explicit and sustained manner. My dissertation considers these literal relays mainly as springboards of other manifestations of relay in cinema. For example, relays obtain among shots, sequences,

onscreen elements in relation to one another, films and narratives, narrative and style. But what brings these many and diverse relays into focus as a complex *network* is the overarching concept of system.

Systems theory begins in the fields of mathematics and engineering, in efforts to account for and improve the operations of self-regulating mechanisms. The work of the Austrian biologist Karl Ludwig von Bertalanffy pioneered efforts (c. 1934) to map mathematically the operations of systems according to the laws of thermodynamics, and to consider the implications of these formulas for non-mechanized systems using notions like "feedback," "input-output," and "communication"—the latter defined in a manner determined by the theory, and therefore only tangentially related to ordinary understandings of communication. Still in use today, Bertalanffy's equations quickly gave rise to non-mathematical applications in work across a range of disciplines, including not only cybernetics but biology, psychology, and sociology. The German sociologist Niklas Luhmann is the most important figure to apply concepts of systems theory broadly—though, as will be seen, to refer to Luhmann's systems theory as "general," a sort of "theory of everything," is in important senses a category mistake. The account below is an effort to outline systems theory in a manner that negotiates between prevailing models and Luhmann's more specialized variant. Because systems theory in either version tends to move between levels of great simplicity and great complexity, often with little middle ground, to provide such an "introduction" is a challenging task; the reader should keep in mind that this exposition is intended as an initial outline to lay groundwork as directly as possible, and that systems theory in many of its key implications will be unpacked cumulatively in the course of this project.

For most systems theorists, systems are differentiated from one another by virtue of the type of operations each performs. A system concerned with biological operations is a living system; one that performs cognitive operations is a psychic system; another involved with operations of communication is a social system. If we submit each of these general types of systems to ever closer levels of scrutiny, ever further distinctions can be observed. A system that parses information according to exigencies of the law is a legal system, for example. Likewise, close observation of living and psychic systems will yield singularities: no two organisms, even within the same species, are identical; and no two minds think alike.

So far this description of systems assumes a particular class—namely, complex systems. The crucial difference between complex and simple systems is that the latter are operationally closed, meaning that they generate their own components. Simple systems depend on an external agency to supply the inputs required for their operations, and the outputs that result are very often unavailable to the workings of the system itself. Complex systems, on the other hand—because they are able to operate on their own operations, as it were—do not conform to the input-output model. Simple systems are commonly referred to as machines. The description here treats systems that contrast with the vast majority of simple machines, as complex systems are self-referential entities capable of observing their own operations. The internal states of complex systems are dynamic, changing not only in concert with fluctuations in their environment, but also in response to self-reports about past and potential future system states.

According to Luhmann, systems are operationally closed, but open to their environment. This last point might appear to be a paradox—how can a system be closed

and open at the same time?—thus some further explanation of how systems relate to their environment is in order. A first point to make is that a system can be defined as the difference between itself and its environment, and this difference hinges on the set of operations exclusive to a particular system, recursive operations that allow the system to maintain itself. Each time a system connects an event within the system to another internal event, it re-inscribes its boundary in relation to the environment. Yet events that occur inside a system are capable not only of self-reference but other-reference, and it is this latter capability that explains how a system can account for its environment. Since systems cannot import functions from outside without compromising their autonomy, and must instead depend on the productivity of their own operations, all attempts to understand the environment necessarily involve a translation of external stimuli into the codes of the system. Thus, to the extent that the environment exerts an influence on a system, the effect must be understood as so profoundly indirect and indeterminate as to challenge any conventional notion of causality. And because the environment is rendered by a system only according to its own terms, the system is essentially blind to whatever lies outside itself. This discussion has assumed that a legion of systems exist, and on this basis it can be said that the environment of any system is composed substantially (though not exclusively) of other systems. But a given system would not be aware of this fact as such, nor would it take direct notice of an outside physical-chemical-organic continuum that nevertheless supports it.

All systems are relay systems. This axiom is most clearly discernible perhaps with machines in which an input is not only transformed by one or more operations but, in the process, transferred across time, sometimes space, when and where it emerges as output.

In the case of complex systems, the relay function is, not surprisingly, more complicated. To understand how systems perform a relay function, we might take as examples psychic and social systems, which can alternately be described as "meaning systems." Here, the term "meaning," as will be explained, is synonymous with "relay."

The operations that define systems can be regarded in a number of ways. We have already characterized them by reference to the major types of systems; psychic systems have been said to perform cognitive operations, for instance. We could also say of psychic and social systems—the types most relevant to this project—that they perform meaning-making functions. These systems distinguish themselves from their environment by making meaning from their own meanings. On the other hand, the production of meaning differs in some respects from the production of operational events discussed earlier. An event is a single operation selected by a system from a stock of possibilities. Meaning, however, is not an event itself, but the difference between whatever event is actually selected and the array of other possibilities not selected. Because the production of meaning is a goal of these systems—in other words, the production of difference between actuality and possibility, a difference which also goes by the name "contingency"—the systems are compelled to enact an interminable relay between selections. Once a selection has been made, once an event has taken place, the system must choose again from among the multitude of subsequent possible operations the prior event has invoked. Given that the inner workings of a system are serial in nature, the relay thereby established is located on the axis of time. But what is meant by "time" here is a property unique to the system, and to the extent that meaning serves as the basis for

conceptions of reality, the "reality" produced by a particular system belongs to that system alone.

We can consider this same phenomena from another angle as well. Selections made on the part of meaning systems re-enact a significant aspect of the basic division between a system and its environment. What might account for this inaugural distinction system/environment—observable only in retrospect, and then only at many orders of observation removed from the primal scene, thus not observable at all as such—is the duress of overwhelming complexity, as every environment to a system is infinitely more complex than the system itself. Selections can be understood similarly as attempts by systems to regulate their internal state: the profusion of operational possibilities that come into view as consequence of an actual event is a complexity, an instability, that only another selection can help to mitigate. In this way the relay kept in motion by meaning is, from another vantage point, a perpetual movement between states of complexity. While meaning is in general a difference, the specific binary conditions that give rise to meaning are in a constant state of flux, therefore, it should be noted, meaning too varies constantly.

Systems theory is concerned with sets of interconnected parts that form a complex whole, and it seeks to understand both relations among parts and the relationship between parts and the whole. Classical objects of systems theory are natural phenomena and machines, which have been studied as systems primarily in the contexts of philosophy and the sciences. Social organizations are a more recent object, with application of systems theory taking place in sociology, principally in the work of Talcott Parsons

(1902-1979) dating from the 1930s, through Luhmann's work from the 1960s to his death in 1998.

From this brief description, we can already identify several characteristic features of the theory: first, because its premise is so logic-oriented, the tenor of its discourse can (and often does) rival the difficulty of any "high" theory; second, because it can be used as a conceptual apparatus in virtually any field of inquiry, systems theory has far-reaching interdisciplinary potential; and third, because it recognizes only abstract components and relationships, human beings—understood in the specific Enlightenment sense as rational, autonomous subjects—are ill-suited objects for systems-theoretical analysis, thus systems theory has an affinity with posthumanism and the various theoretical approaches that can be said to fall under that category.

Though one could argue that examples of systems theory reach as far back as the work of the ancient philosophers, the roots of modern systems theory are usually traced to the emergence of thermodynamics over the course of the seventeenth to nineteenth centuries. Especially influential on the history of systems theory is the second law of thermodynamics, which concerns entropy and the tendency of closed systems to deplete their available energy over time. Indeed, it is to the problem of entropy that efforts are directed in the nineteenth and twentieth centuries to design self-regulating machines that employ feedback mechanisms to achieve states of equilibrium. Progress in control engineering subsequently played an important role in the development of cybernetics, an interdisciplinary field of study that departed from prior systems analyses in a number of crucial respects. Most prominently, cybernetics joined the concept of information (understood simply as "messages") to the notion of feedback, enabling the consideration

of similarities between, on the one hand, machines, and on the other, living organisms and social organizations—these latter understood, at base, as information processing.

Cybernetics has a rather storied history. Its foundation was a series of annual meetings, the Macy Conferences, held in New York City from 1946 to 1953, attended by scholars from such diverse disciplines as engineering, mathematics, computer science, sociology, biology, and psychology. These scholars are said to be the first practitioners of "second-order cybernetics," a designation meant to underscore another of their chief contributions to systems theory—the notion of "self-reference"—a key concept that sets apart the work of participants at the Macy Conferences (and those who carried that work forward) from "first-order" theories of mechanized control systems. Self-reference is probably best understood as an attempt to address a certain paradox: self-regulating systems must be closed (in order to remain self-regulating), yet somehow information systems are able to respond to events outside themselves. A puzzle to be sure, yet resolved by the idea that complex systems evolve an awareness of themselves as situated within some larger surround, hence they observe themselves as systems and, in turn, construct an internal proxy for their environment that allows them to process stimuli from outside. Among the research discussed at the conferences was that of to two Chilean biologists, Humberto Maturana and Francisco Varela, whose concept of autopoiesis mirrors the notion of self-reference. According to Maturana and Varela, living organisms are autopoietic, meaning they are operationally closed yet environmentally open, which allows them to constitute themselves over time and, thus, to achieve autonomy. The significance of this description of autopoietic systems for Luhmann's theory is profound.

It is generally recognized that Luhmann's interest in developing a systems theory of society was inspired to some degree by his association with Parsons, with whom Luhmann studied during a brief stint at Harvard (1960-61). Parsons, one of the attendees at the Macy conferences, is best known for his action theory of society, based on two key precepts: first, society is composed of individual actions steered by the functional requirements of society; and second, society's functions are equivalent to a kind of shared value system. Like Parsons, Luhmann's theory of society focuses on something other than human beings. But rather than actions, Luhmann posits communications as the constituent elements of society; and in place of Parson's functions, Luhmann proposes that society is organized by a multitude of functionally differentiated systems. Luhmann's social theory is thus significantly more advanced in its posthuman and poststructural commitments than Parsons's. On the one hand, Luhmann's concept of communications can be seen to cleave the human from the social with far greater insistence: for Parsons, actions are more or less the direct embodiments of human intentions, whereas Luhmann installs an unbreachable divide between communications and individual psyches (the latter of which are also severed from one another; again, no two minds think alike). Furthermore, Luhmann's division of society into an array of functionally closed systems (politics, law, art, science, religion, etc.) stresses the radically contingent nature of modernity: Parsons's shared value system presupposes a single rationality that amounts to a form of idealism by contrast with Luhmann's total rejection of an all-encompassing unity that might preserve some hope of future harmony among competing rationalities.

Luhmann is a remarkably prolific and wide-ranging theorist, such that efforts to summarize his body of work can hardly do justice to its scope and variety. Nevertheless,

for the purpose of an initial overview, it might pay to focus on three of Luhmann's most fundamental ideas: functional differentiation, communication, and observation.

Modern society, according to Luhmann, is differentiated by separate functional systems that perform their operations with strict adherence to a binary code that determines whether or not information is relevant to the system. The political system is said to employ the code government/opposition, for instance, and information that fails to accord with this particular schema is deemed irrelevant—indeed, not information at all. We might want to assume that this form of organization is a response to modernity and the manifold complexities that arise from industrialization, urbanization, democratization, and so forth. Luhmann himself suggests that the turn from traditional society (organized by class differences) to modern society occurs in the eighteenth century. But it is important to keep in mind that, for Luhmann, descriptions of society are just that, descriptions—they are observations employed by a system (like sociology), not positivist analyses of cause and effect. Luhmann's description of a functionally differentiated society allows him to surmise that social systems progressively increase their internal complexity, a consequence of operational closure that he notes with some caution, as systems can in theory fail to maintain their coherence and integrity. In the event a system were to collapse, negative consequences for society are likely, for even while social systems are closed, they nevertheless depend on each other. Functional systems refer to one another through "structural couplings," a term Luhmann uses to mean something like correlation without causation: systems can "perturb" one another, but cannot determine each other's actions. Furthermore, the concept of functional differentiation implies that modern society lacks a single rationality that might subtend the whole. Because each

system operates according to a discrete logic, there are as many forms of reason as there are systems.

Whereas society is composed of functional systems, society itself is said to be no more and no less than a system of communications. The influence of Maturana and Varela is particularly felt in Luhmann's writing about communication as an autopoietic system that produces itself through constant recursive operations. A single event within the communication system is composed of a triple selection: information, utterance, and understanding. The first two selections are made by "alter," the term Luhmann uses to designate the origin of the communication: information is what the system chooses to communicate, utterance is how the communication is made (via language, sign, gesture, etc.). In order for a communication to be successful, an "ego" must be able to recognize some difference between information and utterance—a "why"—and this difference is the selection by ego of "understanding." And yet, given the asymmetry between selections made by alter and ego, "understanding" is more often than not misunderstanding, which happens to be a boon to the system, as misunderstandings compel further communications. To understand the system of communication described here, we might want to conjure an image of two humans conversing, but this would be a misunderstanding itself, which should be clear if we recall that Luhmann delinks consciousness (psychic systems) from society. Only in the context of society do systems make utterances, and they do so in a bid to change the state of their environment; an answer in the form of positive or negative (or neutral) feedback must take the form of another communication issued from the environment.

Observation is a type of operation performed by all systems; or to put this another way, all operations are observations. Luhmann's understanding of how systems observe is influenced by George Spencer-Brown's *Laws of Form*, an excursus on Boolean algebra that begins as follows: "We take as given the idea of distinction and the idea of indication, and that we cannot make an indication without drawing a distinction. We take, therefore, the form of distinction for the form" (1). Spencer-Brown's theory of distinction is employed by Luhmann to explain what constitutes an event for a system. Each event is the unity of the difference between what a system selects and what is left unselected. It has already been noted that a selection is a reduction of complexity: it designates from a plane of possibility a "marked space." Though, because the form of a distinction always has two sides, every selection also produces an "unmarked space," which is always a "blind spot" for the system. For Luhmann, every observation entails a blind spot. There is no position from which everything can be observed; no observer has a privileged purchase on truth. The notion of the blind spot sets an imposing limit on knowledge projects, and Luhmann's work is often said to take an "epistemological turn" with his account of observation—a term, by the way, which is borrowed from cybernetics. The cybernetic concept of self-reference is also relevant here, as it explains how a system can understand itself as a producer of knowledge. A "first-order observation" will select something, but the observing system can only "see" itself has having made this selection by way of a "second-order observation"—a subsequent "marked space" that brings the system itself into view. However, this new vantage point carries with it yet another blind spot.

Luhmann provides the best theoretical lens for this project because he is the most comprehensive systems theorist and the most interdisciplinary. Though his work has only begun to exert an influence on the humanities, it is also the work in systems theory whose concerns most clearly overlap those of poststructuralist approaches in the humanities. As the following chapters will show, Luhmann's ideas about everything from the general concept of system and systemization to ideas about communication, structure, and the notion of medium itself provide new avenues of thought for established and emerging questions in film studies.

Luhmann's theory is apropos for my project—a putting to use of systems theory in the new context of film studies—because its focus on the liminal charge of distinctions, on boundaries as both constructive and destructive, extends to disciplinary boundaries. The basic theoretical move in Luhmann is to designate a system by drawing a distinction—specifically, a distinction between a system and its environment. Systems are defined by their difference from an environment. What accounts for this difference, in part, is the reduced complexity of a system relative to its environment (once defined as such). The subsequent development of a system depends on communication, and Luhmann is at pains to define communication apart from the domain of human action and intention. In systems theory, communication is said to occur indirectly between a system and its environment—neither of which are reducible to the "human"—and communications are fleeting and unstable. Indeed, Luhmann argues that all communication is improbable, because it depends on the unlikely coordination of three fickle components: utterance, information, and understanding. Contingency plays a central role in Luhmannian thought: communications and the systems they depend on are

susceptible to variation, uncertainty, surprise—influences that are decidedly non-deterministic.

The medium in which communications occur, according to Luhmann, is neither language nor images nor sound but rather meaning. Just as he draws a distinction between a system and its environment, Luhmann distinguishes between a medium (meaning) and its forms. A form is understood as an incidental sedimentation of a medium, or as a chance "rigid coupling" of medium elements; forms make a medium perceptible, and without medium elements there would be no forms. An interesting consequence of this form/medium distinction within systems theory is that a form from one angle of observation can be seen as a medium from another angle. For example, in cinema, a shot can be understood as a *form* from one angle—a coalescing of some otherwise diffuse "reality"; but from another angle shots can be seen as the *medium* from which scenes are derived. Despite the debate in classical film theory about whether image composition or editing constitutes the "essence" of the medium, this idea from systems theory undermines any search for "medium specificity"—a search that remains a privileged topic of conversation in film studies even after the field abandoned its quest for cinema's "essence."

Systems theory is especially productive for the ways that it intervenes at crucial sites of conflict and irresolution within film studies. With its emphasis on nonhuman agencies, systems theory calls for reappraisal of the significance of the human to the cinema apparatus—a significance long assumed to be simply a given. With its stress on contingency, systems theory can be seen to upset the terms of debates within the field about cultural and technological determinism, and to provide further grounding for recent

work on contingency and cinematic time (e.g. Doane). And with its qualification of the concept "medium," systems theory stands to help the field to push beyond questions of medium specificity, or of what is unique about cinema that distinguishes it from the other arts.

At the same time, this project should no more be understood as a "Luhmannian" dissertation than D. N. Rodowick's *Gilles Deleuze's Time Machine* should be understood as strictly "Deleuzian." Indeed, in chapter two of the current project, Deleuze figures rather more prominently than Luhmann, and though the dissertation aspires to a rigorous understanding of systems theory and Luhmann's work, it might be helpful to understand the relation between these materials and the film-theoretical work of this project as an exercise in "structural coupling." Just as Rodowick uses Deleuze's work as a conduit for key questions that are also examined from other angles, so here Luhmann provides a lens for understanding cinema as a system—a lens that is sometimes looked through more obliquely than simply via an "application" of Luhmann's ideas. In light of the fact that this project is the first sustained effort to explore film through systems theory—and in keeping with the significance of contingency in systems theory itself—the aim is often to be suggestive rather than definitive.

At one level, the focus on film in the dissertation is somewhat strategically restricted. The project considers American film of the silent and early sound periods, then looks at the classical Hollywood era though its ebb and flow of the 40s through the 60s. A conclusive section takes up questions about cinema and media in the digital age. Several considerations lead to this delimitation, including the sense that a broad "theory of film" across historical, geographical, and other lines alongside an explication of

systems theory would be a daunting project indeed—as daunting to read, surely, as to write. A more localized treatment of film materials permits, in important ways, a broader treatment of systems theory. In its way, however, the dissertation combines elements of history with theory, tracing a wide arc across key points in American film history—though in a way inflected by Luhmannian notions of time and systemic evolution. As always, too, contingency plays a role: the American cinema is simply the one I happen to have studied most deeply and know the most about. Given this focus, readers are asked to indulge occasional references to "the cinema" or "the cinema system" *tout court*; though these sometimes refer simply to the cinema at hand, in a kind of shorthand, they sometimes mark my conviction—or at least speculation—that the theoretical observations this dissertation pursues are more widely applicable than the project itself can substantiate within its necessarily circumscribed scope.

The organization of chapters follows a twofold logic. First, each chapter identifies a particular manifestation of cinema as relay and explores its significance. Second, each chapter focuses on a decisive moment within the unfolding of cinema as a system, "decisive" in the sense of marking a shift or—in the Luhmannian sense—of drawing a distinction. On the whole, I intend for the project to present a complex, nuanced concept of relay in the context of cinema, and at the same time to advance a larger argument about media change and systemic evolution.

Chapter one examines a defining staple of early cinema (1895-1915), the chase film, as a quintessential example of the construction of movement, in the evolution of film editing, via a chain of interlinked segments that relay—and tend to abrogate—human figures. Typically, the chase film has been seen as a crucial move away from

spectacle and toward a cinema of "narrative integration" (in Tom Gunning's phrase). This approach views the chase as a logical sequence that coheres across multiple shots, effectively teaching early filmmakers how to edit and allowing narrative to "master" action, making way for the "institutional mode of representation." Such analyses rightly acknowledge the chase as a literal relay across imagined space that makes possible, and ultimately realizes, increasingly complex linkages of shots. Looking backward to the "actuality" or the trick film rather than forward to classical Hollywood, however, the chase film is notable for its over-complicating tendencies, for all that it attempts despite what is not yet available to it, such as point-of-view shots. As late as 1910, the chase film continues to be marked by literal elements of non-identity in its depiction of the human—the preponderance of long shots, among other elements, rendering human figures only distantly, with little psychological underpinning. Thus, humans function as elements of the relay system as surely as do ropes, hatchets, and other tools, as shown in an extended analysis of a significant but unsung early American film, *Rescued from an Eagle's Nest* (1908). The chapter also shows how developments in early cinema function to increase system complexity in a Luhmannian sense, especially through recursive means.

The second chapter draws on the distinction within the cinema system between silence and sound, considering the relays that comprise early-sound slapstick comedy. The analogy between cinema's mechanisms and a Rube Goldberg machine—intricately designed machines geared to achieve simple outcomes—was powerfully remarked by the inventor/cartoonist himself when he worked on a film in 1930 called *Soup to Nuts* designed to showcase his sendups of the age of mechanical reproduction. This chapter contextualizes this little-known film within the tradition of slapstick comedy immediately

after the silent era. Situated between the visually-oriented Chaplin/Keaton tradition and the dialogue-oriented "screwball" comedy of the 1930s, *Soup to Nuts* reflects the problem of integrating synchronized sound with the visual networks of representation that the silent cinema had formulated—Goldbergian chains that slapstick, in fact, had crucially helped to determine as clearly as the chase film had in an earlier phase. Where Chaplin and Keaton typically battle machines in comic enactments of the threats of modernity, Goldberg's personae typically delight in the contraptions, and they welcome mechanization even as its absurdity and its potential abrogation of the human are registered. The chapter shows this dynamic in action, historicizing it in its relationship to mechanization, and examines the prospects of this dynamic for changes to cinema as a relay system. It also ventures a theory of objecthood in the cinema, via an examination of the emerging subdiscipline of "speculative realism," many of whose adherents have been influenced by Luhmann and systems theory.

Another distinction the cinema system leverages is the difference between montage editing (cutting up space and time), on the one hand, and mise-en-scene editing that features the long take (preserving contiguity alongside continuity), on the other. Editing might serve as the ideal exemplar of an analogy between cinematic form and a relay (as chapter one shows). Chapter three, however, extends the analogy to the limit case of the long take: how can the long take, which would appear to have more in common with the "naturalness" of theater than the mechanics of cinema (pace André Bazin), exhibit the operations of a relay system much as montage does? This chapter suggests several answers. Drawing examples from classical cinema, the chapter examines the dynamism of long takes with a moving camera, emphasizing the gradual and

incremental disclosure of elements—the processual character of the long take—that creates a looped sense of continuous relationality. An equally significant variation of this kind of shot is a protracted tracking or dolly shot that is not only meant to announce the mechanical nature of cinema but that of modernity, as in Max Ophuls's *Lola Montes*. Here, the long take draws attention to the cinema recording process itself as a type of Goldberg contraption—a process which classical editing was intended to conceal.

Two key lines of argument develop alongside the more localized goals of these chapters. The first concerns the "modernity thesis" that became such a crucial feature of the revisionist treatments of early American cinema in recent decades. At base, Luhmann's work is a theory of modernity, an insight that guides one of the most subtle and wide-ranging critical treatments of Luhmann's work in the humanities, *Niklas Luhmann's Modernity*, published in 2000 by the philosopher William Rasch. Like most thinkers, Rasch understands modernity under the banner of a post-Enlightenment fracturing of the "unity of reason," a phenomenon typically said to follow the Enlightenment imposition of notions of "universal" reason. Rasch finds that this model has given rise to accounts of modernity across spectrums of belief that are essentially penitential, a tendency he explicates in explicitly political terms:

> If the Hegelian Left bemoans the rupture separating theoretical from practical reason . . . then the Straussian right mourns the loss of the classical unity of the True, the Good and the Beautiful. In both cases, modernity carries the burden of a lack. The missing unity [produced by] our differences weighs heavily on the modern soul. (5-6)

As Rasch shows, Luhmann's response to this widespread "critique of modernity" stands virtually alone in not being a veiled effort to recover a lost unity of reason, a tendency visible, as the first two chapters suggest, in much of the work in film theory on "the modernity thesis." In turn, as the first two chapters of this study suggest, what makes Luhmann a particularly useful guide to thinking of cinema as a system is precisely this feature of his thought, providing an alternative to the "critique of modernity" that has so fundamentally shaped discourses around that topic and, as chapter one especially illustrates, continues to exert an influence.

Another important (and related) strand of argument that runs through the first three chapters turns on questions of narrative. Radically constructivist, Luhmann's work is also anti-mimetic; representations do not depict a world, he assumes, but construct one. This position has major implications for thinking about the role of narrative in cinema. The first two chapters consider an important line of thinking that finds that American film "began" as non-narrative, based in spectacle, only gradually—and tragically, it would seem—to become successively subject to the dominion of narrative. Indeed, for many, this amounts to what it means to say that cinema is a system—it is a system to the extent that its less systemic (and therefore more highly valued) elements became co-opted by the system of narration, at which point it moved from being a sphere of play and difference, to being one of circumscription, limitation, and ideological closure. In fact, precisely what "system" appears to mean, in many of its uses in film studies, is coercion, suppression, constraint. But Luhmann's theory of systems assumes nothing of the kind, and thus provides a vantage point from which such attitudes might be re-thought. It should be noted that, while discussions of film narrative and systems theory recur in the

first two chapters, a systems theory "take" on narrative as such is outlined in detail in the third chapter (in the section "System, Structure, and Narrative"). This seeming deferral reflects the project's commitment overall to a gradual, cumulative unfolding of the complicated terms and assumptions of systems theory.

In conclusion, a section on cinema in the digital age reflects on the "computerization" of film and media, showing that systems theory provides a useful avenue to thinking about the continuity between analog and digital cinema due in part to an unusual but rich and suggestive conception of the notion of "medium." After examining some work in recent film theory on cinema and "the digital," this section surveys a first wave of post-Internet writing on the concept of "new media" and ends with an exploratory model of systems theoretical film analysis for the digital age. Luhmann's work, it should be said, is not particularly rich in models of textual analysis, to put it mildly, so one of the most challenging, and rewarding, elements of this project has been experimenting with ways to bring as abstract a model as systems theory to bear upon the practical work of "reading" films. In the end, however, it is at the theoretical level that the principal energies of this project have been directed, and the readings themselves should be understood as participating in much the same energies. On reaching the end of this project, I am more convinced than ever that systems theory and Luhmann's work provide vital tools for re-thinking long standing issues of film theory and moving beyond certain impasses. I can only hope the pages that follow will convince others as much.

Chapter 1

System, Relay, and the Chase Film in Early Cinema

The Narrative of Shock and the "Modernity Thesis"

In the early years of cinema, the Great Men of the age made a practice of mounting excursions to the movies and then reporting on their experiences. On the whole, viewing films for the first time, they were shocked by what they saw. Some were also delighted; others dismayed. In an account printed in the *New York Times*, Leo Tolstoy remarked that "this little clicking contraption with the revolving handle will make a revolution in our life. . . . We shall have to adapt ourselves to the shadowy screen and to the cold machine" (qtd. in Leyda 410). Maxim Gorky was troubled by the unnatural aspects of the medium's representations, but still found them uncannily compelling and declared the virtual world they were forging a "Kingdom of Shadows" (qtd. in Burch, *Life to Those Shadows* 23). The list goes on, from the Russian modernist Andrei Bely to the abstract painter Theo van Doesburg, and these pilgrimages have been ritually recounted from the earliest years of film history as evidence of the talismanic power of the new medium.

That they continued to be highlighted in revisionist treatments of early cinema from the late eighties on (e.g. Burch, *Life to Those Shadows*; Gunning, "Modernity and Cinema") is significant because what this work attempts to accomplish is a set of corrections to prevailing understandings of cinema, especially in its first twenty or thirty years. For the most part, this work—by Noël Burch, Tom Gunning, Miriam Hansen, André Gaudreault, Thomas Elsaesser and others—strives to restore a certain vitality to an

era previously dismissed as "primitive." It is engaged in an effort to draw attention to elements of complexity in early cinema neglected by virtue of certain prior critical preferences for sound cinema, classical cinema more generally, or other subsequent forms. Though it is a project of demystification—geared to demonstrate the unexpected sophistication of early films, especially when viewed in their cultural contexts rather than through lenses of traditional (read: nineteenth-century) aesthetics—it typically expresses, at least by implication, a reverse preference for early over later forms of cinema, and preserves (or at least asserts) something of the novelty of those forms. It is that enterprise for which the Great Men are typically enlisted—to show how these paragons of high culture were subject to certain raptures ("The destruction of gravity! The secret of movement . . . !" raved van Doesburg) under the influence of the shock of the new.

Given the demystifying aspirations of this enterprise, it is surprising that none of these critics wonder about what happened the second or third times that Bely, Gorky, Tolstoy, van Doesburg, or whoever else, went out to the movies. It is possible, of course, that they grew increasingly bored by further acquaintance with the new medium, novelty having such a short shelf life. Still, their initial awe—redolent of the fierce affect of those commoners who were said to leap under tables as the Lumière train pulled into the station—certainly serves a purpose. It underwrites a narrative shared by most of the scholars named above, however different the nuances of their work otherwise. In this narrative, early cinema is a vitally disordered field rife with possibilities, not yet standardized. That it will soon become so is also an article of faith; Burch, for example, speaks of the shift from the "primitive" mode (he is one of the few who does not reject the word "primitive" but rather uses it defiantly) to the Institutional Mode of

Representation—a phrase with Kafkaesque reverberations that Burch underlines by designating it with the grim acronym "IMR." Gunning, too, writes the history of the medium's first thirty years according to an evolution, broadly speaking, from a "cinema of attractions" to a cinema of narrative integration. Against previous critics who could only perceive lack in early cinema—the "lack" of sound, the "lack" of sophisticated storytelling, even the "lack" of real human presence—Gunning proposes the raw excitement of a new medium that could go (or could have gone) in many different directions, and that encompasses the heady intensities of emergent modernity itself, in its post-industrializing phase.

Basic to this narrative is a conception of "shock" as a redeeming value. As late as 1936, Walter Benjamin was still assuming that viewers of films were readily shocked by, for example, closeups—though Burch, Gunning and others would find that the hectic virtues of early cinema had long given way to its institutionalized mode by then. But there was something hopeful in Benjamin's belated vision of the shocked spectator; indeed, it was precisely this shock, if only it could be sustained, that would keep that spectator from the omnipresent danger of complacent habituation and prevent film itself from settling into some standardized form. In even larger terms, this state of perpetual shock could activate an underlying social consciousness; it could be part of the democratizing process that might change "the reactionary attitude toward a Picasso painting" on the part of the masses into the "progressive reaction toward a Chaplin movie" (Benjamin 234). The objects of these attitudes, clearly, were less important to Benjamin than it was that "progressive" ones remained somehow available. If so

activated, the spectator—now a full-fledged social subject—would inhabit a state of alertness, less amenable to the rising orders of totalitarian regimes.

Burch values early over later cinema because it was, as he sees it, both formally and ideologically decentered (thus inviting a genuine plurality of responses); because it produced a "prodigious 'circulation of signs'" (*Life to Those Shadows* 196)—both at the textual level, where borrowings among filmmakers were legion, and at the extra-textual, where films were not viewed as property in the way they would be later; because of its narrative openness; and because of the absence from it of the "classical persona"—a form, that is, of the bourgeois subject to emerge later as the ostensible addressee of classical cinema (195-98). Gunning notes the confrontations of or direct addresses to the audience in early cinema (in, for instance, the frontal, tableau compositions that dominated); its abbreviated narrative forms; its fascination with speed and surprise effects; its forthright exhibitions of novelty; and its alternative forms of linear constructions in spatial-temporal (and not necessarily narrative) terms. Both imply—or state directly—that early cinema bears affinities with avant-garde movements in the culture of modernity, affinities closed off when cinema falls victim to cooptation by classical realism in its (to use Burch's acronym) IMR.

Thus—the story of a legacy betrayed. Nor is this broad account of cinema's first thirty years necessarily inaccurate, though Gunning's work, for example, is marked by an ambivalence toward modernity that determines the particular incompleteness of his own account. As we will see, Gunning's work has been charged with tautology, to the extent that it suggests a relation of causality between cinema and modernity, in its claims that key developments in cinema are profoundly conditioned by features of modernity.

Certainly no one can deny that cinema is a technology of modernity—though, as this project tries to show, few have taken seriously the implications of such a claim. But Gunning's particular version of the "modernity thesis" (as it has been called) appears to rely, in fact, on competing modernities—one the energizing modernity of shock, novelty, liberating unsettledness, and alert spectators; the other the dispiriting modernity of institutionalization, reification, narrativization, habituation, and passive consumers. Both Burch and Gunning appear to suggest that cinema begins in the first of these modernities and ends up in the second. It is not surprising that there should be differing accounts of modernity, even within the same writers' work, since it is a term that readily accommodates multiple, even contradictory meanings.

From the perspective of systems theory, however, the basic feature of modernity as such is systemization. Therefore, it is a mistake to assume that there could be one variant of modernity that is non-systemized—therefore potentially liberating—and another that is systemized—therefore constraining or oppressive. Things may be constraining or oppressive, but it is not because they are systemized or not—for, being outgrowths of modernity, they are systemized by definition. For Niklas Luhmann, modernity is, in the words of William Rasch, "the precondition for all our deliberations, the 'structure' within which our 'semantics' makes sense, even as we think we celebrate (or mourn) its passing" (1). That being the case, according to Rasch,

> Modernity is not a disease for which we seek a cure but rather the question for which we continually devise answers, the insoluble problem for which we find a continuing series of incomplete solutions. Modernity is the

> structure of contingency that forces selections, which in turn, force other selections, none able to assert its own necessity. (1-2)

If we take such claims seriously, the problem with revisionist theories of early cinema is not that they are incomplete—because that is true of all systems and observations about their operations; it is that Burch and Gunning assume that some forms of cinema are systemized and others are not. But if modernity is the precondition of our deliberations, according to Luhmann, that is because it has produced the basic situation in which we find ourselves—that of the systemization of the world.

But though Luhmann's theoretical system thrives on critique—or at least on the production of communications that cannot be reconciled with one another and so produce further communications—he would no doubt find that the kind of critique of systemization found in Burch or Gunning is, by definition, an effort to transcend given circumstances and recover an anterior "unity of reason" of the sort that, he claims, no longer exists in modernity—because what modernity did, precisely, is to *divide* all realms into multiple, intricately adjacent, but self-enclosed systems. These are never "free" in some Rousseauian sense, of course, but neither need they always be perceived as constraining in some Benthamite sense. One could find that cinema met a tragic fate at some point in its evolution, and thereafter became constrained or oppressed (and perhaps therefore constraining and oppressive); but, especially if one insists on its status as an instrument of modernity, one could not logically do so by arguing that it was formerly non-systemized and subsequently systemized. One would have to advert to some other set of observations, some other causal ground for one's lament. Indeed, systems theory demands that we accept its starting point—that modernity systemizes phenomena and

experience—not by any means as a bleak edict but, on the contrary, as a way of moving beyond the all too familiar anxiety and nostalgia of the critique-of-modernity mode—which, in contemporary theory, has already been disavowed virtually across the board in any case, as witness current ritual denunciations of the Frankfurt School. The series of self-enclosed, autonomous, non-hierarchical systems that constitute modernity put an end, once and for all, to notions of transcendental immanence—to the idea that there could be any one system that overarches the social whole; indeed, under such conditions, there can be no social whole—and that is all to the good. For Luhmann, systemization and its sibling, modern rationality, as Rasch points out, have landed us not "in a surreal wonderland of unreason [or at least not only there, I would add] but rather in the midst of a plurality of competing rationalities" (11).

What is especially noteworthy in revisionist theories of early cinema is that it is in the name of pluralism that they celebrate the lost paradise of the early years. For Burch, decenteredness preserves the plural subject who must later yield to his or her bourgeois other; for Gunning, the "cinema of attractions" maintains an openness to modern experience that is lost in the onslaught of narrative integration; for Miriam Hansen, the spectator of early cinema is posited as a highly variable construct in terms of class, race, gender, and so forth, especially by contrast to the homogeneous spectator posited by classical cinema. At the same time, none of these scholars is eager to open himself or herself to charges of being anxious and nostalgic critics of modernity as such—not even Hansen, the one whose project is most closely allied to the work of the Frankfurt School that serves, in turn, as a sort of shorthand reference-point (whether justly or not) for just that kind of anxiety and nostalgia. Yet all of these scholars abut upon the critique-of-

modernity mode that they simultaneously disavow; and although the work of these scholars subsumes many of the key concerns of systems theory, none adopts the ideas of that theory that could help to undo the binds in which these scholars sometimes find themselves (though Gunning's work, interestingly, moves increasingly toward a concern with what he calls "systematicity").

In a sense, this chapter bears less of a burden in the project overall than chapters to follow, courtesy of the very models of early cinema that have emerged in the work of Burch, Gunning, David Bordwell, and others. As we will see, the accounts of early cinema that they provide lend themselves quite directly to discussion of cinema as a relay system; in fact, especially in looking at quintessential and definitive genres such as the chase film—which literalizes the relay quite explicitly—it seems unlikely that many would deny such an attribution. Early cinema's tableau framing, its lateral staging, its tendency toward "assembly editing," its freedom from certain continuities, including later techniques such as reverse-field editing, yet its pronounced emphasis on creating an increased sense of movement from shot to shot, especially by linking shots in a chain via people and objects being, as it were, moved insistently along that chain—these are essentially undisputed features widely recurrent across national traditions. It will be the burden of following chapters to show how the notion of cinema as relay system remains suggestive for later permutations of the medium and its theories—mostly by arguing for the persistence of certain features of cinematic construction widely deemed to have been casualties of "institutional modes" of various sorts. This chapter has the advantage of discovering that the notion of early cinema as a relay system is in fact already an entrenched one—even if it has not been articulated in this way previously.

Early Cinema Revised

Tom Gunning's "The Cinema of Attractions" is one of the most influential essays on the subject of early film history, so it is somewhat surprising that it concludes with the equivocal statement that the "heritage" of early film is "ambiguous" (61). This ambiguity is said to arise from a rivalry between two distinct modes in early cinema—spectacle on the one hand, and narrative on the other. This is a contest that neither side fully wins, though the balance begins to tip decidedly toward narrative around 1906, according to Gunning. The "cinema of attractions" is notable for the shocks it is alleged to provide the spectator, whereas narrative cinema promotes absorption into a story world by successively evolving strategies of linear, continuity editing. Gunning explains that, prior to his own work, the history of the development of linear narrative continuity in cinema had come largely to stand for the history of early cinema itself, with the implication that all that was not already narrative was only paving the way for what later would be. Thus, Gunning's purpose in the essay is to right a certain wrong, to intervene in a construction of film history that substitutes a part (narrative editing) for the whole (cinema "as such") and so fails to do justice to the early tradition in cinema of "showing," of simply "exhibiting." As Gunning notes, films in their early years were exhibited in vaudeville as "attractions" between performances—also "attractions"—by comedians, singers, acrobats, magicians, and the like; despite these associations with popular forms, Gunning finds that the dynamic of "showing" itself implied a certain self-reflexivity, at least to the extent that films engaged in such exhibition directly addressed their audiences and openly declared themselves illusions, by contrast to subsequent forms of cinema that closed

themselves off from the spectator—thereby allegedly locking him or her into a voyeuristic position—and attempted to conceal their illusionist nature.

As Gunning remarks, the novel machines responsible for cinema—various camera and projector technologies—were themselves exhibited as part of the entertainment event. By implication, pointing to such exhibits promotes that sense of the self-reflexivity Gunning posits as an element of early cinema that had previously gone unnoticed. On the basis of this observation, among others, Gunning argues for a higher degree of self-awareness among the spectators of early cinema than had formerly been acknowledged. Far from being a crowd of dupes, mired in naiveté and surrendering themselves ecstatically to the lure of seductive illusions, they were—or might have been—an aggregate of thoroughly modern subjects, avidly attuned to the mechanized nature of the cinema as a modern technology.

The connection between the "cinema of attractions" and vaudeville is of special interest. As Gunning observes, the vaudeville program was a strikingly heterogeneous series of acts that required only novelty, not story—a reason, we might assume, that films could be incorporated so readily into the program. The serial format of a vaudeville show squares with Gunning's description of early "trick films" by Méliès and others: "The story simply provides a frame upon which to string a demonstration of the magical possibilities of the cinema" (*Cinema of Attractions* 58). A trick film, then, can exhibit characteristics of both narrative and non-narrative; moreover, these seemingly opposed modes share a common feature—namely, a certain continuity, whether interpreted as "story" or "string," such that the movement from point to point elaborated a kind of relay along the string. Though the vaudeville program may have lacked narrative as such, it

nevertheless connected events in a linear fashion simply by virtue of its time-based, sequential structure. Furthermore, the cinema machines included within the frame of vaudeville as spectacles in their own right, showcasing modernity's inventiveness, operate according to something of the same "string logic," insofar as these mechanisms expose or project heterogeneous images in continuous succession, rendering the sense of a dynamic whole from static parts. Thus the "magic" of film technologies is of a piece with the "magic" of a variety show, and that of a trick film: each transmutes contingency into a fait accompli.

The resulting "shock" effects lent themselves to criticism on moral grounds. Here Gunning turns his attention to the Russell Sage Survey, an offshoot of reformist movements that inquired into possibilities for cinematic development from a social-sciences perspective. By contrast to earlier reformist reactions to cinema that simply vilified its general immorality, the Russell Sage Survey was a part of the "Better Films Movement," dating back to 1914 and allied with the National Board of Review, attempting a more positive engagement with cinema to encourage the production of worthy films (rather than simply criticizing unworthy ones) by chronicling the attitudes of discerning viewers. Despite this motive, the framers of the Survey found that variety shows and the films they subtended depend upon "an artificial rather than a natural human and developing interest, these acts having no necessary and as a rule, no actual connection" (qtd. in Gunning, *Cinema of Attractions* 60). This observation assumes a spectator who is simply vulnerable to artificial stimuli—the body, it would seem, does not "humanize" these shocks, cannot convert this external energy into a corresponding "human" form. Furthermore, the Survey's complaint appears to conflate vaudeville's

effect with its formal structure: the former is artificial because the latter is also, the structure having "no actual connections." Though Gunning derides the Survey's spurious moralizing, he largely accepts this characterization of early cinema. Indeed, what is chastised by the Russell Sage Survey is precisely the machinic dimension of cinema that operates as a relay system, relatively indifferent to whatever objects—human or otherwise—it sends along its path of transfer, with all that may imply about the "dehumanized" subject.

If we accept one of the most important implications of Gunning's essay—that early film takes as a primary resource for its development the production of new perceptions on the part of spectators—perhaps we can better understand the reach of relay systems. If a system like the one described above requires only the condition of novelty to incorporate some item into its relay, then in theory it can incorporate the very new human perceptions it arouses. The threat of modernity and mass culture at the turn of the century in America, from this vantage point, and as articulated by the Russell Sage Survey, is the capacity of their systems to challenge the autonomy of the spectator as subject—if only by suggesting the ease with which that spectator may be initiated into ongoing processes of modernity. Gunning, of course, celebrates the very discontinuity that the Survey fears; in a sense, his most pressing contention is that modernity is a fragmented field, and that we should, as modern subjects, accept this fact. For him, early cinema is a site in which this fragmentation is dazzlingly displayed for all to see. Where the Russell Sage survey views this fragmentation as a threat, Gunning's fear is a different one: that the modern subject will become habituated, lose sight of this defining fragmentation, labor under the illusion that overarching wholes or some other universal

principles are somehow still operable. Indeed, this danger is so prevalent that viewers must be continually shocked out of it so that they will remain aware of their differences, and of difference itself—hence the perpetually, or at least theoretically, shockable spectator that Gunning posits.

David Bordwell takes approaches like those of Gunning and Burch to task, in one sense, for their melodramatic flavor (this despite Gunning's impeccably academic prose). Gunning shares a basic assumption of systems theory in all of his work: that the field of modernity is sundered and that no overarching unity can, or should, bring it together. He departs from systems theory in staging this observation as a kind of catastrophe, with the lingering after-effect that the subjects of modernity may remain gallingly oblivious of the disunity that surrounds them, and may slip into a slumber of habituation, ill-fitting them to respond rightly to the onrush of stimuli, the very hectic field of "shocks" that—preeminently in early film—objectifies the encroaching fragmentation. Bordwell shares a different set of assumptions of systems theory: that the world is as it is, but could be different; and that the fragmentation of modern life (on which Bordwell remains neutral on the whole) could just as easily be understood as a gain. (To clarify, Gunning thinks it is a gain too, because it produces endless differentiation among humans and in other fields, but he worries that too many others will fail to see it that way.) Bordwell counters Gunning and other theorists of early cinema with the common-sense assertion that what really happens is that filmmakers create movies with attention to maximum legibility, and that spectators take these cues and sort them dependably, and that things move along when viewers get tired of the prevailing cues and filmmakers attempt to accommodate them with new, better effects. Novelty remains key, but it is not, in Bordwell, imbued

with crisis, perhaps because of the faith Bordwell continues to place in cognition as a baseline measure of experience, and in empiricism as an overarching method. Despite these commitments, it is striking to note the overlaps between Bordwell's own procedures and a systems theory approach to early cinema.

In his article "*La Nouvelle Mission de Feuillade*; or, What Was Mise-en-Scène?" Bordwell calls attention to a line of research that tries to recast the terms of a central debate in histories of early cinema about whether priority should be given to the role of narrative editing or tableau staging. Specifically, this research suggests that early experimentation with staging in depth represents an alternative front for inquiry into the evolution of the medium. In some ways, this mode of film presentation combines the interests and devices of both editing and tableau styles. Ironically, the work of early revisionist historians winds up settling into a formulaic pattern by distinguishing itself primarily in opposition to narrative concerns. Bordwell points out that one reason staging in depth might have awaited recognition as a crucial device in understanding the development of cinema is simply because it is difficult to describe. Its formal qualities, logistical determinants, and aesthetic effects upon both the internal organization of a scene and the external consciousness of the spectator are all so complex as to render attempts at mapping and articulating all of these a significant challenge. This mode of early film practice, Bordwell also suggests, may languish on the sideline of research programs because it is not readily reconciled to theories about the influence of mass culture and modernity that have dominated revisionist histories of early cinema.

One might think that Bordwell's study of the dynamism of space within a single shot would trade observations with Burch on the tableau style of early cinema, as Burch

too is interested in the functions and effects of single shots and long takes. Yet in fact, Bordwell takes Burch as something of a foil to make his points about depth staging and organization of space and time within mise-en-scene. Specifically, Bordwell challenges one of Burch's key assertions about the "primitive" mode, namely, that tableau films represent a decentered or "centrifugal" style. According to Burch, this style contrasts with that of early narrative films that are seen to place important information in the center of the frame for the sake of legibility, thus inaugurating a "centripetal" (restrictive) form of shot composition. With his characteristic demeanor of getting down to the brass tacks, Bordwell asks "What is a decentered composition?" ("*Nouvelle Mission de Feuillade*" 11). Burch's claim begs the question, Bordwell finds, because directors tend to exert more control than Burch allows over the relation of parts within the entirety of the frame, particularly as these relations are choreographed over time. And besides, Bordwell adds, no matter how dispersed the information that occupies any given frame, spectators nevertheless tend to make sense of the various data and cues sequentially, by noticing and processing the various components of a shot one-by-one. In pursuing his investigation of these matters, Bordwell provides an account of how a shot functions as a sequence of elements that react to one another, forming a chain that can be observed in retrospect (though not necessarily the same chain for each spectator).

Bordwell concludes by venturing a theory about why staging in depth arises as a repertoire of devices responsible for advancing cinema, as it appears to. Borrowing a concept from art historian E. H. Gombrich, Bordwell speculates that changes in cinema are driven simply by a demand for novelty. That is, as one set of strategies ceases to inspire interest and surprise, another set emerges, typically with the old and new sets

serving as supplements to each other; and when new strategies or devices are introduced, they inevitably upset a balance, which further promotes invention as the system seeks to reestablish harmony among its parts.

Bordwell draws his examples chiefly from the serials directed by Louis Feuillade in the 1910s. Among the most striking features of Bordwell's exposition are the vividness and subtle strangeness of his descriptions of selected scenes from Feuillade's films. What accounts for these distinctive qualities is that, instead of referring cinematic materials to narrative frames or their absences, he concentrates on articulating a "dynamic flux" in the scenes "whose stabilities and instabilities unfold over time" ("*Nouvelle Mission de Feuillade*" 14). Indeed, he remarks on how scenes proceed by a successive imbalance which is redressed and which in turn triggers a new perturbation, followed by a subsequent correction. The critical terms that appear in these descriptions include "synchronized," "stasis," "oscillation," "rebalancing," "pile up," "block and clear." Perhaps against his better judgment—this is the same Bordwell who wrote *Narration in the Fiction Film*—it would seem that Bordwell's pursuit of an alternative to modes of critical practice that oppose "primitive" and narrative cinemas allows him to tap into a version of cinema-as-design—or engineering, as the case may be. Directly derived from the field of control engineering, the terms he uses describe the operations of systems—and in particular those of a relay system. Though Bordwell uses them metaphorically, they retain their implications in his analysis.

Even so, Bordwell disallows modernity as an underlying cause of cinematic evolution. In *On The History of Film Style*, published the year after the article on Feuillade, Bordwell takes up and expands upon nearly all of the issues considered in that

essay. Among these is the modernity thesis, with special reference to problems of visuality. In the course of discussing that notion, Bordwell devotes several paragraphs to Gunning and his work on the cinema of attractions. In refuting the modernity thesis, Bordwell argues that the more Gunning posits an identity between cinema as attraction and other forms of modern life, like rollercoasters or the tumult of the urban environment more generally, "the more problematic the case seems to become" (144). If cinema is indeed part and parcel of a modern culture of shocks, Bordwell wonders, why are not all early films attractions? Cinema itself was apparently not sufficiently spectacular, for Bordwell, at least up to 1906 or thereabouts (Gunning, however, gives the impression that even "filmed theater" would function as an attraction). Further, Bordwell seems to think (though may only be scoring rhetorical points in saying so) that theorists who speculate that modernity alters vision are actually proposing that human physiology changes—that the apparatus we call human perception is forced to evolve to accommodate the speed and jolts of modern experience. Because such a claim is beyond the scope of film studies, possibly unverifiable in any case, and certainly improbable, it fails to be persuasive as an explanation for the development of cinema. Nor does his criticism stop there, as Bordwell plays out the modernity thesis by way of an imaginary narrative of apocalyptic or utopian futurity that comes up short at each twist and turn. If humans change in some radical way in response to modernity, why does cinema settle into the dominant mode of narrative continuity, bourgeois storytelling? And if cinema has the capacity to transform the character of perception, what becomes of the nervous system tuned to astonishment when films become increasingly standardized and predictable?

Gunning responds to several of Bordwell's key criticisms of the "modernity thesis" in, among other places, his contribution to the *Oxford Guide to Film Studies*, an entry that surveys scholarship on "Early American Film." Two of these rebuttals stand out in particular. First, of Bordwell's expressed incredulity about what he understands as the claim that modernity actually rewires perception, Gunning counters that this objection is "based on a disingenuous reduction ad absurdum" (267). Appealing perhaps to Bordwell's empiricism, Gunning cites the work of art historian Jonathan Crary on modern vision, to make the useful point that Crary and other theorists concerned with the possibilities of historicizing vision base their insights on material evidence. Specifically, they draw from the observations of visual objects—objects that observe humans seeing. The assumption here is that paintings, drawings, advertisements, photographs, films, and so on, do not simply represent the world; these objects look back at humans and regard how we see the world, recording these observations in their content and form. In Luhmann's terms, films can be understood as "second-order observers" of humans, and the spectator—especially in the guise of researcher—acts as a "third-order observer" of second-order observations. Thus the object of a "modern vision" study is not the mysterious senses, as Bordwell postulates, but rather a material record such as a film. To this defense, Bordwell might object that visual objects cannot function as reliable observers.

The second response Gunning offers to Bordwell's criticisms is similar in some respects to the first rebuttal. This rejoinder answers Bordwell's complaint that "culturalist" approaches to early cinema cannot account specifically for changes in film style. Gunning at first concedes that "the relations drawn between the structures of

modernity and those of early film frequently lack specificity and remain on the level of vague analyses" ("Early American Film" 268). But then he points to something so obvious that one understands how it might escape common-sense recognition: contemporary cultural theorists are not minting brand new claims about the reciprocal relations between modern life and cinema; they are in fact repeating and building upon the writings on cinema at the turn of the century which first adduce connections between features of cinema and modernity. Again, researchers are working with actual evidence and not with "Theory" alone. Gunning further protests that the legitimacy of a research program on early film cannot be decided by the sole criterion that it can (or cannot) explain the history of film style.

Bordwell's complaints are part of a larger commitment—his general disapproval of "symptomatic" approaches to film analysis. He favors inductive analysis that derives its questions from "within" a film or films. In this regard, the modernity thesis is mistaken because it posits film as a symptom of modernity, or modernity as a symptom of film, as the case may be—and that this logic is circular to the extent that it could in fact go either way. But their debate exemplifies a condition that Gunning's approach implies. The fragmentation of modernity has led to a fragmentation of observations about modernity's constituent parts, which leaves us with no access to a commonly assumed objective world. In a field of plurality, modern systems tend toward complexity to a degree that renders it impossible to relate all elements to all others; but for Luhmann, this incommensurability is what produces the very surfeit of observations about systems that allows them to continue differentiating themselves.

But, by contrast to symptomatic approaches, this process is never one of direct correspondence—as it could only be if there *were* a commonly assumed objective world. Rather, it is a process of "vicarious causation" (in the phrase of the mathematician and quasi systems theorist Graham Harman)—in which operationally closed, self-referential systems interact with one another via discourses produced, in part, by their closure and operations of self-reference. Communications between systems and environments are blocked, but that condition produces a potentially endless relay of communications that, in turn, "perturb" systems, as catalysts for their internal activity—but not as determining factors of how that activity proceeds. These perturbations become, in a sense, circuitously-processed feeders—much like the internal operations of systems themselves—that serve the system's basic function of self-preservation. This notion may have a ring of Social Darwinism about it—certainly Luhmann's ideas are, in part, quasi-evolutionary—but if modernity is defined as the plurality (not a totality) of horizontally ordered systems that differentiate, then it is not modernity that is a threat to difference but *de*-differentiation that is a threat to modernity. In fact—at least according to systems theory—it is the re-production of differentiation that produces conditions of pluralism, and it is the closure, autonomy, and self-replication of systems (features that might seem menacing in prevailing theoretical contexts) that all but guarantee these conditions. The self-replication of systems is, then, deemed a positive value in systems theory.

Thus, a systems theory approach to film brings with it an understanding of modernity and narrativity, cultural context and representational forms, ultimately quite different from those that have been applied by Gunning, Burch, and others. As the analysis to follow indicates, it suggests alternative approaches to the developments of

early cinema. It also answers Bordwell's call for a theory addressed to questions of stylistic change that is able to make sense of even the most local details—though the idea of what it means to "make sense" in this context may remain a specialized one.

The Chase Film and the Relay System: *Rescued from an Eagle's Nest*

The chase film, by common consent, is a sort of ur-genre of early cinema, the model for the process of extending films across multiple shots. "With the chase film," notes Eileen Bowser, "the moving picture really began to move" (13). According to Miriam Hansen, the chase structure followed upon the actuality and the trick film from about 1900 to 1906, as the quintessential means for "an elaboration of continuous action in cinematic terms" (*Babel and Babylon* 46). Most scholars agree that the chase structure was the transitional vehicle from a "cinema of attractions" to a "cinema of narrative integration." In *D. W. Griffith and the Origins of American Narrative Film*, Tom Gunning traces the progression from 1904—from Wallace McCutcheon's *The Escaped Lunatic* (1904) to D. W. Griffith's *The Adventures of Dollie* (1908), which Gunning dubs a "trajectory film" influenced by the chase structure. Of course, most films followed a trajectory of some kind from very early in American film history. Edwin S. Porter's *Life of an American Fireman* and *The Great Train Robbery* (both 1903) follow the action of firemen racing to a fire and thieves robbing a train. Both impart a sense of urgency to the sequence of action even if it does not involve a chase, and the second ends with a climactic chase as the robbers are pursued by a posse. According to Gunning, "The process of following a continuous action through a series of shots created new relations to the spectator, new approaches to space and time, and a new focus on storytelling" (66). In

Early American Cinema in Transition, Charlie Keil traces this development from 1907 to 1913, and suggests that the chase not only moves American film increasingly toward narrative integration, but that it introduces "the intertwining of character and narrative" (48).

It is important to note that some of the earliest films employed a chase structure. For example, one of the first Lumière films shows a man watering a garden while a boy behind him steps on the hose to stanch the flow of water. When the man turns to him indignantly, the boy runs off into the depth of the frame and the man pursues him. At the edge of the frame, the boy is caught, and the man pulls him back into the foreground of the image to spank him—all of this in a single shot. The film is significant as being among the first to flirt with the possibility of a subsequent disclosure of off-screen space; when the boy hovers at the boundary of the frame before being apprehended, he is poised between the "world" of the film and whatever lays beyond it. Though the Lumière films frequently emphasized the permeability of screen space—their series of films of workers leaving a factory, for instance, show the crowd streaming toward the camera and then exiting on either side, while a dog keeps running in and out of the frame—they rarely broached it with continuous action. Most of their multiple shot films from 1895-1905 simply place differing vantage points of a scene in sequence without linking them through the movement of human figures or other pivots from shot to shot.

Of course, Bowser would not deny that moving pictures moved from the start. When she says they "really began to move" with the chase film, she is referring to a moment of differentiation within the cinema system. What she means is that an amplification of movement within shots occurs following upon a linkage of multiple

shots, especially when these are connected via persons or objects moving from one shot to the next to the next, along a sequential line. Since cameras, on the whole, did not themselves move within shots, it is the extension itself, the placement of shots one after another, that apparently provides the enhanced sense of momentum. Movement, then, is seen as a function of linkage, assembly, accumulation—features that may (or may not) give way to causality. Hansen's notion of the chase as an "elaboration" is also noteworthy, especially since she refers to the "string of events" that films were thereby increasingly geared to chronicle (*Babel and Babylon* 47), recalling Gunning's "string" metaphor.

We know from Bordwell's work on staging—if not from our own observation—that systemic operations occur within the space of a single shot ("dynamic flux," "oscillation," and so forth). This can only be complicated by the addition of subsequent shots. The multiple shot film is a clear change—possibly an "advance"—in the cinema system, but one that seems foretold by the gestures in the earliest films toward off-screen space, with their implication that other shots could follow representing that heralded space. In that sense, we might observe that this change in the system fulfills certain internal dynamics—and Bordwell seems to suggest as much when he follows a chain of action across multiple shots in his discussion of Feuillade and finds that it reifies a set of otherwise contingent shot relations. Burch, meanwhile, finds that the multiple shot structure all but foretells the paradise lost of early cinema, and all but accomplishes the move toward the IMR so quickly to follow. This is because the single shot film with its "tableau" framing, as he sees it, retains a certain autonomy, hence a freedom from verisimilitude, an indifference to its own relation to reality, while multiple shot films, by

definition, work to create the sense of a virtual world, fostering the illusion of continuous space-time from shot to shot.

Yet even Burch, along with most theorists of early cinema, acknowledges an element of contingency in shot relations as films begin to link shots in chains of action. This contingency is a positive value for Burch, as it keeps the IMR at bay for a while and maintains possibilities for a kind of openness within cinematic structures. Gunning describes the chase film as "the original truly narrative genre of the cinema" even though he says it is actually composed of "mini-spectacles" (*Cinema of Attractions* 60); to the extent that "spectacle" films depend on contingent relations between shots, Gunning too deems such contingency a saving grace; moreover, he finds such contingency increasingly curtailed by the process of narrative integration, though still potentially available, especially in the avant-garde or modernist cinemas of which he sees early film as a forerunner. (This is especially clear in his work on Fritz Lang, which follows Lang's career from the 1910s through the classical era of cinema.) For both Gunning and Burch, contingency holds off the standardization of cinematic language that will soon be accomplished by the overlying structures of narrative causality, and it preserves something of the "shock" value of early cinema insofar as shot relations have not yet become codified or habituated.

One way to grasp this notion of contingency is to understand it in terms of a certain implicit freedom: in theory, any shot could follow any other shot. That a particular shot has in fact been selected in any given instance is the essence of this contingency in Luhmann's sense; Luhmann regards the structures of uncertainty that define modernity as profoundly contingent in every case, but this is so to the extent that an actual possibility

is selected in a given instance from an infinite number of options (or what would be infinite, if systems were capable of directly selecting options from outside themselves). Contingency is present not in the absence of choice, in other words, but once a choice has been made, in the knowledge that it could always have been otherwise. Seen as a step toward narrative integration, the chase film could be said to inhibit such contingency from the start, since a central line of action—the chase—comes to define the chain of shots. That it has not, on the whole, been viewed in this way—that it tends (until the "transitional era") to be seen more as pointing back to traditions of spectacle and the "cinema of attractions" than looking forward to classical narrative—suggests possibilities for rethinking in larger terms the role of contingency in the cinema system.

A more basic question may be posed here. Why did movement in cinema need to amplified or elaborated in the first place? One answer might be that it did not need to be; it simply happened to be. But this happening has both internal spurs, as has already been suggested, and environmental influences. As Luhmann would have it, the "environment" can only serve to provide "triggering" devices to changes within a system because, in order to be comprehensible at all, a system must be "closed," or else it would be so fraught with possibilities, with no selections having already been made—the "outside" of any system being a space of unorganized chaos—that it would have no organization by which to be defined in the first place. Many variables enabled or drove the extension of films into multiple shots, some of them technological (refinement of motorized cameras and projectors with greater capacities, for example). But the development from single-shot to multiple shot films follows the trajectory of systems much as Luhmann defines it: it turns on processes of division, differentiation, distinction, atomization. Like any

modern social system, it generates a series of partial views that stand in relation to one another without being able to formulate a whole; if key branches of film theory find that the "danger" of cinema lies in a transcendental illusionism, based in its construction of inviolate, authoritative, or panoramic levels of vision, such cautionary exhortations may participate in the very woes of modernity they claim to diagnose and expose. This is especially the case if we acknowledge, along with Luhmann, that the founding condition of modernity is one of stratification (though he would prefer to name it what he claims it becomes, "functional differentiation"). Once that step has been taken as a point of departure, such exhortations sound more and more like calls for a recovered unity of a sort, even as they decry the illusions of false unity that classical cinema constructs.

By 1907, the chase film was giving way to successive narrativization of its possibilities. Just as theorists of early cinema find the chase film to be the quintessential genre from 1900 to 1906, so do discussions of the "transitional era" from 1907 to the mid-teens center the chase film as a privileged site of analysis to demonstrate the increasing sway of narrative logic. As Charlie Keil argues, the early chase film already presaged an "intertwining of character and narrative" (48) that would quickly yield a version of (in Burch's term) the "classical persona," an individual agent driven by desires and centered within the action. In the "transitional era" that Keil's work treats most fully—the period from 1907 to 1913, in which the continuing inexorable movement toward classical narrative is uncovered—the chase film remains the *sine qua non* of that process. Keil observes that in the films of this period the chases become more complex in the sense that the reasons for the chase are more clearly defined, and a moral dimension is introduced—that is, the films seem ever more eager to emphasize the culpability of the

chased and the virtue of the chaser, often in the terms of a melodramatic heritage. Moreover, films featuring a "rampaging group of angry pursuers" proliferate, and "a principle of aggregation" obtains (48); in other words, with each successive shot, more and more people have entered the chase. As a result, according to Keil, a new "sense of narrative necessity" begins to determine the "introduction of each new shot/space" (48). Narrative action, that is, comes to dictate the order of shots. This is, in essence, another version of the narrative sketched above, in which a greater narrative determinism drives out contingency, thus closing off former possibilities of representational freedom. Attention to the processes of relay at work within cinema challenges the primacy of such accounts, which select narrative as the central principle of distinction. Put simply, earlier films are less contingent than such accounts would have it, and later ones are more contingent, perhaps because a different, more "technical" (at least to the extent that it is derived from systems theory) definition of contingency is assumed.

An analysis of *Rescued from an Eagle's Nest* (1908) will show not only how this is the case but what is at stake in the concept of cinema as a relay system more generally. As we have seen, systemic metaphors are common in discussion of early cinema, especially with reference to metaphors of the sequence of shots as "strings." One reason for this is that commentators observe the absence of reverse-field editing prior to 1910. It should be noted that this absence could only be observed as a lack in retrospect; as of 1910, nobody was observing it as an absence because it was little heralded as a possibility. Keil contends that reverse-field editing enters the cinema system later than most other scholars find, receiving "a rudimentary testing in the late stage of the transitional period but await[ing its] full articulation in the years to follow" (209). Thus,

Keil sees it as largely a post-1913 development, except in "rudimentary" form, while Gunning argues that it begins to emerge in complicated forms as early as 1910. It is as a result of this absence, in any case, that notions of film editing as adumbrating a string or a chain emerge—not even really as metaphors, but as viable descriptions of actual shot relations. That is, since reverse-field editing has not yet been articulated, the relation of shots is seen as essentially lateral, or horizontal—moving along a sideward track—rather than rounded or directionally multivalent. In other words, the relation of shots is one of "beside"-ness, rather than the shots being perceptible as in front of, behind, above, or below one another—or any other variable of virtual relation.

The chase film is regarded as quintessential largely to the extent that it promotes this sense of the particular stages at which the medium finds itself during its first twenty years. The action of the chase is lateral, with the principles moving usually in a single direction from side to side and shots changing, presumably, to follow and actualize this movement. Such films operate in a process of relay in some literal sense, with people and objects being passed along an ever-increasing chain of shots. What remains to be shown is the nature and purpose of such movement and what it reveals about the cinema as a system.

Rescued from an Eagle's Nest is one of the hybrid films that, as Hansen shows, characterize the middle years of the century's first decade (*Babel and Babylon* 47). While certainly characteristic of the early silent chase-and-rescue film, it can also be seen as an example of the early trick film in the manner of Georges Méliès. For one thing, it makes use of a mode of "trick" photography and employs a mechanized device—an automated puppet that represents an eagle—to achieve the effect of its central spectacle. But one of

its ultimate accomplishments is to transport a family—a father, mother, and child locked together in an embrace—from the space adjoining their cabin to a clearing in the nearby forest where, in the film's last shot, they are surrounded by three men whooping and hollering. But unlike Méliès who typically achieved such feats through a simple manipulation of the camera, using in-camera editing, the directors of *Rescued from an Eagle's Nest* (J. Serge Dawley and Edwin S. Porter) accomplish that trick by the design of a relay.

The film consists of eleven shots that tell the story of a baby's abduction by an eagle and the child's rescue by its parents. The story begins with habitual action: the father goes to work as a woodsman and the mother leaves the baby outdoors to play. But this ordinary course of events is disrupted when the eagle swoops down and carries the baby to its nest on a nearby ledge. The mother subsequently emerges from the house, frantically notes the baby's absence, evidently sees the eagle flying above, and runs to the site where the father is working. Acting together, the mother, the father, and his fellow woodsmen form a chain along a cliff so that the father can climb down and retrieve the baby, fighting off the aggrieved eagle all the while. The film ends with the tableau of the mother and father presenting the rescued baby to the camera while the other woodsmen gesture triumphantly behind them.

In its narrative, the film allegorizes the workings of relay. The father's arrival at his worksite figures the sense of relay associated with labor—the original Marxian sense, when one worker relieves another on a crew. The snatching of the baby, shown in a long take in which the mechanical eagle and the child are matted against a painted backdrop, emphasizes the baby's transport through space, linking two shots. When the rescuers

form a human chain using a makeshift pulley, they complete the allegory and fulfill its positive outcome. Each shot is a node along these interlinked instances of relay, and form a network in realizing it as a larger complex. What is of special interest for the present analysis, however, is neither the narrative itself nor its representational implications—though these will be taken up later. Rather, it is important to show how the mechanisms of relay exceed narrative containment or the framing contexts of individual shots. Indeed, despite the film's evident "simplicity," it consists of an elaborate network of nodes, vectors, lines, from its very first shot, which function much as currents or changes in voltage, as it were, which activate further switches along the transfer, and must then be controlled by certain counter-movements, as in a feedback loop. An analysis of the film's narrative system might privilege the conventional movement from order (the family's everyday life established in the first shot) to disorder (the snatching of the child) to reestablished order (the accomplished rescue and the final celebration of the child's and the parents' reunion). But observation of micro elements of the relay takes us a step further to understanding the kinds of movement it involves.

When the father emerges from the cabin in the first shot, his right elbow bends and raises causing a hat to settle on his head. A step forward causes the father to lift his chin, and his eyes cast upward to an empty sky. Simultaneously, he grabs the handle of an axe, which then rises, as if on its own speed, to his shoulder. As he takes a few steps in the direction of the forest (which we do not see until the next shot), the axe swings up and over his shoulder, causing his body to rotate back toward the cabin, a movement which brings the mother, holding the baby, from inside the cabin to outside. The father spins until the mother's body draws up tightly against his own. As their faces turn to regard one

another, both of their lips push forward and they press together. This embrace, which includes the baby, is the very tableau the film's directors will transport to a wholly different setting in the last shot. It could, of course, happen at this moment, via Méliès-like trick editing, or perhaps through a jump cut like the ones Porter uses to portray the family in *The Whole Dam Family and the Dam Dog* (1905). Its function—to present a final triumphant image of familial unity—is the same, but the conception of succession is altered. To get from shot A to shot Z, as it were, it is now deemed necessary, for whatever reason, to pass through a number of intermediate phases. Each link in the chain has its purpose, but the very extension of the tableaus, the accumulation of shots, establishes a circuitousness about its elaboration. Seen from this perspective, the transfer of the tableau from one location to another is the ultimate purpose of the film, and this transfer can be seen as a super-relay circumscribing and justifying all the many discrete transfers that constitute it.

The kiss causes the father to take a small step back. As if to counter the exertions of the social force connecting him to his work, the father pushes forward his right arm, palm outward, such that his hand lightly brushes the baby's face. This caress loosens the father's resistance; an invisible, stretched coil is released, pulling the father back again toward the forest, his right hand still held in the air, now waving. The movements of his hand cause the mother to mirror this parting gesture. With her left arm outstretched, her left elbow buckles, and grasping the baby's tiny arm, she causes it to make a gentle pumping action, so that the baby too reflexively "waves," sending the father finally off to work. The mother points to the father, then draws her arm back again into a high wave, which causes the father to draw back his axe. He unwinds his hips, swings the axe

forward, striking the wide cleft at the base of a tree; fellow woodsmen follow suit with their axes. The tree nearly separates from its trunk and falls sideways, but catches in the branches of another tree and so fails to unhinge from itself completely.

Between these actions—specifically, the moment the mother waves and the father draws back the axe—a shot change occurs. We cut from the first shot, showing the front of the house, to the second, showing the woods where the felled tree is attended by workers. The intricate interrelation of movements already established in the first shot is thus "elaborated" in the formal gesture of juxtaposing two shots. But the shots are not connected by movement in this instance; we see the father leave the first shot, but we do not see him enter the second. In fact, he is unrecognizable in the second shot because he has removed a jacket he wore in the previous shot and now appears interchangeable with the other workers. Rather, the connection between the shots is secured by the mother's wave. This is an early example of a kind of eye-line match—where the virtual relation between shots is literalized by characters' looks between them so that they may be seen as spatially contiguous—but the father does not acknowledge the wave in the subsequent shot, unless his action upon the tree serves as such acknowledgment. He is already present in the space when the shot begins, already transmitted into the space of labor.

Thus, the half-felled tree constructs a gap between intention and result, a potential rupture in the chain. The third shot takes us back to the front of the house, in part as a "correction" to this breach which reestablishes the loop by doubling back on it. The baby, now alone and seated on the ground outside the cabin, toys with a found object. In the sky, an eagle appears, circles, swoops down, grabs the baby with its talons, and lifts the baby up into the air. In the shot most geared to "spectacle"—exhibiting the trick eagle,

the trick photography, and the shocking sight of the baby suspended in the air from the eagle's claws—the eagle carries the baby over panoramic lakes and mountains as the baby kicks and cries. A cut back to the house front shows the mother emerging from the cabin—her movement again as if bidden by the previous shot, though without a direct visual connection. With a spin her head snaps back; she sees the eagle carrying the baby away. This sight causes her left arm to jut out and point at the sky, a feeble gesture that she follows, in a continuous motion, by the more resolute act of grabbing a rifle. No sooner does she raise the rifle aloft, then she lowers it suddenly. The gun hits the ground, an impact which propels the mother first into the cabin to retrieve her hat, then—in a cut back to the site of labor—into the forest where, catching the father's attention, she gesticulates extravagantly toward the sky.

So far, two key features link the many nodes along the chain. One is a notion of causation, by which movements "cause" other movements. In one sense, this notion derives from specific features of this text, in which movement is both overdetermined and balletic. Characters' motion seems predetermined, somewhat evocative of the dictated movements of early cinema in which "direction" is literally visible onscreen; one example is D. W. Griffith's *As it Is in Life* (1910), in which actors visibly look beyond the camera for instructions about their subsequent movements, then complete them onscreen one by one. Yet the movements of human figures in *Rescued from an Eagle's Nest* are also fluid and dance-like (if occasionally spasmodic), in concert with one another, especially by contrast to the automated movement of the eagle, which automation the film takes no steps to conceal. In another sense, all cinematic movement is mechanized by virtue of being filmed and mechanically reproduced, as Deleuze,

among others, would aver. Even in their appearance of spontaneity, then, the movements of human figures in film are fixed—they are these movements and not others, and they relate to one another by virtue of unfolding within the same frame. Thus, causality becomes a form of contingency, not only because other causal connections could be adduced—the narrative ones that most theorists select, for example—but because the movements could be other than what they are—in a different take than the one selected in a given instance, for example, or in an alternative realization that one could imagine of a given scenario.

The other feature to be noted concerns the "string" that links these intricate causes and contingencies. As should be clear, this string is not only what links shots—or a product of the fact that shots are linked—as in Gunning's use of the metaphor. It may be tied to mimetic or narrative dimensions of the text, but it includes non-mimetic and non-narrative dimensions, vectors that introduce at a molecular level of the text processes of oscillation and equilibrium, perturbation and corrective action. The mother's pantomime, as she enlists the aid of her husband and his co-workers, is a node on the chain that has already been elaborated, but it unspools a string of feeling here connected to the baby; the more she gestures, the more tension accrues at the location where this string terminates, yet unknown. The taut string pulls the father and the mother toward the base of a rock wall, joined by the other workers at the cliff base.

The father's shocked recognition when he sees the baby in the nest causes the string of feeling that connects him to the baby—now seen to extend from the nest on a ledge along the rock face—to retract violently, whipping him around and up to the top of the cliff, and over the edge where he is stopped by the hold of the woodsmen on his feet.

The mother, meanwhile, spins away from the top edge of the cliff, which draws the woodsmen back, as they pull the father to the safety of the cliff top, where he stands and—in a gesture of apparent reassurance—kisses the mother; the kiss turns the father's head in the direction of a piece of rope lying on the ground. It is at this point that the "string" metaphor—already poised between the figurative and the concrete—becomes most suggestively literalized in the film. A rope from the worksite becomes a pulley by which the father lowers himself to the ledge where the nest is, with the entire group mobilized as human links in a chain along the rope, and the mother positioned as its anchor.

Limp yet available, the rope bears a certain nodal connection to the sky earlier in the film. Before the father looks up to the sky in the first shot, it exists as pure potential, nothing more than the general surround. It is a part of the system, visible in the background of the image, but it remains a non-crucial element until the father's glance brings it into the sphere of attention, suggesting its possible significance and making it a vehicle of meaning. When the eagle appears in the sky a few shots later, that portent is fulfilled. Similarly, the rope is a seemingly inert object that is drawn into the relay quite directly when it is put to use. In both cases, the fate of these objects—to become absorbed in the process of elaboration and transmission from shot A to shot Z—marks them off from the many other objects in the film (in any film) that serve as part of the general surround, functioning as background "noise" to the extent that they are not drawn directly into the relay. It is the assembly of the whole range of these objects, and their temporally delimited framing that, in large part, makes film systemic in a quite literal sense if we define a system in Luhmannian terms as a finite set of elements that establish, by virtue

of being finite, a calculable, but never wholly determined, set of relations between these elements. It is the movement of selected elements along this chain that defines, in turn, the system of relay. The contingency that conditions this system derives from the back-and-forth motion that gives certain elements meaning—always a process of selection. After all, the fallen tree in the second shot, or the baby's toy in the third, might just as well have become tools that drive the film forward, rather than the rope—just as any shot, at least at this stage in film history, might follow a previous one.

That the last shot of the film answers the first could be seen to point forward to certain features of the classical model of filmmaking as sketched by Raymond Bellour, among others, as an insistent gesture of closure with oppressive connotations. Certainly, the shot is a corrective action to the flurry of activity that has led up to it. In fact, the previous shots have departed from the film's horizontal scheme of shot relations, becoming vertiginously vertical. As the father lowers himself onto the ledge to rescue the baby, we cut from the woods to the cliff. In one sense, this is a reverse-shot, since the camera looks in the subsequent shot in the opposite direction from the previous one. But the shift in level—disrupting the sideward development of shots in the sequence—prevents it from registering as such. For one thing, the rock in the subsequent shot eclipses our view of the space of the previous shot; for another, the movement from horizontal to vertical space creates a marked disturbance in the film's patterning. Perhaps for that reason, the link between these two shots is more determined—less contingent—than those of previous shots (such as the first two shots of the film). It depends on a decisive match, such that the action of the father lowering himself along the pulley in the prior shot is completed in the subsequent one, with a continuity effect between the shots.

After this rupture, it is easy to read the final shot of the reunited family as a corrective, a reestablishment of orientation in a conclusive flourish.

In critiques of classical style, the notion of closure is a dependable bogey. A narrative that ties up its loose ends (or gives the impression of doing so), according to many lines of this critique, shuts down other possibilities that might have obtained. Indeed, Luhmann himself is often treated with suspicion because his vocabulary sounds severe, because he is seen to favor "closure" and "autopoiesis"—the latter, perhaps, conjuring unpleasant associations with T. S. Eliot's notion of the "autotelic" artwork. But these concepts are far from implying the contamination anxieties of "high modernism." It is true that Luhmann maintains the autonomy of systems that close themselves off according to a logic of binary coding. It is also true that these systems are seen as embedded in environments made up of endless communications about them. It is not that systems do not interact; rather, they must translate selected communications into the terms of their own codes. Systems do work to stabilize themselves, according to Luhmann—stability being seen as a condition of a system's continuation—but they do not always manage to do so, least of all when they no longer function in relation to their environment. These acts of translation, meanwhile, produce more and more discourse, while the system's closure itself—far from blocking observations or communications—is precisely what makes them proliferate.

In *Rescued from an Eagle's Nest,* the domestic/wilderness binary functions as a motor, supplying some of the torsion required to move the father from the cabin to the forest. While other readings of the film might interpret this move in the context of some larger point about the fragility of the family unit or the dangers of a will to civilize

nature—with the eagle as a vengefully returning emblem of dominated nature—my reading figures the binary coding of the system as a useful cliché. The relay here operates such that the father must join the other men at the labor site in order to introduce the forest as the final "trick" setting of the film; the cliché functions to serve this purpose of the relay.

Hats in the film function as an accessory to the domestic/wilderness cliché, signaling the transition from a presumed "safe" environment to one less secure, with the hat as a kind of talisman—portable token of a prior certainty and civility. The hats also "cause" the humans' bodies to bend and twist in ways that set key actions in motion. The father's putting on his hat precipitates his glance upward, the look that "constructs" the eagle's sky; not only a cultural symbol carrying its status as a kind of shield, protection against natural elements, the hat is a node on the relay intertwined with the father's act of looking up to the sky.

The most obvious example of the efficient cliché in *Rescued from an Eagle's Nest* is the family itself. This cliché motivates to one degree or another a multitude of actions along the film's chain, among them the parents' kisses, the father's caress of the baby's cheek, the mother's reaction to the baby's shrieking, and the woodmen's joy at the end in response to their reunion. The one action, however, that might be most interesting with regard to the family as cliché is the node involving the mother's playful manipulation of the baby's arm into a waving motion. This wave sends the father off to work, as the event that directly precedes his exit from the field of the visible. But this event is especially arresting as an instance of instruction. It calls attention to the act of teaching as a species of relay, the transmission of knowledge—the mother is teaching the baby to wave.

Furthermore, the event underscores the fact that the family is not only a particularly efficient circuit along a given immediate relay, but also a mechanism guaranteeing the future of the system by inaugurating future actions or reactions.

It is important to keep in mind, however, that these images are being understood here in relational terms. Systems theory is non-mimetic (and perhaps anti-mimetic); it understands depictions as constructions of reality, not as imitations of it. Take for example the moment the family appears precisely as a family: the man who steps out of the cabin door is not readable as a father until he is followed in due time by the woman and baby who are instantly legible as mother and child. Only by a syntax then—first the man, then the woman and child—do these figures become members of a family, and specifically the cliché emerges by virtue of the reading of this syntax. In the very next movement of the relay, when the mother and baby are joined with the father hip to hip, this embrace is a product of certain individual body movements, and the relationship of bodies in motion proximate to one another, requiring the explanatory powers of physics as much as psychology or narrative. In the context of a systems analysis, it really does not matter if the nodes along the relay function as inflected events or not, because ultimately the nodes themselves are not where meaning arises. Meaning in the film, if indeed "meaning" is the appropriate word in this context, occurs at the junction between one node and another—between the stolen baby crying and the mother emerging from the house.

Rescued from an Eagle's Nest appears to pack a lot of activity into its short four and a half minutes, but a feature of the film that helps maintain its operations is the repetition of gestures. The humans are constantly mimicking each other and themselves,

such that the film is replete with instances of waving, pointing, wielding, swinging, running, kissing and hugging. The number of repeated actions suggests that the humans might not have much of a repertoire of gestures at their disposal, and the mechanical nature of the human activity on view is amplified by an absence of psychology and motivation as requirements for the relay. This is why it is possible for the father, at the start of the film, to posit with just a glance the "sky" that the eagle will soon occupy. The father lacks whatever depth might otherwise distinguish him from the film's painted backdrops: the humans and the fake scenery alike are one-dimensional. The example of the father looking up at the "sky," because his chin lifts in reaction to his head falling ever so slightly backward, which in turn is a reaction to his step forward, serves to highlight the body itself as a relay system. But the point the film makes even more clear is that the body-as-relay is fully integrated into the film-as-relay: consider the seamless connection between the chain reactions within the father's body responsible for the swinging of the axe into the tree trunk and those within the structure of the tree responsible for its falling; or the smooth transition between the positioning of the father's head (by way of his kissing) to notice the rope and the progress of the rope over the cliff edge (by way of the workmen's fists) to lower the father down. Yet contrary to the claims of many narrative theories, especially those that stake causality on conceptions of human interiority—desire and will, for instance—the relay in *Rescued from an Eagle's Nest* proceeds quite effectively without the notion of human depth, perhaps because humans on film are so inclined to perform mechanically.

Beyond Narrative

This final section continues to address the narrative bias in discussions of early cinema by considering three key developments in cinematic structure during the period from 1904 to 1911: the principle of "aggregation" identified by Charlie Keil and already discussed above; the elaboration of action across multiple settings; and the emergence of cross-cutting. Each of these is brought about, in part, by the chase film and has typically been seen in the scholarship as a product of, or spur to, narrative integration. In each case, that attribution is based on the premise that increasingly complicated relations among shots were driven by the need to articulate temporal narrative requirements: precession, succession, simultaneity, duration, and so forth. As this final section of this chapter indicates, however, other requirements in the elaboration of shot relations obtain that exceed narrative determinations and undergird the systemic functions of cinematic structures.

How a French Nobleman Got a Wife through the New York Herald Personal Column (1904) is one of the most suggestive examples of this principle of aggregation, though it is not an example that Keil discusses. A one-shot prologue shows the title character's personal ad in closeup, followed by a shot of the character himself, preparing to go to the location (Grant's Tomb) where he has asked respondents to his ad to meet him. When he arrives there, an ever increasing number of women appear, each entering the frame one by one in long shot. Overwhelmed, the nobleman dashes out of the frame, and a sequence of shots across multiple locations shows him running, with all the women in avid pursuit. The film bears a structural correspondence to several of the examples Keil notes, Biograph's *Personal*—a virtual copy of *Nobleman*—and Edison's *Maniac*

Chase, both from the same year as *Nobleman*. Keil's central examples differ from *Nobleman*, however, in that additional pursuers enter the relay as the chase progresses, whereas in *Nobleman*, the chased and the pursuers are all in place by the third shot, with the remaining shots elaborating the pursuit across space. In other words, *Nobleman* is a film that "controls" for this principle of aggregation more tightly than Keil's chief examples, by establishing the participants clearly from the start and keeping the number constant. Yet even this more stabilized example suggests more complex operations of the principle of aggregation than the primarily narrative one that Keil adduces.

Keil's claim is that the addition of new pursuers in the course of the chase makes each shot seem more predetermined: "The protagonist enters a new locale because he is being chased. His presence, in turn, causes some calamity to befall a character already present in the new locale. That character now has a reason to want to chase the protagonist as well" (48). From this analysis, Keil concludes that this "principle of aggregation lends a sense of narrative necessity to each new shot/space." Though he admits that this causality is "undeveloped," he argues that it "stands as one of the chase film's contributions to the early development of narrative principles in cinema" (48). Two points are worth making here. First, the need to multiply participants in the course of the chase may determine a greater number of shots—with one shot dedicated to the addition of each new participant in a clash with the pursued—but it obviously does not determine the space in which those encounters will take place. It is common in chase films of this period for each shot along the relay to be empty when it starts, with the chase moving into view quickly after the shot begins. This is the case with many shots in *Nobleman*, and the effect is for each new space to present an initial surprise, being

presented, at first, if only for a second or two, independently of the action. Especially since these spaces rarely overlap, the viewer has no way of knowing in advance what location will come next in the sequence, and the chase could enter the shot from any direction. Though the chases are usually uni-directional, with figures entering from the same direction in each successive shot, there are examples of the chase proceeding in unexpected directions from shot to shot. That element of surprise remains available, then, further suggesting an ongoing contingency in the relations among shots.

Moreover, Keil undervalues the "principle of aggregation" that, as Bordwell's work on Feuillade suggests, may accrue within nearly any film shot. When we first see the nobleman, for instance, he shares the frame with a floor-standing oval mirror that is as tall as he is. The significance of the mirror is a question seemingly answered when the nobleman turns to face the mirror so as to see how to pin his boutonniere. Yet the mirror is also the inaugurating device of aggregation. It multiplies the nobleman by two, and each of the resulting nodes within the image, set at some distance apart, give rise to the conditions of an exchange from one nobleman to the other, as it were, as he views himself in the mirror.

Further, other principles than aggregation are always simultaneously in operation. In the next shot, the nobleman is greeted by one woman, then another, then yet another, and so on, until he is surrounded by a small mob of eleven women, all jostling for his attention. The surprising deluge, comically out of proportion to our expectations, takes place in a smartly-timed mechanical fashion: the women pile up one by one, and the relay proceeds according to a principle of concentration, where the components slow down as they begin to orbit each other. The relay also proceeds according to a principle of

dissemination, as the components reorganize into a linear chain, a moving circuit (when the nobleman flees, exiting the frame with the women in tow). In the initial shot before Grant's Tomb, emphasis is placed on the relay *within* the frame; in the subsequent series of shots, as the chase commences, emphasis is placed on the train of ensuing frames themselves as the motor of the relay; yet the first type, the kind that occurs at the level of the shot, remains in operation. Thus, the chase involves a relay working at multiple levels in concert.

The machinic nature of the chase, and of cinema itself as a relay system, is especially pronounced in this film due in part to the proliferation of figures on view. But it is not just the sheer number of moving figures that makes the motion in the film so clearly resemble that of a machine; the anonymity of the figures plays an equally large role in this effect. The women are dressed all alike, including the large, floppy hats that adorn their heads; the long dresses they all wear, distinguished only by differences between black and white, are pleated and so billowing that they obscure any variety that might obtain by body size or shape. In short, the women are less figures than parts, cogs of the film as relay machine. Yet the very sameness that conspires to absorb the many figures into the singularity of a system also promotes attention to odd exceptions: how one woman holds her hat atop her head; one woman's hesitation compared to others while surmounting an obstacle; or a rare fall that occasions a slight delay in the relay. The uniformity of the relay system, its dependence on repetition, is thus a ground for the production of difference, critical to maintenance of the relay which depends on effects of surprise and variation.

A question we might ask about this film is, why does the chase begin at all? (Keil notes that the answer to this question is always a contrivance of sorts.) Why in the second shot does the nobleman not simply walk away with one woman, hand in hand with his chosen bride-to-be—which is what happens at the end of the film anyway, after the prolonged chase sequence? Perhaps this question is just a version of a more general one: Why do films evolve from single to multiple shots, or from single to multiple reels? One answer is that not only do systems tend to increase in complexity as a function of their evolution, but also, in the case of cinema at least, forms of extension introduce the very "novelty" that is a condition of system reproduction. What is novel about this film is not simply the chase, but the fact that it involves such a high ratio of pursuers to pursued. In other words, the proliferation of human figures has the ironic effect of underscoring the nonhuman mechanics of the chase in particular, and of cinema in general, at the same time that it introduces a crucial dimension of novelty into the chase as trope and thereby contributes to the elaboration of the cinema system itself.

The third shot of the film begins like the second. It shows a depopulated frame with Grant's Tomb in the center, then the nobleman enters followed by the gaggle of women. But in shot 3 the chase has commenced, which means the nobleman and the rest enter the frame in motion, one by one, running, and they exit the frame the same way, one after the other, as fast as their legs will carry them. A continuity is established between the end of shot 2 and all of shot 3 (as well as shots 4-8) by the fact that the path of movement is not lateral but from background to foreground. The length of shot 3 is determined by the time required for all of the dozen figures to cross the longitudinal plane. In all the subsequent shots of the chase, the direction of movement is back to front

(usually along a diagonal). The duration of the shots is determined by neither narrative nor stylistic requirements but rather by a system concern: the amount of time it takes, in each shot, for all the figures to traverse a given shot "setup." The only exception to this rule is shot 4, which ends after only nine of the figures pass through the frame (in my enumeration of figures here I make no distinction between the chased man and the chasing women, because they are all simply components of the relay).

Each setup involves a physical challenge of some kind: a short fence to climb over, a steep drop-off to somehow maneuver down, a log in the road to skip past. The relay system here is a kind of obstacle course, a staple of the chase film, as well as of relay races. A result of this type of organization is that attention is drawn to a "what" (as in "what obstacle") followed by a "how" ("how will it be overcome"); these two system-based questions are interrelated, and the unit they comprise is sufficient to generate enough interest that the unit can be deployed over and over again in serial fashion. With each cut, the space is a new and unpredictable setup that indicates a novel "what"; the interest or surprise this "what" creates is supplemented and extended by "how" each figure negotiates the course. Thus, the novelty of each new shot is firstly an operation of mise-en-scene, or space (and here the film can be seen to participate in a potential of editing that has been called "creative geography," there being no requirement of any literal spatial contiguity), secondly an operation of time.

A fence, for example, becomes the condition for many different mounts, an insistent many, all somewhat imperfect, all arbitrary and prescribed, faulty and mechanical. The last shot of the film echoes the first shot by reproducing a version of the dressing mirror. The frame is divided into nearly equal halves: a reflecting pond covers

the entire bottom half; a grassy, sloping bank occupies the top. Once again, the shot begins with a view of the empty landscape. Soon the nobleman enters the frame from the top, and when he stops at the edge of the pond he is doubled by his reflection on the water's surface. As in *Rescued from an Eagle's Nest*, the end of *Nobleman* loops back to the start, closing the circuit of the relay and so too the film. As if to confirm this appearance of closed circularity, what follows next is a repetition of the film's second shot: all eleven women arrive, one after the other, congregating busily at the shore line, while the nobleman haplessly wades into the shallow water to escape. One woman, the last to arrive, follows him into the water while the others look on from their positions distributed up and down the bank. This woman and the nobleman embrace. Together they trudge through the pond water toward the camera, presumably reaching the opposite shore in the near foreground (obscured by the bottom frame line), and they disappear from view.

But its mechanism of narrative closure is not what is most distinctive about this last shot. The film's overall conceit implies a mathematical disconnect in circuits of desire, the absence of a one-to-one unity between desirer and desired. From this premise we may understand already that any coupling is incidental, a random event, not a guarantee of closure. In fact, because of its structure as a relay, the film begs the question even at its ostensible end of whether or not the chase will simply recommence. What is distinctive about the last shot is that, for a brief moment after the couple has exited the frame, the audience on the bank (for that is what, now excluded from coupledom, they have become) begins to wave—and they are waving at us, the audience that has been observing them all along. This sudden gesture of apparent self-consciousness about the

relay of looks on which film is conventionally seen to depend (resonating also with the last shot of *Rescued from an Eagle's Nest*) is especially striking in the context of this film, considering its reliance on proliferation as a significant operation—the multiplication of figures and therefore of observers—within the workings of the film's system.

Cecil Hepworth's *Rescued by Rover* (1904) is an example of the chase film that figures prominently in discussions of narrative in early film history that precede the revisionist trends inaugurated by Burch, Gunning, Hansen, and others. Gerald Mast uses it as his chief example in his essay "Kracauer's Two Tendencies and the Early History of Film Narrative." His essay differs from the work that comes later in its valorization of coherence. Like many earlier historians, Mast traces a path from "incoherence" to "coherence" in early cinema to show the progress of the medium toward possibilities of narrative complexity. (As we have seen, revisionist historians reject this approach as falsely teleological and favor, on the whole, the works of early film history that are difficult to assimilate to conventional frameworks of coherence.) Mast makes his case by comparing *Rescued by Rover* to a later film clearly inspired by it, *Her First Adventure* (1908). He argues that the earlier film is more coherent and that coherence, therefore, emerges not in a dependable sequence of linear progression but through a kind of back-and-forth between progressive and regressive possibilities. This is due in part, he claims, to the tension in cinema between formalist and realist drives (Kracauer's "two tendencies"). "Although [*Rescued by Rover*] respects the spatial integrity and natural identity of each place depicted in each shot," Mast concludes, "only a conventionalized relationship keeps the individual shots and places together" (473).

Due in part to Mast's essay, *Rescued by Rover* has become something of a landmark in the narrative history of film. Following Mast, it is often said to exemplify the successful imposition of coherence across multiple, potentially disconnected shots. But what is the nature of this "coherence"? The film begins with a shot of a path in a park, or rather a slice of a path that cuts across the frame diagonally. Walking down the path toward the camera, from the top left of the frame, is a mother pushing a baby carriage. Also in the frame is a beggar woman who approaches the mother. Rebuffing the beggar's advances, the mother exits the frame at bottom right, still pushing the carriage, leaving the beggar woman stranded and angry. In the next shot, still in the park, the mother enters the frame once again from the left, but now she is in front of the carriage, walking away from the camera and toward the right side of the frame, pulling the carriage in tow. And this is not all that has changed. The beggar woman now shows up skulking behind a hedge. According to conventional models, her appearance defies a certain strain of cinematic logic, because previously she lagged behind the mother. Has the beggar teleported? In a sense, she has—by virtue of the cut, and its ability to construct continuity and discontinuity as part of a systems logic.

From the perspective of systems theory, the relocation of the beggar woman, and of the mother in relationship to the carriage, is not a violation of continuity with respect to the relay. To be sure, there is a spatiotemporal mismatch between these first two shots, but if we understand space and time as elements dependent on the relay—not the other way around—the changes remain both logical and sequential. They facilitate the progress of the relay, which requires the illicit transfer of the baby to the beggar woman, and

without the mother's knowledge so as to provide sufficient delay to motivate a sufficiently complicated chase and rescue.

Burch might argue that Hepworth, at least at the start of this film, has "one foot effectively 'in the past' and one 'in the future'" as Burch says of Porter ("Porter, or Ambivalence" 99). After all, what is interesting about the cut is that it constructs both continuity and discontinuity—or, if you will, discontinuity within continuity. Burch argues that Porter's films, especially those made in 1903—he singles out *The Life of an American Cowboy* and *The Great Train Robbery*—are contradictory in their exhibition of tendencies associated with both a basic "montage model" of cinematic presentation and a more elaborate narrative model defined by linear continuity editing. In fact, *Rescued by Rover* shares a feature of *The Great Train Robbery* that Burch discusses at some length (a feature Burch assigns to the primitive model) and that he terms the "emblematic closeup": in Porter's film this shot is the famous closeup of the outlaw firing his gun directly at the camera/audience; in Hepworth's it is the prologue shot of the baby and Rover, one smiling and the other panting, posed together as if for a picture to hang beside other family portraits. What is significant about such a shot for Burch is that it stands entirely outside the narrative but nevertheless cleaves to the film it belongs to. According to Burch, the emblematic closeup "provides an early attempt to encapsulate the 'essence' of the film, to provide a 'treasure' which each spectator could carry home" ("Primitivism and the Avant-Gardes" 492).

Like nearly everyone in the field, Burch argues that the chase film is the *locus classicus* of narrative cinema; moreover, he states that chase films like *Rescued by Rover* establish "a chain of spatio-temporal sequentiality *no matter what*":

> No matter that the screen direction (and/or entries and exits from the frame) comprised "bad matches" (according to criteria formulated much later, of course); the simple situation of the chase, bi-univocally concatenated from one shot to the next by its very nature, sufficed to make the narrative movement *legible*. ("Porter, or Ambivalence" 99).

Devaluing "legibility" throughout, Burch trains his attention on ambiguity; indeed, he sees ambiguity between narrative and non-narrative modes as the constitutive framework not only for understanding the development of cinema but for the very evolution of the medium itself. I am suggesting that ambiguity is a critical means to achieving novelty, but a systems theory definition of "ambiguity" is much broader than Burch's sense allows. Burch's interest in ambiguity is in large part motivated by his concern that it is a lost value once narrative becomes the dominant in film production in the ascendancy of the IMR. I will argue in later chapters that while increasing systemization does indeed pose a challenge to novelty, and thus to the continuing development of cinema, the system continues to generate ambiguity and novelty in complex ways even after narrative and linear continuity editing hold sway.

Rescued by Rover also resonates with Gunning's cinema of attractions. As much as the film establishes tight links between its shots, and as much as a story can be said to take shape as a result, one might ask if the overall effect is necessarily "telling," as opposed to the more primitive "showing." A strong argument can be made for the latter effect; and if the question becomes what does the film show, I am inclined to answer it shows the process of the relay and by extension the relay as a process of regulation. From the perspective of systems theory, what is most ambiguous about the film is not the

discontinuity of the first two shots (or three shots, counting the prologue); rather it is Rover's trip between the family home and the beggar's den. Why show Rover's entire trip back home to fetch the father? Why elide spaces on the trip back to rescue the baby? Why elide the entire journey on the second trip home? These are the same types of questions that bear significantly on the operations of *Nobleman*. They are questions not so much about closure and non-closure (the questions that preoccupy Burch), but rather about how cinema as a relay system can expand, branch out, without simultaneously going, as it were, off the tracks.

It would be remiss to end this chapter without a comment on Griffith, however brief. (It is worth noting, however, that Griffith has already made a phantom appearance in this chapter—he plays the father in *Rescued from an Eagle's Nest*.) Studies have typically taken the director's films as exemplary of cinema specificity—of cinema coming into its own, through Griffith, by way of increasingly complex procedures of narrative integration. Raymond Bellour, for example, examines *The Lonedale Operator* (1911) for both institutional and more idiosyncratic articulations of temporal simultaneity and spatial discontinuity via patterns of repetition and alternation (262-277). No matter the particular brand of specificity sought in studies of Griffith—whether in the case of his features or the earlier Biograph films—some measure of privilege is given to Griffith's use of crosscutting. Of special interest about *The Lonedale Operator* in the context of this study, and the development of the early chase film, is the manner in which Griffith exploits the separation of the pursuer and pursued to intensify the relay between them. Whereas in other films discussed here the chase is an occasion to explore spatial continuity, in *The Lonedale Operator* it is crosscutting between spaces that organizes the

relay. This approach to editing does not cover ground in the way montage, or assembly cutting, tends to do; rather, such analytical editing mines the resources of a select few spaces. With the shift from assembly editing (here one might think of Pudovkin's notion of shots as "bricks") to composite editing (patterns of alternation combined with "insert shots"), as apparent in Griffith's films, a question is raised about how film as relay system can increase its level of organizational complexity without inciting chaos and thus heralding a breakdown of the system. One way to begin to answer this question is to consider a concept Bordwell borrows from Gombrich—that is, the concept of "schemas."

According to Bordwell in *On the History of Film Style*, "Schemas are bare-bone, routinized devices that solve perennial problems. Experienced artists can apply them quickly to new situations, trusting that they will serve as they have served before" (152). In the context of editing, examples of schemas might include crosscutting, shot/reverse-shots, flashbacks and flashforwards, matches on action, and so forth. More interestingly, Bordwell goes on to say that "[i]n the course of time, directors might also innovate by synthesizing familiar schemas in fresh ways" (153). In other words, schemas are not only tested relations between the components of a cinema system that can be relied upon and so can augment the efficiency of the system; schemas can also perform a crucial function of systems—the reduction of complexity when negentropy threatens—by collapsing multiple processes into a single operation. A simple example of a schema and its function can be seen with the incorporation of the telegraph—a relay system in its own right—into the relay of *The Lonedale Operator*. By indicating a relay within the system of the film itself, Griffith is able to consolidate any number of connecting devices that might otherwise have made the film impossibly unwieldy. Increasingly elaborate forms

constituting the cinema system do not necessarily imply an elaboration of complexity, as many historians and scholars have claimed. On the contrary, the development of a new form can have the opposite effect by subordinating several processes into a single one. Of course, while this composite form—or subsystem—might achieve a reduction of complexity in the overall system initially, it sets the conditions for a subsequent increase of complexity: subsystems can continue to proliferate, at least until they are later enfolded, concatenated, into new schemas.

Chapter 2

Rube Goldberg and the Relays of Slapstick

Slapstick in Theory

To judge from recent writing on American film history, slapstick comedy picks up almost exactly where the chase film leaves off. Though understood to be a major thread in the development of cinema in its first twenty years—at least from the Lumière film *L'Arroseur arrosé* (1895), discussed in the previous chapter—it takes on recognizable cinematic shape, by most accounts, as an offshoot of the chase film some time around 1905 and solidifies into a full-fledged "genre" with the advent of Mack Sennett's Keystone films by 1912. From this point of origin we follow a familiar dialectic of opposing preferences in the discourse around cinema from that day to this—between the chase film as such and slapstick, its putative offspring; between action and character; between "genteel" comedy and slapstick; and ultimately—after a decade of prominence in the 1920s that James Agee would proclaim twenty years later "Comedy's Greatest Era"—between silent slapstick and the new dialogue comedy of the sound era.

As early as 1908, a backlash against slapstick was already apparent. *Moving Picture World*, for instance, chastised one of Griffith's slapstick chase films—*The Curtain Pole* (1908)—in language both genteel and oddly xenophobic: "One is disposed to wonder why the Biograph company with its splendid organization has felt forced to adopt the worn-out scheme of foreign producers and introduce these long chases and destruction of property as part of their amusement films" (qtd. in Gunning, *D. W. Griffith and the Narrator-System* 191). At least by implication, criticisms like this one express a

clear preference for the narrative integration that, in the views of many observers, was already well underway. The same publication around the same time, however, declared that only in slapstick could "characterization" be subordinated to "incident and action" (qtd. in Neale and Krutnik 61). Despite such license, according to conventional wisdom, the preference for narrative ultimately held sway even where its domination was not viewed as inevitable. In a representative article, Steve Neale and Frank Krutnik conclude that slapstick had already been compromised by the mid-1920s, "no longer exist[ing] in anything like its original form . . . hybridized [with "genteel" comedy that was more inclined toward narrative], combined with other components, or else industrially or institutionally marginalized" (69). That slapstick dies off altogether with the advent of sound is so widespread an article of faith in such histories that one highly regarded volume on the subject, Tom Paulus and Rob King's *Slapstick Comedy*, while issuing ritual condemnations of "golden-age thinking" (3), confines itself entirely to silent cinema and makes little to no reference to the sound era.

Wherever narrative is said to triumph, one is likely to find David Bordwell on the scene asserting a parallel triumph of the empirical and the cognitive—this despite his maintaining, as we saw in the previous chapter, many of the elements of a systems logic throughout his work (perhaps mainly due to a formalist-constructivist legacy in Bordwell's earliest work on Eisenstein, never fully relinquished). The field of slapstick is no exception. In collaboration with Kristin Thompson, Bordwell posits Buster Keaton's *Our Hospitality* (1923) as one point at which narrative subsumes slapstick:

> [V]irtually every bit of behavior of the figures functions to support and advance the cause-effect chain of the narrative. . . . Thanks to such spatial

> arrangements, Keaton is able to pack together two story events, resulting in tight narrative construction and in a relatively unrestricted narration. (*Film Art* 155)

This highly determined set of observations produces, in turn, a view of the text as highly determined and regulated. Reading this same passage, Neale and Krutnik find it suggests that "nearly all the elements in *Our Hospitality*—including the gags—are multiply motivated: used to advance the narrative, used to delineate character, and, often, presented in such a way as to ensure a high degree of narrative economy" (65). This gloss seems like a telling example of understanding-as-misreading—a motif of this chapter, which in part views slapstick as thematizing blind spots in observations, and thereby distinguishing key features of cinema's self-organization as a relay system. As will be seen, such a view is highly dependent on concepts of multiplicity both specific to the cinema system and observable more generally in its environment. That Neale and Krutnik discern "multiple" motivations where Bordwell and Thompson appear to deny them (with "virtually every bit" said to "support and advance" the narrative) is thus a fitting point of departure, since one of the chapter's aims is to apply a systems theory-based model of communication not predicated in the first instance on understanding-as-agreement.

In many ways, as this brief survey suggests, the treatment of slapstick in recent film history and theory reproduces key features of the discourses on early cinema treated in the previous chapter. Influenced to greater or lesser extents by strains of critical theory as such—multiply intersecting and constantly shifting strains, to be sure—much of this work disavows empiricism (with the notable exception of Bordwell and a few others), rejects "binary thinking" and avoids "essentialism." As in so much of film studies *tout*

court, a submerged systems logic persists (as in Bordwell's metaphor of the narrative "chain"), but its implications remain largely untested. A given phenomenon—the cinema of attractions, the chase film, slapstick, and so forth—is said to resist (however powerfully or wanly) ever-expanding threads of narrativization but, despite the implicit or explicit avoidance of teleological thinking or commonly presumed fallacies of transcendental immanence, the phenomenon in question is ultimately viewed as being subsumed by that apparently all-encompassing force.

Often these theoretical commitments are fickle on the face of it; one essay on slapstick and narrative in a mildly New Historical mode cautions against both ahistorical approaches and quests for a "master theory," then goes on to state blithely that "comedy is a category that transcends epochs and cultures, and it thus adds little to a consideration of historical genres" (Karnick and Jenkins 71). Yet the authors go on to survey the field usefully:

> A focus on comic stories or plots presupposes the centrality of narrative to our experience of comedy. Most work on gags, however, suggests a fundamental tension within most comic texts between our interest in narrative and our interest in gags and humor. Various writers resolve this tension in different ways, making this question a center of debate within recent work on film comedy. (79-80)

Why this "tension" would need to be "resolved" in the discourse—especially in a context where the drive toward closure is typically held to be one of narrative's gravest flaws—remains unclear. But a comment from one of slapstick's masters raises still more questions about the relation of slapstick and narrative. Looking back on his work near the

end of his career, Buster Keaton understands the evolution of slapstick not in terms of the growing dominance of narrative as such, but in relation to shifting conventions of length: "The faster the gags came in short comedies, the better. In the features I soon found out that one had to present believable characters in situations the audience accepted" (173). Keaton never mentions story or plot; rather, the "situation" remains the basic building block of comic construction. What changes is the kind of gag that fuels these potentially disconnected situations; rejecting "custard-pie throwing" because "the public by that time—it was 1923—had had enough of that" and "impossible gags or cartoon gags" (174), Keaton asserts the primacy of the temporal dimension itself, attesting merely that the longer a given film is, the more intricate the gag structures that are required.

Whether narrative emerged because films got longer or films got longer because narrative emerged is exactly the kind of question that scholars of slapstick like many of those cited would seem uniquely poised to consider, given the kinds of questions they do raise. Yet a unidirectional cause-effect account of narrative's triumph in American film remains largely in force in this case, as in the cases treated in chapter one. Rather than replay the critique of that tendency already mounted in the previous chapter, this chapter pursues key motifs of slapstick that illuminate other—though not unrelated—dimensions of cinematic relay in its relation to a larger systems logic. More precisely, this chapter takes up the question of the status of objects in the cinema, under the "regime" of the cinematic relay and the cinema system. Just as the chase film serves as a crucial vehicle for cinema's systemic self-organization due to its relay functions, so slapstick literalizes cinematic relays at the level of content in a manner that serves principally to renew,

elaborate, and reproduce the formal or functional operations of the cinema system more generally.

As scholars rarely fail to note, slapstick structure works mainly through an intricate assemblage of objects and bodies placed in relation and serving as vehicles of exchange and transfer in comic loops. This point takes on added resonance in cinematic slapstick, which from the start (unlike much late nineteenth-century vaudeville slapstick, for instance) engages explicitly with the "machine age." Examples include the careening automobiles of the Keystone cops; the "crazy machines" or "uproarious inventions" of Sennett and many others; Keaton's various alliances with automata and other forms of technology, as in *The Navigator* (1924)—a cargo-transporting steam ship; *The General* (1925)—a steam locomotive; or *Sherlock, Jr.* (1924)—that most literal of cinematic relay systems, the motion-picture projector; or Chaplin's run-ins with technologies of various sorts, most notably the assembly-line machinery of *Modern Times* (1936).

In *Cinema 1: The Movement-Image*, Gilles Deleuze comments on a representative kind of slapstick gag structure as follows: "Each element of the series is such that it has no function, no relationship to the goal, but acquires one in relation to another element which itself has no function or relation" (177). In this light, Deleuze goes on to show how Keaton's work illustrates the "recursion function" of cinema, as Deleuze sees it. The original French is "recurrent"—translated literally in the English edition of *Cinema 1* as "recurrent"—but the context makes clear that Deleuze has in mind the computational and mechanical concept of recursion, an understanding that squares fully with Deleuze's ultimate conception of cinema as a thinking machine. From that perspective—and in keeping with basic assumptions of cybernetic modeling—each element in a data series is

a singularity that occurs once, every recurrence effectively a "new" event rather than a reiteration. The particularity of each element—a feature one must assume would be dear to one of theory's foremost celebrants of the "molecular" over the "molar"—enables, as Deleuze remarks, "the realization of Keaton's dream of taking the biggest machine in the world and making it work with the tiniest elements" (180). Causality is conditioned by disconnection, defined as strictly "physical causation," and always subject to "processes . . . which pass through detours, extensions, indirect paths, liaisons between heterogeneous elements" (181). Considering Deleuze's explicit debt to Henri Bergson, it is not surprising that this account squares directly with Bergson's notion of the "serial" and mechanistic nature of comic representation, involving "processes that consist in looking upon life as a repeating mechanism, with reversible action and interchangeable parts" (*Laughter* 50).

The resonance in Deleuze with the language of cybernetics is by no means accidental, just as surely as Bergson's vocabulary prefigures it. Taking its cue from an understanding of the body itself as an assemblage of systems including the biological and the psychic, cybernetics depends on the acknowledgment that the elements of complex machines (including the body) cannot communicate with one another directly, in part because these elements consist of different systems working in tandem within a larger one. When a cinder gets into one's eye, the brain cannot "know" what it is; it can only "know" that something is there, and only because it registers as a perturbation in the brain's environment, which the brain then, through a process of "structural coupling," translates into the codes of its own system, thereby making a reaction possible (the production of tears, for instance).

In systems theory, under the influence of cybernetics, a complex system is defined precisely as one with a finite set of elements capable of establishing a set of relations among these elements that can be calculated but never totally determined, because no element in the system exists in any one-to-one relation of direct communication with any other element. An influential and representative work of cybernetic modeling of 1965 (the year of Luhmann's first major work in systems theory) is Jiři Klír and Miroslaw Valach's *Cybernetic Modeling*. Typical of such texts, this one is rife with charts attempting to show the operations of many forms of exchange among systems in order to suggest how these features of inter-system communications (among parts of bodies, among persons, between persons and machines, and so on) might translate into processes of making meaning—and, of course, to suggest how they might influence the further development of "intelligent" machines, especially computers. Even in examples involving the simplest sentences and stories, these diagrams are a riot of ebbs and flows, with multiple nodes signifying circuits of meaning understood as provisional, and arrows denoting potential meanings pointing in multiple directions along the chain—because, to theorize meaning in a way that is "sufficient" for cybernetic modeling, many potentialities must be calculated, including the improbable.

The trajectory from eccentric "thought experiments" of nineteenth-century physicists (Charles Babbage, James Maxwell, and others) to emergent models of control engineering in the phase of late industrialization and on to cybernetics at the dawn of the computer age is a theoretically more direct one than those it tends to produce as its models or emblems. Surely Bergson, writing in the midst of these developments, was reacting to them, in part, when he drew the connection between mechanization and the

comic that Deleuze pursues and that has remained pertinent in more recent treatments of comedy in the context of modernity and modernism. What is perhaps most significant in thinking about the relation of cinematic slapstick to this tradition is precisely slapstick's tendency to observe trajectories of various kinds—often deriving their comic impetus from a sense of their own hyper-complexity, such that any transaction among the nodes along the relay becomes complicated. The catapulted pie that misses its target and hits another one is a simple example. The opening title of Keaton's two-reeler *My Wife's Relations* (1922) provides a more explicit verbal example that underlies the visual gags of the film that follows: "In the foreign section of a big city—where so many languages are spoken, the people misunderstand one another perfectly. . . ." The title makes wittily clear what Deleuze values so highly in Keaton's work, a valuation that is part of what makes Deleuze's own theory so responsive to the logics of systems theory in its Keaton-like attunement to the productive possibilities of circuits of miscommunication.

Rube Goldberg, Laughter, and Relay

One important figure whose work establishes a crucial confluence among slapstick, modernity, and the influence of the physics of control engineering in everyday life is Rube Goldberg, whose work as a cartoonist of nearly seven decades (from about 1905 to his death in 1970) lampooned an increasing dissociation between human capacity and environmental complexity in the "machine age." Indeed, Deleuze's description of slapstick gag structures cited above is a direct gloss on Goldberg's work, and "Goldberg machines"—the intricate inventions calling upon improbable chain reactions to achieve, usually, simple daily tasks—figure routinely as a sort of parallel track, cited (usually in

passing) by scholars of slapstick such as Donald Crafton, Tom Gunning, and Lisa Trahair, among many others. In the case of Deleuze, Goldberg figures by comparison with Keaton as a linchpin in Deleuze's conception of the movement-image early in *Cinema 1*. In Deleuze's decidedly systems-oriented vocabulary, the typical Goldberg machine illustrates "flows," "circuits," "chains," "strings" of movement all at once—the very substance, if such it can be called, of the movement-image as Deleuze conceives it. The intricacy of the assemblage adumbrates the complex relation of "parts" to "wholes" that underlies Deleuze's film theory overall; in a typical Goldberg machine, the trajectory from one node to the next is usually linear in the sense that it is designated alphabetically and moves from A to B to C and so on, such that if any one part along the relay were to fail, then the goal of the machine as a whole would fail, with the result of systemic breakdown. Yet, in the operational process, no one part seems "aware" of any other—even if immediately adjacent elements react to each other, they do not react to any other elements along the trajectory. This is in large part what Deleuze means when he says that each element has "no function" in itself, but acquires one only "in relation to another element" (181).

The question of awareness is raised in the first instance by the fact that some points along the chain are routinely occupied by ostensibly sensate creatures, human and animal figures. Each of these figures is typically engaged in a more localized goal than the one of the machine as a whole, suggesting their lack of awareness that they are part of the system at all. One invention, for example, uses a complicated pulley system in order to extract a dental patient's tooth. Like most of the inventions, this one depends on an initial whimsical "given": that the dentist is an investor on Wall Street who goes

repeatedly back and forth between his own office and that of his stockbroker next door. (Tellingly, it is at the time of the Great Depression that Goldberg's machines come most fully into their own, and many of them involve outcomes related to the stock market crash—a machine for committing suicide, for instance, when you discover that all your money's gone.) The dentist's rushing from the room to "see what Consolidated Boloney is doing" precipitates the chain reaction: as he runs out, the rubber heel comes off his shoe and bounces into a cup that tilts and tips a lever that upsets a bag on a pedestal, spilling peanuts below in front of a caged squirrel, making the frustrated squirrel—unable to reach the nuts—run madly in its wheel, activating a piston that squeezes a fan at a wedge of cheese, the smelly fumes from which make the patient in the dentist's chair fall unconscious, producing a snore that makes his head bob, releasing a delicate prop from under the headrest, resulting in the dropping of a weight connected to a string that, finally, pulls the tooth (rpt. in Kinnaird 25).

What makes this Goldberg machine especially evocative of an important line of slapstick structure is that the joke has to do with an intricate process running its course across a spatiotemporal trajectory, a relay of figures, in a manner that exceeds individual human agency. Indeed, the more intricate the process, the less significant the agency. Even in the least complex machines, part of the gag is to register the "disconnection" (to use Deleuze's word) of even its "animate" parts. In the case of the panel in question, the dentist is oblivious of the patient; the squirrel, locked in its cage, is concerned only with the unreachable peanuts, and not with any other part of the relay; and the patient, locked in his own head, is a cipher whose reactions are pure reflex—instant unconsciousness at a single whiff of Limburger cheese. Considering Deleuze's commitments to multiplicity,

one might think the linear, unidirectional flow of the process would render it unsatisfying to him, but in fact, what makes it central to the task of grounding Deleuze's theory of film is its illustration that even processes that appear linear or unidirectional cannot "actually" be so in process (in part because this actuality is always shadowed by the virtual). That conviction is also one of the clearest links between systems theory and Deleuze's thought.

Though Goldberg's machine cartoons are almost entirely single-panel images, they undermine any simple sense of temporal simultaneity. In their static way, they evoke the Bergson-inspired notion of "sheets of time" that, especially in *Cinema 2*, Deleuze finds to be constituent of cinematic images—the always-shifting onrush, falling away, and overlap of past, present and future. It is rarely clear in Goldberg's panels at what point in its process the comic trajectory is being depicted. In parts of the image that trajectory seems to be in progress, in other parts already completed, and in still others just about to begin—and these three orders of time are often difficult to square with one another within any given image.

From yet another vantage point, one could say that everything in these panels is happening at once, even though the chain depends on the elements reacting in sequence, not all at the same time. That the elements are often hilariously arbitrary links this temporal dimension of the cartoons to a systems-specific issue that is also suggestively Deleuzian. The complexity of Goldberg's machines, like that of any system, is in fact a reduction in the complexity of its environment. Just as some film images conjure an "any-space-whatever," in Deleuze's parlance, the objects along a Goldberg relay are, in a sense, "any-things-whatever." They are by no means exactly the objects that a rational or

normative observer would assemble for the achievement of the machine's particular goals—that's one reason they're funny. Their presence bespeaks the improbability of their selection, making the principle of selection itself—jerry-rigged yet smoothly functioning—grist for the comic mill.

It is not difficult to see, then, why Rube Goldberg emerges as such a suggestive figure for Deleuze's understanding not just of slapstick but of cinema itself. One of his first orders of business in *Cinema 1* is to establish the definitive importance of partial views to cinematic structures. For Deleuze, each cinematic image is a field of objects, maintaining fluid, open, and potentially infinite relations with other images in the system. The "molecules" of film form, he suggests, are the objects in an image and the constantly shifting set of relations established among them by their framings and re-framings—nearness and distance, resemblances to one another or their prototypes, qualities and densities, intensity of "attractions," tactile or other sensory interrelations, their embeddedness in events and their transfigurations in time, and so on. Any visible image is a selection—a subtraction from some non-present "whole which changes," a subtraction not only, perhaps, of the entirety of a given object, but of the fields in which such objects find themselves extricated. Each visual iteration of an object as an "actualized" form demonstrates its difference from any prior iteration because of the differing relations among objects that obtain from an alternate vantage or at a different time. This dynamic describes, in large part, Deleuze's conception of the cinema's operations as machine-like, even though they suggest mobility, freedom of movement, and elasticity rather than qualities ordinarily associated with mechanistic operations.

Michael North's *Machine-Age Comedy* is a significant effort to theorize comedy in relation to modernity and mechanization. Its subject is largely comedy in modernist and postmodern literature and art (Wyndham Lewis, Samuel Beckett, David Foster Wallace), but it ventures into the territory of vernacular modernism with chapters on Buster Keaton and Mickey Mouse. Yet another chapter, "Goldberg Variations," promises to treat Rube Goldberg, but it ends up being a gloss on comedy in the work of Marcel Duchamp. Even so, North's treatment of Duchamp, with its passing references to Goldberg, is worth considering here. Among other things, North's work illustrates the tendency in theories of the comic to work outward from the individual "work" to its putative effect—that is, laughter—a displacement with significant implications for an understanding of relay operations in slapstick cinema.

The inaugurating event in many of Goldberg's cartoons is an impulsive reaction by a human figure—the dentist rushing off mid-tooth-extraction to check on his stock portfolio, for instance. North observes a correspondence between the human reactions that figure in the cartoons—like fright or anger in response to a stimuli, or even a simple assertion of will—and the laughter the cartoon is meant to provoke. In this context, North refers to Bergson's notion of an "inner mechanism" responsible for laughter, claiming that "[e]ach of Goldberg's 'inventions' is a visual proxy for this inner mechanism, which somehow seems to combine an intellectual process with an immediate, even visceral reaction" (95). In other words, amusement is at once an unconscious and self-conscious phenomenon, combining automaticity and reflection. This paradox lies at the heart of Bergson's central idea that laughter is always a response to a perceived clash between the mechanical and the organic, yet laughter is itself simply a reflex. Thus what North calls

"comic modernism" is driven by a circular logic, which helps to explain how and why a Goldberg cartoon might be seen to internalize virtual markers of the very reaction it is designed to produce.

As North notes, the term "readymade" used by Duchamp to describe some of his key works was borrowed by the artist from Bergson's 1900 monograph on laughter. But North goes on to argue that the meaning Duchamp attributes to the term is opposed to the one that Bergson understands. For Bergson, "readymade" describes a feature of modern life to be resisted, synonymous with a term like "clichéd" or parallel to the Flaubertian notion of the "received idea." For Duchamp, however, the term means "found," and more precisely, "found to confound." Whereas Bergson sees in the readymade an enemy of spontaneity and, hence, laughter, Duchamp prizes the readymade for its ability to surprise, to perform a kind of mischief that invites a playful response in turn. With Bergson, the negative connotation attached to "readymade" reflects a similarly negative attitude toward the mechanization of the modern world. Duchamp, on the other hand, at least according to North, embraces the mechanical within modernity because he sees automaticity as a condition for the unexpected, and the unexpected as a precursor of humor.

Taken together, these references to Bergson suggest that approaches to the question of comic modernism, especially as that question might pertain to machines or other forms of mechanization, could be said to establish a negative/positive binary. Bergson is clearly on the negative side, given his generally hostile attitude toward the mechanical—an attitude that is commonplace in critiques of modernity. Laughter in Bergson's theory is a counter-response to the oppressive effects of mechanization that

threaten to curtail or destroy what is best about humans, which is their capacity for easeful improvisation. North seems to suggest Bergson's view is reactionary, however, because it makes a too strong distinction between humans and machines, whereas the likeness between the visceral and the mechanical is precisely what excites Duchamp. Duchamp's work finds the mechanical within the human—exuberantly so—but also something of the human within objects produced by machines (of course machines too bear traces of the human).

In his discussion of Duchamp's highly intricate and complex work *The Large Glass* (1915-1923)—subsequently called *The Bride Stripped Bare by her Bachelors, Even*)—North proposes that the work is an explicit joke on Bergson. Bergson pronounced the products of mechanical reproduction worthy of laughter because they were intrinsically trivial in their status as copies, the ridiculous poor cousins of a presumably less absurd "original." This is a very familiar strain of thought at the turn of the century—one that Benjamin famously complicates and challenges with his essay on mechanical reproduction in the 1930s. A reason Bergson's view itself might look trivial in light of *The Large Glass* is because Duchamp's work is carefully designed to make observation of any telos impossible, even while it paradoxically places cause-effect relations front and center. North recognizes the obvious similarity of the work to Goldberg's inventions, explaining that *The Large Glass* stages a chain of reactions, both organic and inorganic, yet all basically mechanical. Duchamp does not privilege the organic, he does not posit the organic as "origin," nor does he mark any site as a point where the operations of the bachelor machine definitively begin. In other words, for Duchamp there are no originals, there are only reproductions; there are no actions per se, only reactions.

Duchamp's readymades are said by North to do something: they "turn the whole relation of the real to the representational into a single grand pun":

> Duchamp is not simply telling jokes about representation, or making jokes at the expense of conventional means of representation, but suggesting that representation in the modern world is a joke as such. In the world of mechanical reproduction, representation itself comes to have the unmotivated, seemingly automatic quality of the pun. Meaning can be generated without, or even against, human intention. This should not seem a negative and satirical point, however, for it also means that even the most mechanically reproduced object can have in it a certain novelty, even a kind of originality. This is why the readymades are truly comic, because they find even in the most utterly repetitious artifacts of society a new and unexpected meaning, emerging as a kind of witty surprise just where it was least expected. Thus the readymades transcend what Duchamp called a "negative ironism dependent solely on Laughter" to achieve instead the "ironism of affirmation" that was apparently the goal of all his work. (104-05)

The readymades are seen to perform a kind of alchemy, then, whereby X becomes Y. The transformation North describes is in fact more complex, because it is twofold if the "representational" itself is taken to be a transformation of the "real," in which case we could say a primary operation of reproduction transforms the "real" into "representation," and a secondary operation transforms the output of that primary operation into a pun. And what if we were to extend this relay of transformations further, by defining the

"real" itself as a manufactured reality—as any good constructivist would be inclined to do? The passage in question culminates North's discussion of Duchamp's famous *Fountain* (1917). Because the urinal is a manufactured object, we could say that raw materials are transformed into a fixture by a manufacturer (Mott), which is transformed again into a representation by an institution (Art) and a pun by an artist (Duchamp). We now seem to be describing a relay system, and in particular a system composed of different machines (Mott, Art, Duchamp), each of which transforms an input into an output. Just as the individual machines rely on their internal operations to produce a certain output, so too the system can be described as a series of operations; yet the system's operations are not simply a collocation of the machine's operations. The system is not concerned with the urinal as such; rather, its purpose is to feed the output of one machine as the input to another. In these terms, the system could also be understood as a machine, with the crucial difference that it seems impossible to identify who or what is responsible for its operations.

Like Goldberg's inventions, systems theory assumes that any reaction might be understood to function as part of a whole—an assembly larger (much larger even) than, for example, the simple concatenation "joke-laughter" in which laughter is simply a terminus. Theories of comic modernism like North's render visible how comedy can operate as a loop or series of loops. We can picture a machine of the simple input-output variety, where laughter that emerges as output is fed directly back in to the same machine as input—a closed circuit, then. But this is not the only scenario we can imagine. For example, laughter produced by comic machine X could be routed into comic machine Y; or laughter produced by comic machine X could serve as input to some non-comic

machine Z, yet the output of machine Z might flow as input to a comic machine (or not). The point is that the dynamics of comic modernism can be thought to operate in a highly non-linear fashion. Just because Goldberg's machines tend to be unidirectional—in the sense that energy is made to travel along a single channel—we can also understand laughter to function as part of a network, a multichannel relay, and thus we can begin to see more clearly how a reaction such as laughter might be poised to participate in a set of contingent operations.

When Bergson describes laughter, he defines the reaction as primarily "cultural." However, given that laughter is an embodied reaction, and in this sense "biological," even in Bergson we can read "laughter" as a paradoxical term, and must understand laughter as a complex reaction because it perturbs at least two machines (or systems) at the same time—one outside the boundary of a body, the other inside. This view of laughter as an event with multiple valences is a species of the scenario described above, where laughter produced by machine X is routed into another machine Y. Thus, the amused convulsions of the human body stir the system "culture," or these convulsions accompany a stirring already in progress within culture produced by the same comic machine that set the body in motion; and all of this, it should be added, is irrespective of whether or not such stirring in culture is what Bergson says it is (an immunizing counter-response).

To consider laughter in this way, as multiple and unpredictable in its effects—and perhaps multiple in its very constitution, as culture does not "laugh" as a body does, nor do all bodies laugh alike (probably no two do)—is to broach two more ideas about laughter as a phenomenon. First, activity involving laughter takes place in time, a fact

that Bergson's theory seems to deny to the extent that his vision of the comic, "cause-laughter," resembles a one-two punch. A reason this matters is because it raises the question of multiple durations with respect to the "flows" of which laughter is a part. Considering the slowness of a critical reflection relative to an automatic convulsion, it is surprising Bergson himself does not discuss durations with respect to the comic, especially as his work on the whole has been said, by Deleuze among others, to turn on the concept of duration. Moreover, it is extremely useful to unsettle the binary human/object in thinking about the comic (North calls it the visceral/mechanical binary), because an understanding of humans and things as equivalent, as all objects without subjects—which is to say, a systems understanding—is what enables us to think, with respect to a Goldberg cartoon for example, of the interpenetration of processes "biological" and "cultural."

Tom Gunning, in his essay "Mechanisms of Laughter: The Devices of Slapstick," adumbrates three comic devices: "crazy machines," which are contraptions that go haywire and suddenly fail to carry out the operations they are intended to perform; involuntary physical responses, such as sneezing; and "recalcitrant objects," objects that impede human goals. Like North, Gunning notices that laughter, typically thought of as a response to (and categorically different from) a mechanical gag, is nevertheless hardly at odds with the mechanical in that it is itself a mechanical response. Along these lines, Gunning offers the following quotation from Kant, describing the dynamics of laughter:

> The mind looks back in order to try it over again, and thus by a rapidly succeeding tension and relaxation it is jerked to and fro and put into oscillation. As the snapping of what was, as it were, tightening up the

> string takes place suddenly (not by a gradual loosening), the oscillation must bring about a mental movement and a sympathetic internal movement of the body. (139)

According to Gunning, this description vividly registers how laughter is "the conversion of purposeful motion into a pure dithering and breakdown" (139), a process parallel to that of the breakdown of crazy machines. The passage and Gunning's treatment of it make evident some potential problems in thinking about laughter as only a reaction, without considering how it might be a precipitant for something else. Gunning views the process that Kant describes as a mechanical one resulting in a certain output: "a pure dithering and breakdown." While Gunning frequently uses terms like "breakdown" to describe what happens to crazy machines, "a pure dithering" seems to be a very different kind of event. And indeed, regarding the quote, what the gag (as input) appears to produce is something like a recursive quaking rather than a total collapse. If this sympathetic reaction is a breakdown, it is only so to the extent that "breakdown" is understood simply as failure, which begs the question how exactly laughter fails here—or how it could ever fail. As we have seen, prevailing theories of laughter, Bergson's chief among them, tend to characterize laughter as a "positive" reaction, an adaptation of a sort, one that redresses an imbalance and restores order to disorder. Gunning himself claims that comedy (and presumably laughter) serves "to allow us to adjust to the minor collapses of the machines of daily life" (149). But if laughter "fails"—thus becoming a "negative" reaction—the quote from Kant nevertheless ends with the suggestion of a quaking that is "pure," which we could understand to mean "resolute" or "persistent." What would appear to be negative here about laughter, then, is that the relay previously

in motion, from gag to mind to body, neither continues nor definitively terminates. The very "flow" that Bergson himself (and Deleuze after him) valued so highly is caught here in an endless loop, a reaction that reacts only to itself.

Such an observation might help to explain why Gunning elsewhere in the article characterizes comic mechanisms as those which are shattered, destroyed, exploded. A full stop along a cinematic relay is not problematic in the way that a "stuck gear" in a machine is, because the halt calls for something else, like a new gag (and on this point Gunning suggests there is a direct relation between the force of the halt and the insistency of the call for a new sequence). If we agree that laughter is part and parcel of a mechanical sequence, yet also observe how it is movement that refers to itself and thus could stall the relay, then it would seem some other device is required to advance the flow, other than the mind's oscillation that is caught in a feedback loop with the body. In other words, laughter as formulated by Kant would have to be seen as part of a larger network of relations, not as node in a purely linear chain—a notion that bears out Gunning's main argument that comedy must be seen to have multiple causes and effects.

The key difference between Gunning's "recalcitrant objects" and his "crazy machines" is that the objects require both an "external" observer for the gag (a spectator) and an "internal" observer (a character). The object gag assumes different observers who witness the same event, but do not react with the same affect: the spectator is presumably meant to be amused, while the character is more often than not made frustrated by, or angry with, the object. This difference in affect seems to clarify the relation of representation to spectator, as it would appear laughter depends on an observer position once removed from the actuating event. If what I have just suggested about the dual

observers assumed by object gags is perhaps also true of machine gags—if we consider that characters play a role in the larger narrative units of which machine gags are a part—the connection between comic devices and narrative also becomes a bit more clear. Devices, we could say, are a hybrid of narrative and spectacle. In fact, we might even locate the devices that Gunning considers along the narrative-spectacle continuum, placing machine gags toward the narrative end, body gags toward the spectacle end, and object gags somewhere in the middle. Yet, since the devices are all mechanisms no matter where they land on the continuum, the implication is that both narrative and spectacle operate in a similarly mechanical fashion.

Turning from the status of objects to a discussion of gags in general, Gunning invokes Bergson's image of a body "divorced from conscious control and purpose" (140). This sentence harks back to the earlier quotation from Kant as it summons the familiar image of the Cartesian subject, and it further recalls North's work on Duchamp and Goldberg with respect to the parallel between the mind-body split and the division between the mechanical and the visceral that North makes central to his argument. In all these cases, the common conclusion seems to be that comedy upsets dualisms, and especially the binary organic/inorganic—Bergson's founding distinction in his monograph on laughter. Even though this tendency implies that humans and nonliving objects are similar in their being, the radical consequences of such an idea are rarely taken up. Gunning notes that "[c]razy machines create gags in which purposes are thwarted and new scenarios of systematic frustration take over" (140)—where the thwarted purposes refer to specifically human intentions, reinstating the human as the reference point for meaning and privileging the human over the machine. On the other

hand, the phrase "systematic frustration" could be seen to nod toward an alternate perspective that might well require a rethinking of comic structures, in addition to cinematic ones, because this frustration is referred to something other than the human or the machine—namely, to a system. And from the perspective of systems theory, a state of frustration is "positive" as it is the state required for self-reproduction of the system. Gunning himself points in this direction when he asserts: "Crazy machines are complex devices that appear rationally designed to achieve a purpose, but suddenly and comically assert a counter-will of their own, thwarting the purpose of the protagonist (who thereby becomes a comedian)" (138). Here he seems to take seriously the notion—one that recognition of self-reproducing systems and self-regulating mechanisms like the machines in question brings to light—that "will" is not a property exclusive to human beings.

Object-Oriented Ontology and the Cinematic Object

To frame new observations about the status of objects in the cinema should not necessarily require a return to the primal scene of Berkeley and Johnson—especially since systems theory is largely indifferent to "incept dates" (to use the language of *Blade Runner* [1981])—but that may be as useful a point of entry to the issue as any. Famously, Berkeley's claim during a friendly walk that the world was not a material but an ideal realm was met by Johnson's gingerly kick of a big stone and his spirited follow-up riposte, "I refute it thus!" The intrepid Boswell, in his biography of Johnson, failed to note Berkeley's reply, but it could easily have been laughter; or, more in keeping with his idealist commitments—and if he were in his usual stubborn mood—he might well have

answered, “That proves nothing, because to assent to your proof, I would have to have occupied the very space you did at the very moment that you kicked that stone. Otherwise, I have no way of knowing whether real contact occurred, or that my own sense that you kicked a stone is not a mere construct on my part, predicated on my otherness from your position in space and time.” At which Johnson, no doubt, given his history, would have thrown up his hands. Indeed, the history of ontology as a quest for knowledge of material origins, to disclose the nature of being consists in large part of a throwing-up of hands, whether in the form of Wittgenstein’s claim that ontology produces nothing but pseudo-problems of philosophy that lead only to unnecessary confusion, Bertrand Russell’s rejoinder that Wittgenstein himself was the source of the confusion, or any ensuing episode in the seemingly endless debate about objects and their relations to subjects.

A systems theorist might be content to note that the debate goes on, and that it could be construed as very familiar from a wide range of observational positions. In fact, Luhmann readily admits to only three such positions—first-, second-, and (in a pinch) third-order observation—which behave recursively instead of teleologically, never dependably resulting in “progress,” or in the final triumph of more “advanced” (second- or third-order) modes. For such ultimate triumph to be possible, it would be necessary for there to be observational positions that encompass or subsume all others. In other words, it would be necessary for people, at least as a first step, to be subjects, as distinct from all other entities being objects. As William Rasch shows, the impossibility of such a position in the vast replication machine that is communication is one of the guiding principles of systems theory:

> If the conflict of perspectives is not to be reconciled from a higher-order metaperspective; if, in other words, a universal perspective of the morally Good or ontologically True cannot be occupied; if, rather, such perspectives must compete on the same level as all others, with no hope of logical or divine resolution; then, ironically, the statement that describes this state of affairs must "pose" as a meta-statement and "occupy" this impossible metaperspective . . . [T]hus, the description of modernity as contingent has to serve as modernity's "transcendental" ground. (24-25)

By no means does this condition spell disaster, for Luhmann; on the contrary, from the vantage of systems theory, it would be ultimate triumphs that would be worthy of fear. Even with the cautionary scare-quotes, Rasch may overstate Luhmann's willingness to posit this ground as "transcendental" in any sense. Also, he perhaps misconstrues the sense in which observations and communications (the means by which the perspectives in question emerge) "compete" in every case, let alone "on the same level as all others." But the passage certainly conveys the Luhmannian sense of a level field, of a sort, the environment in which observations and communications circulate—an always potentially chaotic field, rife with entities that can "see" or "know" only partially (if at all) the field in which they find themselves, which is rendered less chaotic only by systemization itself.

Far from being lamented, the blind spots that result from this constitutive partiality are highly valued in Luhmann's thought, as they contribute to the proliferation of observations and communications, the ongoing process that means that an arrival at ultimate horizons will continually be deferred. Enlightenment humanism supplanted the

notion of the human as an embodied soul with a secular understanding that privileged humans over other entities by declaring that humans possess subjectivity while objects do not. In that tradition, subjectivity itself became the ground of transcendence—which was often conceived, precisely, as the experience of that privilege or (in the domain of the sublime) its limits. The critique of modernity typically views this supplanting as the point of emergence of a painful dialectic (in one version, the "dialectic of enlightenment") in which the human subject gained "mastery" at the cost of the division between subject and object, the traumatic splitting of a former alleged unity. Later, in Sartrean existentialism, subjectivity is given a decisively visual form—it is the power to look that confers mastery yet leads quickly to the disillusioning realization that one is also the object of others' gazes, leaving such mastery forever troubled and having to reconstruct itself again and again. Luhmann's version detaches the question from visuality, as the concept of observation does not only or always entail actual seeing; sight may be something to account for, but it is not required for transactions within systems, which often take place among nonhuman elements. That systems exceed human control and that even man-made objects like machines are nonhuman are among the premises that lead Luhmann, without a trace of regret, to deny human privilege in the world of systems—a world of objects without subjects, even if some of these objects go on thinking they are subjects.

Reality, in Rasch's words, "is not a pattern of objects but an account of such a pattern" (15-16). Despite his radical constructivism, it is Luhmann's refusal to deny the existence of a world "out there," independently from its constructions, that allows more recent thinkers in a neo-materialist mode to adapt his work in systems theory to their effort to "redeem" the object, as it were—usually in the name of a critique of the human

drive to domination. “Object-oriented ontology” is one line of this thought that has emerged over the past fifteen years under the aegis of figures such as Graham Harman and Levi Bryant. Though its search for groundings and origins would likely have left Luhmann impatient—and indeed, Luhmann criticized the movement explicitly in *Art as a Social System*—object-oriented ontology helps to illuminate the status of the object in systems theory in a manner that is useful, in turn, for thinking about objects in the cinema system.

Object-oriented ontology combines assumptions of contemporary critical theory (especially Deleuze) with a provisional and qualified return to “realism” to the extent that it claims that, even if the world “out there” is only the construct of a finite number of consciousnesses, no one of which fully squares with any other, that still does not exhaust what could be said about it as an aggregate of objects—especially since the putative postmodern “death of the subject” provides a novel position from which to consider objects as independent entities. Indeed, Levi R. Bryant uses the word “individual” to refer to all entities making a claim to being real: “We affirm the notion that being is composed of nothing but individuals, existing at different levels of scale but nonetheless equally having the status of being real. These entities differ among themselves, yet they do not have the characteristic of being ‘more’ or ‘less’ beings in terms of criteria such as the distinction between reality and appearance” (“Ontic Principle” 269-70).

The movement’s ontological edge turns mainly on its presumption that matter did not have to take the form of objects, and that there was some time when it did not have that form. This claim indulges possibilities of contingency not usually found in ontological thinking, and it is one point where the connection to systems theory is clear.

According to object-oriented ontology, it was when it took on such forms—after the Big Bang, presumably, or some other such narrative of cosmological origin—that objects became systemized: As Bryant states, "Objects are nothing but their structured differences . . . [W]e could say that it is necessary to simultaneously think the relation between relations and relata without reducing one to the other. The latter are attained when an object gains totality and closure, constituting a system where certain differences are inter-dependent with one another and maintain only selective relations with other objects in the cosmos" ("Ontic Principle" 270). Despite the explicit vocabulary of systems theory, this line of thought continues to depend on a lingering reliance on the notion of a primal unity when all matter was one. If this way of thinking implies a metaphysical bent—which would certainly place it at odds with systems theory—it evokes something like the existential and relational metaphysics (to return for a moment from a primal imaginary to the ground of cinema) of Terrence Malick's *The Tree of Life* (2011), a film that envisions a cosmos of shifting, oozing, bubbling matter in relation to a host of objects that, miraculously enough, have apparently emerged from it, as small of scale as a blade of grass or a little toy dinosaur and as large as an ocean. Certainly what object-oriented ontology has in common with Luhmannian systems theory is a similar conception of vastness; if we posit the human as the central principle of that vastness, then there are only some seven billion consciousnesses to take into account; if not, then infinite complexity looms, as it always does in systems theory—or would, if systems did not dependably reduce that complexity.

The word "ontology" has a very different meaning in cybernetics and computer science—one entirely free of a metaphysical dimension. In those terms, it means simply

"a formal, explicit specification of a shared conceptualization," a kind of taxonomy to define extant objects in their properties and relations. In other words, ontologies are sorting mechanisms of a kind, frameworks for organizing information (Gruber). While by no means discounting the more strictly philosophical connotations of ontology, Bryant is equally attuned to the cybernetic dimension, as when he speaks of the need to conceive objects in time and space—according, therefore, to events and actions ("Topology of Critters"). More specifically, he speaks of "regimes of attraction" and a "field of relations." This regime manages the relations of objects to one another. Thus, objects can be said to coexist within a space governed by certain rules (hence the idea of a "regime") or, as Bryant writes, "constraints." This rule-bound field is said to involve "attraction," and as such sounds permissive toward the objects that inhabit it, felicitous. Yet contrary to the impression of the regime as an inviting space is the fact that it constrains. What does it constrain exactly? Bryant suggests regimes of attraction exert a limiting influence on the "movements and transformations" that objects might make in relation to each other. But on the other hand, he says this happens in a "space of possibility," suggesting that constraints are best thought of in relation to potentialities. In other words, rules are only "negative" if thought by themselves, outside of a context of space and time; in the context of "regimes of attraction" they are only one half of the coin "possibility/constraint."

It is striking to note how Bryant's language here evokes key concepts in film theory. Perhaps this mainly reflects that the vocabularies of critical theory in the humanities have influenced him in much the way they have influenced film theory. The notion of the "regime of attractions" recalls the notion of the "scopic regime" of Christian

Metz and apparatus theory—though without the same penitential thrust. More significantly, the use of the term "attractions" recalls both Tom Gunning's notion of the "cinema of attractions" and Eisenstein's quite different idea of the "montage of attractions." Though Gunning intended this resonance, by his own report, his meaning is much more specific; his phrase is meant to evoke, in the first instance, the attractions of a circus sideshow, or some other such entertainment venue. Eisenstein, meanwhile, did not disavow the carnivalesque connotations of the term, but clearly had in mind the more specialized meaning that obtains in physics, having to do with electric or magnetic forces, the gravitational pull of images within themselves and in association with one another. The latter is what Bryant has in mind as well, and Eisenstein's use of it suggests that object-oriented ontology is hardly alien to the "field of relations" that is film theory.

Bryant indicates the stakes for understanding regimes of attraction when he writes that the study of this space is "crucial to understanding questions of change because in many circumstances these regimes can themselves be transformed allowing for hitherto unknown and unimagined potentials to be unleashed in the world" ("Topology of Critters"). By "questions of change" he seems to imply questions of social change, particularly as the next sentence reads: "Often it's not a belief that keeps certain oppressive forms of life and existence in place, but a regime of attraction." Thus, the regimes he describes are susceptible to change, and this is fortunate because these changes can lead to new permutations of objects—and Bryant seems to allege there are "bad" objects, like brutal military dictatorships, for example. Bryant does not consider here, however, that if there are "good" objects, like liberal democratic governments, these too can presumably transform into something else, into a "bad" object even. Nor does he

indicate the mechanisms by which regimes of attraction might change—can objects change their field of relations?—even as he asserts, "Getting at that regime of attraction is a condition for change."

What is most striking about Bryant's thinking is its vital engagement with materiality, evident in the close observation of the appearance of things and in the evocation of material "on the move"—bending, pulling, stretching, folding. Also remarkable is his contention that we can recognize the being of objects without making human consciousness a ground for such acknowledgment. A consequence of this approach, referred to in Bryant's "The Ontic Principle: Outline of an Object-Oriented Ontology" as a "flat ontology," is that humans are equal to other objects. With respect to cinema as a closed system—thus, a kind of object—the implication for this project is that not only is the human not "superior" to cinema, humans are equal to cinema in their being as objects themselves.

Concepts of action and event are also crucial to systems theory, though they tend to be related to the question of communication rather than to the status of objects—in part due to Luhmann's radical constructivism, and his insistence on defining objects as constituted rather than existent. In chapter four of *Social Systems*, "Communication and Action," Luhmann defines the relationship between the chapter's titular terms. Actions are not communications; though the two are inseparable to the extent that action is a reduction of the complexity that is communication. At the level of society, we tend to observe actions, but Luhmann reminds us that behind these actions are communications. Communication is said by Luhmann to be the "unity" of three selections: information, utterance, and understanding. Understanding is defined as the recognition of a difference

between information and utterance, between what is meant and what is actually expressed, which never achieve identity. The party to a communication that selects understanding is here called "ego," and the party that selects for information and utterance is called "alter." By describing these processes of selection that constitute communication as a "unity," Luhmann means to emphasize that communication is a closed system—hence the famous Luhmannian dictum: "Only communication communicates." As a consequence, on this model, humans as such do not communicate with each other, as strange as that might seem—and this is one reason that Luhmann refers to the parties involved by the rather abstract terms "alter" and "ego," precisely to include nonhuman actors in his account of communication. In fact, Luhmann suggests that if anything other than the aforementioned selections were to be found responsible for communications—if anything else could be said to constitute them—it would be time, because the processing of selections depends on time (here we encounter the influence of Derrida on Luhmann with the deconstructive notion that every difference is a delay or deferral). For communication to take place, then, ego must be able to observe a difference between information and utterance. If alter were to laugh suddenly and reflexively, for example, this might or might not be a communication; it would depend on whether or not ego could detect intention behind the laughter and discern that a selection had been made.

Luhmann goes on to introduce a further distinction that he says communication uses to order itself: the difference between themes (an example would be an election) and contributions (the utterances made about the election). Themes provide continuity to communications, and this helps to offset the disorder (noise) introduced by contributions, which tend to be brief and scattered yet proliferate. Themes also serve as a measure for

deciding whether or not a particular contribution should be accepted or rejected. But themes too can be rejected, especially as time passes and interest in them wanes; thus with each concept Luhmann introduces we encounter contingency, and Luhmann recognizes this when he asserts how remarkable it is that communication happens at all. As Luhmann understands it, communication is beset by its own improbability. It must also cope with the fact that communications are invisible. To explain how this last problem is addressed, Luhmann returns to the question of action and its relationship to communication. Actions, he writes, are the observable manifestations of communications (165-66). Communication depends on action to orient itself. A reason invisibility is a problem is because it follows from the fact that communications are abstract processes that do not necessarily track forward in a progressive fashion (any more than the movements from or to first- or second-order observation do)—and so actions, both observable and sequential, work to supplement the groundlessness of communication. Action serves to orient communication, in part, by making it possible for communication to observe itself, which in turn allows communication to draw a distinction between itself and its environment—to become, therefore, a system.

In one passage, Luhmann refers specifically to communications in the form of "humorous, joking turns of phrase" (*Social Systems* 153). This reference appears in the context of an account about language—more precisely, an account about a special value of language, its ability to objectify communications so as to enable communication about communication. Luhmann goes so far as to say, because language so actively promotes reflexivity in communication, a risk is run that linguistic communication might spiral into an endless loop. According to Luhmann, jokes that involve word play, as well as other

uses of language that are intensely self-reflexive, "block" the tendency for communication to devolve into an excess of reflexivity—the reason given that they pronounce the absurdity of metalinguistics, ridiculous to the extent that all such adventures result in tautology, and tautologies (though common) are void of meaning in the Luhmannian universe, because all meaning depends on difference.

Luhmann concludes this excursus with the rather enigmatic assertion: "Such forms function only in the moment—or they do not function at all" (153). Thus, jokes bear a curious relationship to time, for Luhmann, and this amidst the already strange collisions of past and future that he finds in the operations of communication. The curiosity arises from the claim that jokes cannot extend their meaning over time as in fact most communications can. While Luhmann himself does not say so, we could assume this ephemeral quality of humor stems from the minimal gap present in the case of a joke between information and utterance; to understand this point, think of the last time you told a joke out of order and consider how jokes only "work" if the content and its expression more or less match up. When a joke is told well, ego does not have far to go to understand alter, not much effort is required to reconcile the difference between information and utterance. In other words, Luhmann's concluding remark here is not so cryptic after all, if we read it as a variant of that old expression, "either you get a joke or you don't."

A question might remain about how we can reconcile this account of humor as wholly dependent on immediacy with the familiar experience of "getting" a joke only minutes—sometimes hours or days—after hearing or seeing it. In reply to such a question, Luhmann would probably explain the delay as an example of simple repetition

rather than complex recursion. He might suggest, that is, that the route to understanding here involves a simple reiteration of the joke until understanding is achieved, not the usual testing of possible meanings through subsequent communications, back and forth, between ego and alter. This explanation, hypothetical as it is, recalls Luhmann's discussion on the topic of "symbolically generalized media" (*Social Systems* 161). In a nutshell, Luhmann argues that the invention of writing (to include further developments like printing and broadcasting) posed a challenge for communication. Whereas persuasion had previously depended on codes specific to oral communication, writing diffused motivation for acceptance of meanings at the same time that it considerably broadened the territory communications could travel across. To redress this problem, society developed "symbolically generalized media"—money, truth, and love, are examples—which are units of communication that embed a succinct meaning, always a general demand.

Luhmann's principal objection to object-oriented ontology, as stated in *Art as a Social System*, is that it is too dependent on the distinctions between "substance/accidence" and "object/properties." The latter, in particular, "separates the 'internal' too sharply from the 'external'" (102-03). In other words, it suggests that objects may be separate from their own properties—a claim Luhmann himself would only deny, probably, if it displaced objects from their positions in time and space—and thereby seems to contradict the ontology of the movement's own making. Still, Luhmann admits, "There is the obligation to do justice to the object and its surrounding distinctions. It would be wrong to say an object is made of granite when it is really made of marble" (102). Luhmann's own notions of medium and form, he goes on to declare,

have been elaborated precisely "in order to replace and render obsolete the object-oriented ontological concept of matter" (102). Certainly, in the first instance, his concept of "medium" seems abstract—the basic media of art are, at base, time and space, according to Luhmann. As its correlative, form emerges as something like action and event—though never in a narrative sense, for something like the reason that Deleuze dismisses Metz's founding claim that narrative "took over" cinema at a certain point. It could not, Deleuze avers, because "Narrative is never an evident given of images, or the effect of a structure which underlies them; it is a consequence of the visible [apparent] images themselves, of the perceptible images in themselves, as they are initially defined for themselves" (*Cinema 2* 27).

The need to conceive objects in fields of event and action would seem necessarily to bring us back to the realm of narrative where objects are occluded, but Bryant solves the problem, in part, by replacing "narrative" with the more elastic concept, "fiction." "Fictions aren't void," he writes ("Texts are a Factory"), setting out to challenge the idea that fictions are not themselves actual entities—a basic though errant assumption of critical theory, he claims. Humanities scholars very often defer to the material world as a yardstick for determining "truth," such that materiality is accorded a privileged status over inventions, fabrications, impressions. But according to Bryant, we make a mistake when we consider fictions to be immaterial and thus squarely outside the domain of reality. Bryant emphasizes the materiality of fictions to argue that they can be shown to have real effects. The fact that fictions are capable of making a difference in the world is proof they are entities in their own right, and their existence is not dependent on the mind. This is a crucial power of fictions that Bryant suggests scholars neglect or deny

with their usual routines: of treating fictions as either thought experiments or representations only, therefore divorced from the material realm; of regarding fictions exclusively as indices of real events rather than as generative mechanisms themselves.

Bryant's "realist" ontology is a useful model for thinking about Rube Goldberg's inventions because they are assemblages (the same word Eisenstein used to describe the elements of montage) where smaller objects combine into a large object or system. Bryant's work is suggestive of ways to describe and to analyze Goldberg's intricate assemblages of objects-inside-of-objects. We can pay attention to what the objects do to each other, for example, and to the ways they constitute each other through operations of anticipation and appraisal. However we might respond to the inventions cannot amount to a transcendent recovery of the assemblage as a whole, but it can constitute the creation of new objects (utterances) that extend the relay of a Goldberg system.

The question of assemblages is not only about what entities a fiction constitutes itself from (those internal and external objects that collaborate in the structure of a fiction), but what entities a fiction—having congealed into substance, taken shape as "text"—go on to perturb; and what these irritated objects or systems then irritate. In other words, the question is finally about the ecosystem of a fiction, which is for Bryant a matter of material relations. The emphasis of an object-oriented textual analysis would fall on to relations between and among objects, instead of on to objects themselves, because the "realism" of object-oriented ontology is mitigated by its sense that what matters most is not the object but rather its relations with other objects. This is the same reason Deleuze and Guattari claim that all machines—as Luhmann says of all systems—

are binary in nature: a machine requires at least one other machine to actualize its powers, to call it into existence (just as a system depends on its difference from its environment).

The role of cinematic objects has been considered most intensively in film theory with a phenomenological orientation, including the work of such figures as Walter Benjamin and Siegfried Kracauer. Benjamin's notion of the "unconscious optics" of the cinema implies that cinematic representation potentially discloses qualities of objects on film that are invisible when such objects are perceived in reality (237). Similarly, in *Theory of Film: The Redemption of Physical Reality*, Kracauer conceives of the cinema as an archive of objects, chronicling the conditions of a degraded modernity yet containing in form a residue of objects' materiality that can be unearthed in their reception and potentially liberate them from their status as transparent and mass-mediated emblems. As Miriam Hansen puts it in her discussion of Kracauer, "Film is capable not only of rendering objects in their material thingness and plasticity, bringing them into visibility, but also of giving the presumably dead world of things a form of speech" (*Cinema and Experience* 16). Hansen argues that Kracauer's concept of "redemption" remains skeptical rather than committed to ideals of transcendence, in large part due to Kracauer's insistence on the opacity of the cinematic object; unlike Benjamin, whose concept of "unconscious optics" depends on the fixity of cinematic objects—tantamount to specimens observed under glass, which reveal their hitherto unseen properties by virtue of being recorded and available for more intense and concentrated perception than the fleeting perceptions of the real world permit—Kracauer emphasizes the placement of cinematic objects in a matrix of mobility and movement, time and space, that constructs a sphere of evanescence in its own right. The "traces of social, psychic, erotic relations"

that can "redeem" the material world are dependably lodged in cinematic objects, but because they are constantly receding from any stable "present," there is no guarantee that these energies will be released (*Cinema and Experience* 16).

Deleuze's conception of cinematic objects goes even further in its contention that motion is a constitutive part of the cinematic object, so that not only is the object denied "a form of speech"—his discussion of cinematic objects doubles as a critique of semiological and linguistic theories of film—but, as in Kracauer's conception, it continually withdraws from present-ness in the moment it is produced. Deleuze goes so far as to deny the "resemblance" of cinematic objects to their real-world counterparts:

> [T]he movement-image is not analogical in the sense of resemblance: it does not resemble an object it would represent. . . . The movement-image is the object; the thing itself caught in movement as a continuous function. The movement image is the modulation of the object itself. . . .
>
> Modulation is completely different [from resemblance]; it is a putting into variation of the mould, a transformation of the mould at each moment of the operation. (*Cinema 2* 27)

Cinema's "language of objects" is, in fact,

> not at all a language. It is the system of the movement-image. . . . On the one hand, the movement-image expresses a whole which changes, and becomes established between objects: this is a process of differentiation. The movement-image (the shot) thus has two sides, depending on the whole which it expresses and depending on the objects between which it passes. The whole constantly divides depending on the objects, and

> constantly combines the objects into a whole [*tout*]; 'everything' [*tout*] changes from one to the other. (28-29)

Here Deleuze works out a systems theory of cinema so explicit that it appears to be directly inspired by Luhmann. As in Luhmann, the system works according to a logic of self-reference, with meanings emerging as principally differential rather than referential, and with all elements of the system understood as having been always already re-encoded into the terms of the system—so that a key, a tuxedo, a yellow Rolls-Royce, a monetary bill, a red violin (to name at random a few objects that circulate meaningfully in notable films) have been, whenever they appear on film, reconceived as specifically cinematic variants on "actual" keys, tuxedos or the rest. So repurposed, their specifications become, for example, two-dimensional and divisible (by editing)—properties that actual objects possess only in special circumstances—as well as sensory, kinetic, intensive, affective, rhythmic, tonal, and so forth. No more than Luhmann would Deleuze flatly deny the resemblance of such objects to their "real world" counterparts (assuming there are any); but, like Luhmann, he clearly insists upon the qualities conferred on them by their re-encoding as by far the most relevant to an understanding of their meanings.

Also significant is Deleuze's assertion of the binary logic of the cinema system; the "two sides" of the movement-image recall the relation of a "marked" to an "unmarked" space that, in systems theory, every distinction constructs. Like Deleuze, Luhmann notes that such abstract spaces are frequently occupied by attendant distinctions such as presence/absence, visibility/invisibility, and virtuality/actuality (*Art as a Social System* 29-36)—all crucial terms as well in Deleuzian thought. The sense in Deleuze of the deliriously self-reproducing qualities of the system are also distinctly Luhmannian,

with each "operation" (a key term too in Luhmann's vocabulary) generating a near-infinity of further operations, like a sorting machine sifting its data rapidly and ceaselessly.

Deleuze parts company with Luhmann at two key points. First, his work does not disavow metaphysics as Luhmann's adamantly does. In fact, Deleuze could be said to be elaborating a metaphysics of singularity in his books on film (as well as elsewhere in his work). Second, he retains a full-fledged model of the human subject, in spite of his critique of psychoanalytic concepts of subjectivity and his complete lack of interest in the dynamics of reception. These two points are closely related, and Luhmann's severe dismissal of metaphysics—even when it is disguised as so innocuous and seemingly desirable a thing as simple consensus, as in the work of Jurgen Habermas—and his blithe dispensing with the concept of subjectivity are in the service of a much greater sense of the role of contingency than Deleuze maintains (though contingency figures prominently, in its way, as a concept in the *Cinema* books, especially *Cinema 2*).

Luhmann's account of objects in *Art as a Social System* answers Deleuze's point for point, with Duchamp also as one of his test cases. Both artworks as objects and objects depicted in artworks are "quasi-objects" (47), in his view, in the sense that they retain possibilities of recognizability and identification yet—especially in mass mediated representational art—do not occupy space and time in the way that other objects do. This definition resolves, at least in the realm of art, some of the potential problems of object-oriented ontology—the counterintuitive sense in which objects are said to observe or participate in communication, which Luhmann also maintains. Indeed, the main thrust of Luhmann's discussion of objecthood in art is to reject the centrality of the human subject

in processes of observation and communication. In classical aesthetics, according to Luhmann, the subject functions to ensure continuity between perception and communication—one thinks, therefore one is, therefore one sees, and says what one sees, with an unbroken flow from each point in this process to the next, and the subject presumably performing this operation binding all the stages together. Even if Luhmann concedes that objects exist independently of their perception, he still insists that perception constitutes the object rather than simply discovering it—and since perception and communication exist only in a "structural coupling" with a "strict distinction" between them (46), then communication constructs the object yet again, with the aid of perturbations from perception (thus becoming, as noted below, the result of "repeated indications").

This is the essence of Luhmann's unyielding posthumanism. What he rejects is precisely the humanist notion of the subject—namely, the Kantian subject that, even if it cannot grasp the "thing in itself," remains secure in a core of subjecthood shared with all other subjects by virtue of consensus: "The judgment of taste . . . must involve a claim to validity for everyone, and must do so apart from a universality directed to objects, i.e. there must be coupled with it a claim to subjective universality" (Kant 43). All that Luhmann grants, in *Art as a Social System*, is that "the experience of others must be assumed to occur simultaneously if communication . . . is to take place" (47). Thus, Luhmann replaces the notion of subject with the position of observer, resulting in observations that may (or may not) gain wide consensus but can never presuppose it and always recur, precisely, to an observer's position, which obviously alters in space and time but does not "transcend" itself in any given moment to join mystically with all other

subjects (or any other, for that matter) or "every other man." In turn, this move entails a changed understanding of the object in general:

> Giving up the notion of the subject requires reconstructing the object, which loses its opposite. If one starts out from the counter-concept of the "unmarked space," objects appear as repeated indications, which, rather than having a specific opposite, are demarcated against "everything else." Objects are forms whose other side remains undetermined. The unattainability of its other side accounts for the object's concreteness in the sense that determining its unity "as something" becomes impossible. Every analysis remains partial, depending on further specification of the other side—for example, with regard to color, magnitude, purpose, consistency. (46)

These claims form the basis of Luhmann's distinction between first-order observation—that is, observation of objects—and second-order—that is, observation of observations. Though first-order observation is often said to be "naive," neither precedes nor follows the other, as both are always already in operation, never simply sequentially. It is always important to remember, in reading Luhmann, that observation is never posited as a species of empiricism, but a logical process that need not even be a human one—ultimately, as William Rasch puts it, "a formal tool the universe uses to observe itself" (101).

With all the above in mind, it is possible to venture some observations about film analysis in a systems theoretical context. When I watch a film, my psyche works to accommodate the unique events a film makes available to perception; my psyche selects

from the data given by the film. By this congress, a structured coupling between two closed systems, both the film and I become binary machines, each actualizing certain potentials in the other. What matters for me, or rather for my system of consciousness, is what new events the irritation by the film will produce in my psyche. There is no guarantee that my consciousness will generate new events in response, and if it does, this would not mean that the film has determined these events, considering the utterly oblique nature of the relationship between my psyche and the film.

But this is only the beginning of the story, as something else is at stake—namely, the system of the film (and, by extension, the system of cinema) and what difference I might make as an object capable of perturbing the film. Once again, no matter the event manifested in response, the cinema system will necessarily interpret it according to its own logic of sense. To give a somewhat crude example: If I were to level some complaint at a film—one that joins numerous other complaints, even if all these criticism are based on misperceptions—later films could eventually manifest new properties—for instance, one film could be joined to another (as a "double feature" on a "budget" DVD, say, by a distributor attempting to leverage unpopular holdings by bundling them together into a "discount presentation"). For the film this would mean a mutation—a radical extension of its system by attaching to another object; there would be no question of "failure" for the film itself (or of "success" if, for instance, the film suddenly gained new status as a cult object by a group of video enthusiasts).

Goldberg on Film: *Soup to Nuts*

In light of the above, there are, of course, a host of ways one might approach a text for the specific purpose of analyzing its comic dimension. Because comedy is so often predicated on the incongruous, we could start by observing discrepancies in scale, significance, tone, and so forth, by noticing what defies our expectations in terms of the reasonable or rational. We could also begin with our first response resembling laughter and attempt to trace it back to its cause, and further inquire what it is about the provoking detail that might explain our initial smile, chuckle, burst of laughter, or bemused double take. If this approach can be compared to tracing a symptom back to its trigger—because psychoanalysis has shown how symptom formation is always an intersubjective phenomenon—we might ask for whom we smiled or laughed. Another tack we might take is to ask what in the text we feel some resistance to, on the assumption that much comedy could be described as a "pulled punch," meaning that it first threatens to disturb or upset us and then mitigates the offense by some compensatory maneuver that swiftly domesticates the threat. The comic dimension could also be brought into relief by an inverse inquiry, by asking what is not humorous and why, especially when we are left unmoved by a text that, for whatever reason, we assume should elicit our laughter (is not failed comedy nevertheless a species of the comic?). Or, our analysis might concentrate on aspects of the text that are emphatically rigid, dogged, rule-bound; as we might recall, according to Bergson, it is the inflexible or mechanical that is the root of humor. Again, the preceding list is only a small sample of the numerous strategies for analyzing a comic text, but what they all have in common is that each methodology is grounded, in one way or another, by the observer's position.

Rube Goldberg's influence on film slapstick has already been established, but he is officially credited with only one little-known film. *Soup to Nuts* is a production of 1930, written by Goldberg, directed by Benjamin Stoloff, and featuring several performers making the transition from vaudeville to cinema, including Ted Healy and his backup troupe, a trio that would become known as the Three Stooges. A virtual anthology of slapstick tropes and comic conceits spanning a variety of contexts, the film combines elements of 1920s slapstick with 1930s "dialogue" comedy, evoking along the way and *avant la lettre* Capraesque screwball comedy (in its romantic subplot) and Lubitschean folk comedy on the order of *The Shop Around the Corner* (1940) (in its evocation of Eastern European immigrant communities).

For these reasons, the film is a wildly suggestive test case for ideas about the operations of the cinematic relay system. At the most literal level, it features an array of inventions designed explicitly for the film and showcasing the cinematic possibilities of the Goldberg machine. A decidedly non-canonical case, *Soup to Nuts* also typifies early sound comedy, at a point of transition between initial experiments with sound and the ultimate establishment as a standard of what Donald Crafton calls the "modulated sound track" (443), a synthetic blending of speech, music, and sound effects. As in so many works of the period before the establishment of that standard, sound elements are often not integrated conventionally into a holistic sound design, such that speech, for example, sometimes exceeds its simple communicative functions to work, as Cynthia Erb suggests, "poetically, existing merely to create rhythm and noise" (57). *Soup to Nuts* suggests that reports of the death of slapstick in the sound era are exaggerated—for indeed, slapstick persists in the work of most major comic stars of the sound era, including teams like the

Marx Brothers and the Ritz Brothers in the 30s, and Hope and Crosby or Martin and Lewis in the 40s and 50s, not to mention the Three Stooges. (It also continues to play a role in 1930s "screwball" comedy, among many other emerging comic subgenres.) But even more significantly, it shows how the integration of sound into the cinema system enhances and modulates the networks of cinematic relay.

For one thing, sound becomes a key factor in the evolution of editing. Editing in the sound era remains tied to a chain logic of alternation and accretion, but speech in particular amplifies possibilities of assemblage in cutting. The opening sequence of *Soup to Nuts* is a case in point, featuring breakneck crosscutting between the two sites of a telephone conversation, a volley eased by the use of voices to mark visual spaces. Though critics like Crafton see the "modulated sound track" as another step toward a regrettable standardization, a systems theory perspective would more likely observe the system's incorporation of sound as a redundancy necessary to ensure the system's continued operations—a redundancy that, however, serves to set novelties and anomalies into greater relief, both syntagmatically and paradigmatically. Many commentators on the early sound period, in fact, far from decrying cinema's betrayal of its silent heritage, note the establishment of "an early sound aesthetic based on speed, wit, topical references, and urbanity" (Erb 51). According to Erb, the fast cutting of an ostensibly dialogue-based film of the period such as *The Front Page* (1931) is a key example. Indeed, a marked self-consciousness about voicing and sound was a fundamental feature of cinema in the 1930s, and *Soup to Nuts* is no exception.

The coming of sound also raised new problems of cinematic authorship. On the one hand, critics of the period became increasingly critical of the work of old studio

stalwarts like Francis Marion, a noted writer of the pre-sound era, whom *The New York Times* criticized for clinging to an "old silent" aesthetic in films like *The Champ* (1931) (Hall). On the other hand, writers were recruited in large numbers from theater and literature to supply stories and dialogue for sound features. Though there was a quick backlash against these outsiders in Hollywood (e.g. "Waste in Story Preparations is Studios' Biggest Bugbear"), writers were still widely regarded, from the coming of sound, as a given film's authors. *Soup to Nuts* also exemplifies this tendency, with Goldberg migrating from the world of comic strips to write the script—a trajectory that would become more common in the following decades (with the superhero serials of the 1940s and the emergence of figures like Frank Tashlin). Though the title cards place Goldberg's name above the credits of the film, its authorship remains as vexed as that of most films of the era. Above Goldberg's name in the credits is that of the producer—William Fox—while Stoloff, the director, has twenty years of subsequent credentials worthy of a rediscovered B-movie auteur in the making. Though the film was plainly intended as a star-making vehicle for vaudeville fixture Ted Healy, placing him in the company of contemporary figures making the same transition like Eddie Cantor, it is much more likely in retrospect to be viewed as the debut of the Three Stooges, who remained popular for the next forty years while Healy faded into oblivion (contingency, indeed). The Stooges' lack of cultural prestige of any kind accounts in large part for their absence from discussions of slapstick; like the hundreds of similarly unknown films of the early silent era—an obscurity that continues to enable tales of slapstick's demise—*Soup to Nuts* is something of an orphaned, theoretically author-less film, a status that makes it an even more evocative example of the evolution of the cinematic relay system.

The visibly collaborative nature of the film's creation points to a chain of networked relations in which the network does not simply join a sender (author) and a receiver (text), enabling transmissions predicated on preexisting points of origin and arrival. Rather, the trajectory, itself in flux, constantly re-determines those points. This is the essence of how slapstick realizes the operations of cinema as a relay system. In a typical slapstick set piece, there is no given structure of "sending" and "receiving" between "stations," as it were. The move from the isolated individuals of canonical 1920s slapstick to the teams of three or more that come to the fore in the 30s (W. C. Fields and Bob Hope being the most significant exceptions) is a clear development that illustrates this point. The routines of the Three Stooges are typically relays in a quite literal sense—Shemp slaps Moe, who spins to jab Larry, who pivots back to retaliate, or siphons the aggression off onto some domino chain in the environment. But they are very different from the solitariness of Chaplin or Keaton, or the one-two volleys of a team—the verbal sparring of an Abbott and Costello, for example—because, denied the security of a simple back-and-forth between "subject" and "object," or "ego" and "alter," the "transmission" divides and reroutes in transit. *Soup to Nuts*, like most examples of slapstick, is a movie about blind spots and miscommunications, "failed" transmissions that succeed in ways not anticipated, and the comic inability of observers to see beyond the positions in which they find themselves along the chain.

The film begins with an exterior shot of a city firehouse—two openings in a building facade, tall and wide, give way to a view of two fire trucks parked inside; meanwhile, a telephone is ringing. Cut to the Three Stooges as firemen, with their feet up on a large table. Shemp answers the phone and calls out to his friend Ted. From the

ceiling, along a pole, a platform glides down; atop the platform are Ted and another man seated across from each other, a checkerboard between them. Ted is humming loudly, obnoxiously, but stops to acknowledge that the phone call is for him. He does not hurry to the phone, however.

Ted is now centered in the frame. Entering the frame from the right, his eye on the checkerboard, is another fireman: he is a strange, fey creature, small in stature, with two large, black caterpillars for eyebrows, a Stan Laurel and Groucho Marx rolled into one, and apparently mute (thus adding a hint of Harpo to the mix). This figure points at the board and mouths some words, offering advice to Ted about the game. Ted takes the advice, then loses spectacularly—his opponent jumps all of his pieces. Ted laughs, stands up, then without expression he presses his entire hand into the mute fireman's face, pushing him down and across the floor. Briskly wiping his hands against each other, Ted strolls toward the phone stopping once to take a drink from a kitschy sculpture-cum-fountain that features a monkey holding upright a fire hose.

Ted finally sits down with the Stooges at the large table. He picks up the receiver and hears the voice of Queenie, his girlfriend. Cut to Queenie seated herself at the front desk of a costume shop; a dapper man hovers above her, standing on the opposite of the desk, regarding Queenie with annoyed curiosity. Queenie is loud and brash, though more no-nonsense than simply crude. She is young and pretty—a real dish (in the parlance of 30s Hollywood). Shots of Queenie and Ted on the phone bounce back and forth as the two trade insults. Periodically, each pauses to address privately those who overhear the conversation (the Stooges; the waiting customer), saying only to these bystanders how dear the one on the other end of the line is to them (for the beloved, only barbs). All of

sudden, absurdly, the Stooges break into song: an *a cappella* rendition of "You'll Never Know What Tears Are."

Ted, clearly frustrated, sets the receiver down on the table when he is approached by the mute fireman again who twitches his eyebrows and points now to the ceiling. Cut to a shot of the mute fireman approaching three hooks fastened to a post, and as many ropes tied around these hooks. The fireman grabs the end of one rope and yanks it; cut to a reverse-shot of the ceiling and three sandbags suspended there by the same ropes and a set of pulleys, with one bag plummeting downward. The sandbag misses the Stooges who continue their singing, oblivious to the threat. Ted encourages the Stooges to stand and move in front of the table, positioning them for another attempted assault, but the second bag misses too. Ted repositions the Stooges (still singing) once more, plying each of their heads down and forward to receive the blow. The mute fireman pulls the last rope, the third sandbag falls, and strikes—yet strikes the mute fireman himself!—knocking its victim out cold.

Ted, remembering that he has left Queenie on the phone, returns to the receiver, just as the Stooges conclude their impromptu choir practice. Queenie hasn't stopped talking the whole time: "And if you're gonna hang around the firehouse instead of being with me, I'll make it hot for you," she says. Sure enough, the horn in Ted's hand starts to smoke—he uses it to light a cigarette. "We gotta get over to Queenie's fast," he tells the Stooges. "I'm afraid this is a special alarm." On cue, the fire bell begins to clang, everyone climbs on to the truck, the truck drives off, leaving only the mute fireman behind to close the firehouse doors. After securing the station with a ridiculously

oversized padlock, our hapless friend commences a chase down the street to join the rest of his crew.

The truck pulls up to the costume shop, with the mute fireman arriving anon. As soon as Ted steps off, the truck begins to speed away again, leaving in its wake the mute fireman who has failed to grab hold in time. With a cut to the interior of the shop, Ted bursts through the door and jostles the still-waiting customer without apology; this surprises Queenie, still on the phone talking, who promptly hangs up in a fit.

Even with this opening salvo, the imprint of Rube Goldberg on the film is undeniable, yet it might not be entirely obvious until Queenie hangs up the phone, a point at which it becomes clear that everything hitherto—from the initial telephone ring to this end moment—has been a mechanism, overdetermined to be sure, designed to perform the simple task of transporting Ted from the firehouse to the costume shop. In other words, what we witness here is a Goldberg invention, transposed into cinematic coding, that involves some of the usual elements like platforms and ropes and sandbags, but also humans, sounds (something literally barred from the domain of the comic strip), and dialogue or speech (where the relay switches tracks from the visual plane to the semio-linguistic). Thus, the entire sequence taken as a whole is the joke.

The opening sequence further serves as an example of how the model of communication propounded by Luhmann operates in an elaborate slapstick structure. During the phone conversation, Ted tells Queenie that the Stooges say hello. “Oh, yeah? Well, those three mugs are the scum of the earth,” she replies. Ted then says to the Stooges: “She speaks very highly of you boys.” Following Luhmann, we can see that what Ted reports back to the Stooges is correct, neither a lie nor a mistake, even though it

appears to contradict Queenie's actual statement. It is correct because Ted has selected the proper understanding, by having successfully resolved the difference between information and utterance: from the pattern that emerges in the scene, it is obvious that Queenie means to express affection when she delivers an insult. Moreover, we can recognize here the difference as explained by Luhmann between action and communication. The lines spoken are actions, but as such they do not represent the entirety of the relay in operation here, as they are only the manifestations of a complex set of other processes (selections) that are invisible—"behind the scene," so to speak.

Still another approach to the opening as a relay system is suggested by Bryant's object-oriented ontology, starting with the telephone. We see it almost immediately, a complex object composed of multiple sub-objects: at the very least, an earpiece, a microphone, and a short cord connecting the last two parts. The cord wraps around Shemp's left arm, bringing his wrist into contact with his shoulder. In its current state, the telephone could be described as "open" by contrast to its twin which is sitting on the table, not in use, all parts touching so as to give the impression of a single (non-segmented) object. But if the telephone in use appears distended, the body holding it is made to draw in to itself, in part because of a constriction caused by the short length of the cord. Yet, on another level, the body is augmented by the telephone, able to extend itself into near space (let alone far): the earpiece elongates the ear; the pedestal that serves as a base for the microphone lengthens the arm. An organic-inorganic circuit, then: mouth to microphone; microphone to hand; hand to arm; arm to pedestal; pedestal to cord; cord to earpiece; earpiece to ear; ear to head; head to mouth; and around again. And, of course, the telephone induces the body to speak, which in turn is a sound that

expresses by contrast the silence of the telephone itself—even though, in any such conversation, one is of course, in the first instance, talking to the phone. Later on, when Ted is talking to Queenie—and his body too is similarly drawn up tight by the encounter with the telephone—smoke begins to issue from the earpiece. Prior to this moment, the earpiece might have been thought to emit sound because it was held to the ear. But now it is revealed that it can generate a cloud of particles, though this cloud is anathema to the faculties of the ear apparently, as the body holds the earpiece away in response. That the vapor is smoke and thus its source a burning substance inside the earpiece is indicated by the fact that it can be enlisted to light a cigarette—a cigarette that resembles the telephone to the extent that it too conceals its ability to emit smoke until it comes into contact with the burning substance. Now, as Ted sets the earpiece down on the table, the cigarette displaces the telephone as an object that is joined to the body and supplements it.

The status of objects in this opening sequence establishes their position for the rest of the film. The motion of the sandbags is triggered by human action, but their targets remain unconscious of them despite the fact that they fall bluntly right in front of the Stooges' eyes. The third bag—the one that hits the mute fireman, even though it is pointedly shown not to be above him—obeys the logic of cinematic construction, which allows it to fall wherever the filmmakers (or whatever forces are in play) would have it fall, rather than the laws of the space-time continuum, which would under the circumstances decree a direct hit of its intended target. Especially after this opening, the film's mise-en-scene is unusually dense with objects, and the pattern of their withdrawal and repurposing, their ebbs and flows among spatial positions, their relations by turns with human bodies and each other, continues throughout. In the opening sequence, for

instance, at the opposite end of the same table on which the two phones rest sits an ashtray, unnoticed by anyone except, possibly, a viewer of the film; yet the ashtray moves across the table's surface, jarred by the motion of the Stooges hastily removing their feet from the table, as if it were about to leap up and become part of the joke, to join the slapstick chain. The redundancy of objects (the two phones) is both overdetermined (three bags, three stooges) and contingent, since the most unpromising element could at any moment—and often does—draw itself forward and enter the relay.

The main setting, Professor Schmidt's costume shop, is more an archive than a haven of commodities. Indeed, the plot—such as it is, the film's having somehow escaped the dominion of narrative coherence that was supposed to have become essentially complete by 1930—turns on Schmidt's inability to sell costumes, leading to his store being foreclosed. That the bulk of the assembled objects are items of clothing is telling, since it suggests a defining correlation between human forms and their accessories. Some of the jokes involve unworn items that behave as though they are being worn, while others involve surprising appearances of people within seemingly uninhabited costumes. Yet the store is also a veritable museum of props and gadgets, mannequins and busts, leering masks, art-deco clocks, *commedia dell'arte* oddments and assorted other kitsch objects; and Schmidt's primary investment in the store is the access it provides to things he can reassemble into Goldberg machines. A poor businessman, Schmidt is so caught up in the virtual or possible relations among the objects in this environment that he has no interest in selling them. When Ted first arrives at the store, Schmidt gleefully demonstrates two new inventions—a device for wiping spilled gravy from one's lapel, and a pulley system to assist in tipping one's hat to passersby. First-

order Goldberg machines, these devices still depend on the chain reaction of objects to one another, the first made up of a brush attached to a handle, the second a cloth (to protect the head), an accordion bellows on top of the head to raise the hat, and a string to work the spring.

The most intricate Goldberg machine in the film is also the only one that plays a role, however arbitrary, in the plot. It is an alarm system, meant to alert the professor to thieves breaking into his store, consisting of an outsized boot placed near a window, which is activated by the opening of the window, to kick a trespasser upwards through a transom, where the interloper is then shuttled down a chute onto a revolving platform, the spinning of which releases a mouse from its cage, causing the professor's cat, stationed nearby, to chase the mouse and pull a string that runs through an upstairs window to a water can above the professor's bed. Thus triggered, the water can is meant to douse the sleeping professor and wake him so that he can apprehend the thief. Though ostensibly dependent on predictable cause-effect reactions, the invention relies on a counter-logic of its own—as Ted notes when he remarks that the thief is likely to have made his escape long before the professor is awakened. Just as surely as the dropping of the sandbag defies the laws of physics in a manner fully in keeping with the codes of cinema, so this machine certifies a certain congruity between the Goldberg machine and the counter-logics of the cinematic relay.

In theory, Goldberg machines often function as prosthetic devices for actions that people could perform more simply without them. By the same token, Schmidt's shop, and all the film's locations, are similarly cluttered with common gadgets of the "machine age"—telephones, telegraphs, adding machines, typewriters, and so forth. The film

sometimes generates gags by showing these devices behaving counter to their usual functions in a manner enabled by trick-film conventions—as when the smoke issues from the telephone receiver, for instance. More precisely, the film comically underlines the constraints produced by the space-time continuum on the operations of these machines—a telephone can transmit voices across space, after all, but it cannot transmit much of anything else, certainly not smoke. "Actual" machines, then, are shown as little but prosthetic devices that perform menial functions. In one gag, while Queenie is talking on the phone to Ted, he appears beside her in the shop, but she goes on speaking into the phone instead of talking to him directly.

The counter-logics of both the Goldberg machine and the cinematic relay complicate the idea of the prosthetic. Just as cinematic codes answer to the dictates of a nonhuman system that sorts those codes accordingly, so the Goldberg machine takes on a life of its own, operating according to its own self-generated rules. Even if we accept the comic conceit that the machines are human inventions, they operate without human intervention once they are in motion. Thus, they could be said to reverse traditional prosthetic functions: it is not that they extend human capacities with mechanized operations that run their own course or work in ways their users do not comprehend—as is often true of telephones, telegraphs and computers, for example—but that, for that very reason, they exceed those capacities. In that sense, they and their constituent parts take the human as their own prosthetics rather than serving reliably as prosthetic extensions of human agency.

The other principal setting of *Soup to Nuts* is the firehouse, a location that became a familiar one in sound-era slapstick, from *Fireman, Save My Child* (1932)—a Joe E.

Brown comedy in which Brown plays a fireman who is also a Goldberg-like inventor—to the W. C. Fields vehicle *Never Give a Sucker an Even Break* (1939) or the Bob Hope vehicle *My Favorite Spy* (1951). The latter two films move from place to place in a manner dictated more by the needs of randomly assembled slapstick set pieces than narrative logic in anything like a classical mode, culminating in climactic scenes of Fields or Hope doing comic battle with the interwound apparatuses of runaway fire trucks. *Soup to Nuts*, not surprisingly, applies the logic of Goldbergian chain reaction to the accoutrements of fire stations and engines—ladders, pike poles, axes, hoses and ramps, and so forth. Despite the rigidity of many of these items, they interlock with one another on the fire truck, compressing and decompressing at will (like the boxes-within-boxes objects in Keaton's *The Scarecrow* [1920])—yet answering to a logic constructed by their conjoined state in a way that makes them function as "recalcitrant objects" in Gunning's sense. Many of the gags surrounding the truck hinge on the hoses in particular, which hiss and writhe in reaction to the flow of water and generally refuse to cooperate with the Stooges' firefighting efforts. As utilitarian tools, these objects function even more clearly than the items of the shop to subvert any presumption of humans' mastery over an objective world ostensibly of their own making.

Among all the cogs in the comic machine that is this film, the funniest is the mute fireman, perhaps because he is what we resist most—or because he himself retains an uncannily separate status, like a monad, in the midst of a film so avidly attuned to the dynamics of relation. Recall my earlier remark about comedy functioning as a "pulled punch," disturbing us but then quickly dissolving the threat. The mute fireman is funny, one could say, because he clashes with the masculinist and heterosexual overtones felt

everywhere else here; his queerness may be more humorous than threatening, however, first because the fireman is repeatedly punished, and second because he repeatedly survives his injuries (since any registration of actual suffering would undo the ineffectuality of the punishment).

The often hostile interaction between objects and humans does not undermine the equivalency between these categories. Both, in the end, emerge as cinematic figures. The mute fireman is an even more figurative presence than most others in the film; uncoupled in an environment of compulsive though arbitrary coupling, he is the most frequent object of abuse in the film—which is saying something, in a Three Stooges movie. He is the one figure who resists incorporation into the interweaving slapstick chains that make up the film as a whole. In a way, this points to his role as a residual figure—an index of silence in this early sound comedy. Indeed, the mute fireman is something of a palimpsest of silent slapstick associations, dressed in a manner that recalls the Keystone Kops, moving with a splay-toed gait that evokes Chaplin, and—of course—refusing to enter the realm of speech as impishly as he stands apart from the comic relays that go on around him. In this sense, he is granted a certain privileged status as an observer who stands apart from action and events, always bringing up the rear, as it were. It is for this reason that his queerness seems celebrated rather than demonized.

With this in mind, a final comment on the Threeness of the Stooges is in order. The addition of a third term to the comic duo multiplies the blind spots on which their comic set pieces depend. Characteristically, the three are arrayed in arrangements that do not allow any one of them to see the other two simultaneously, and in the antically violent and curiously loveless world they inhabit, this factor is what enables them to

enact their constant struggles for dominion upon one another. In a typical set piece, one of them strikes another with his back turned to the third, who takes that opportunity to bedevil the aggressor, who in turn pivots away from the former object of his violence to jab his fingers into the eyes of the previously unseen member of the trio—a turn that renders the previously visible one unseen, and so brings on another round of onslaughts. In short, each becomes an object of the others in turn, the back-and-forth volley of the duo raised to a power of three. The comedy, though, derives not from violence but from ineffectuality. At no point can any participant in the relay "see" from a position privileged enough to anticipate the next rally. In its account of the myriad interactions among humans, humans-as-objects, and material objects, *Soup to Nuts* does not lament the objectification of humans so much as it celebrates these failures of mastery by inviting laughter at them.

In many ways, this chapter may be understood as an addendum to Siegfried Kracauer's account of American slapstick from his earliest work to *Theory of Film*. As Miriam Hansen suggests, Kracauer "extolled slapstick as a creative critique not only of the regime of the assembly line but also of a culture predicated on bourgeois individualism and anthropocentrism" (*Cinema and Experience* 47). Kracauer himself wrote in 1926:

> One has to hand this to the Americans: with slapstick films they have created a form that offers a counterweight to their reality: if in that reality they subject the world to an often unbearable discipline, the film in turn dismantles this self-imposed order quite forcefully. (qtd. in Hansen, *Cinema and Experience* 47)

Thus, Kracauer emphasizes the mutuality of human and machine, the animation of material objects, and the "thinglike physiognomy" of the human figures in slapstick. Goldberg himself suggested that the ideas for his own machines originated in his university study of physics, including his encounters with internal combustion engines and the constructions of his beloved professor, Frederick Slate, a pioneer in control engineering and the invention of self-regulating devices and perpetual motion machines. (Kinnaird 1-2). Certainly, Goldberg's work turns on the mechanization of everyday life in the second wave of industrialization, when machines expanded from the factory to the home. Yet Goldberg machines revel in the pleasure of their own counter-logics; even if his work is read as a critique of mechanization at the expense of human action, it still suggests that the real machines that increasingly appear in the domestic environment, by contrast to his own elaborate fancies, are if anything not too complex but too simple, too beholden to received ideas of cause and effect. As a final note on what systems theory can help us to see more clearly in film and theory, it is perhaps above all the effort to counter such received ideas to which, in Luhmann's account, it is most richly dedicated.

Chapter 3

The Long Take and Systems Theory

Theories of the long take tend to resort to the language of formalism even more resolutely than those of other cinematic elements. Famous writings on the closeup, for instance, may aspire to the abstraction befitting a theory, but they usually assume a content—namely, the human face, in spite of the fact, typically acknowledged in passing, that many closeups do not contain faces. In the most well-known accounts, from Balázs to Barthes, the closeup claims its significance, in its isolation of a single human figure (or part of one), by contrast to the range of other cinematic elements that collocate two or more human figures. When Bazin speaks of the long take in the abstract, though, it is sometimes as if he were anticipating Michael Snow. He appears to be describing depopulated images that are pure constructs of space and time. Yet, although the long take by definition suspends the relations of time and space that editing constructs, Bazin and most others who turn their attention to it continue to understand it in relational terms, though now emphasizing relations of elements within shots rather than relations among shots. For instance, Bazin argues that long takes strive to "bring out the deeper structure of reality, to reveal pre-existent relationships which become the constituents of the drama" ("Evolution of Film Language" 69).

In one of the most sustained efforts to theorize the long take after Bazin, Brian Henderson finds that "the true cultivation and expression of the image as such—as opposed to the *relation between images* . . . requires the duration of the long-take . . . " (49). Yet, despite this distinction, mise-en-scene has already been defined as the totality

of elements within the image "considered in relation to themselves and to each other" (49). Other important commentators similarly highlight the relational aspect of the long take. Jean Mitry conceives the long take as a hybrid or portmanteau trope that, in effect, combines multiple shots into a single image (65-66). A composition in depth out of Welles or Eisenstein's *Ivan the Terrible*, for example—with figures arranged in both foreground and background—is said to meld a closeup with a long shot by virtue of that relation. In practice, the long takes Bazin celebrated were images of groups of people—the barroom scenes of *The Best Years of Our Lives* (1946), for instance, or Renoir's images of spontaneously formed communities, rife with life and motion. In their depictions of people in relation to one another in social space, such sequences seemed to suggest the possibility that Bazin's dream of a humane collective life might somehow actually be realized—at least cinematically.

For Bazin, the long take brings out the "deeper structure of reality" to the extent that it enables a re-discovery of relation apart from the enforced relation imposed by montage or decoupage. Bazin often treats the long take as if it were a stand-alone set piece in each instance, but as many critics have pointed out, examples of the sequence shot as such are infrequent even in the work of the filmmakers Bazin most celebrates—Murnau, Renoir, Welles, Wyler, and the Italian Neorealists. For Henderson, indeed, what makes the long take continue to bear the burden of relation is that it "rarely appears in its pure state (as a sequence filmed in one shot), but almost always in combination with some form of editing" (50).

Bazin's influence on film studies as a discipline in its formative state is difficult to overstate, but the explicitly humanist dimensions of that influence have perhaps been

somewhat exaggerated. As the field begins its own belated self-examination—in works like Dana Polan's *Scenes of Instruction*—it becomes increasingly clear that film studies is founded in a species of humanism that effaces the machinic status of the film apparatus. Thus, we may conclude that the structuralist influences that came to the fore in the 1970s—largely filtered through parallel strains of thought such as Marxism, feminism and psychoanalysis—were second-order phenomena bent on correcting the "naïve" humanism of prior assumptions. Though Bazin's work was subject to accusations of naïve realism during these same decades, his writing reflects certain attitudes of the structuralist movement that was developing explosive momentum in the very place and time at which he wrote.

Especially as structuralism gained influence in France in the late forties, Bazin turned his attention less to new creative possibilities of cinema than to constraints on individual expression of the cinema as a system. In one of his best known essays, "The Evolution of Film Language," Bazin emphasizes, as in the quotation above, how cinema operates as an impersonal "structure," predetermining not only the operations that run their course within it but the reactions of observers. As he puts it—granting volition to "the cinema" itself, rather than to its practitioners, for example—"the cinema has at its disposal a whole arsenal of devices with which it can impose its own interpretation of a depicted event on the spectator" (67). Or again, by the beginning of the sound era, "one could hardly claim that . . . film language lacked the means to say what it had to say" (67-69). This notion of a language that speaks itself—or that speaks the subject, as later formulations would have it—or of an impersonal structure with goals of its own independent of individual expression, is fully in keeping with the emerging assumptions

of structuralism. Moreover, Bazin was among the first commentators to note the relay mechanisms of the cinema as a system; though he proposes these as a set of transactions between the underlying abstractions of montage and their "plastic" embodiment in specific images, he is far from denying the technological mediation of the cinema in favor of its humanist potentialities: "[B]etween the scenario proper—the ultimate object of the narrative—and the raw image, a supplementary link is inserted, a kind of aesthetic 'transformer'" (67).

It is true that in tracing the "evolution" of the cinema from its early articulations of editing practices to the putative apotheosis of the sequence shot or long take, Bazin argues that the long take offers some possibility of the spectator's liberation from the "interpretations" that the cinema "imposes." But nowhere does he suggest that the impersonality of the cinema as a system is thereby overcome; on the contrary, it is precisely the "impressionistic" force of montage, its function as a means of filmmakers' personal expression, that he disfavors. Though "The Evolution of Film Language" ends somewhat incongruously with a celebration of the film director as writer ("*écrivain*"), it is worth remembering that Bazin attempted to rein in the next generation of *Cahiers* critics' enthusiasm for the "*politique des auteurs*" precisely by asserting the systemic logic of classical cinema, in one of his most oft-cited formulations: "The American cinema is a classical art, but why not then admire in it what is most admirable, i.e., not only the talent of this or that film-maker, but the genius of the system . . . " ("*Politique des auteurs*" 258).

Though Bazin's ontology is routinely called into question, his historical account of the long take is widely accepted. It develops in the silent era, most notably in German

Expressionist cinema, recedes in the early sound period, and re-emerges in tandem with depth-of-field photography at the height of classical cinema (especially in the 1940s) in the form in which Bazin celebrates it. As articulated in Wyler's films, it is readily integrated into classical practice; as in Welles's, it is a "problem" for the studio system—as Welles's commitment to an aesthetic of the long take is among the factors that contributed to the truncation of his Hollywood career. Despite such setbacks, the long take remains a feature of cinema as a system to the present, both in American film and internationally, flexible enough to signify a range of affiliations depending on where, when or how it appears—from a neo-Bazinian realism to an uncompromising modernism to an avant-garde formalism, from a populist immersion-aesthetic to an allegiance to "slow cinema," to name only a few.

This elasticity of the long take, as well as its status as perhaps the crucial modulation of classical Hollywood style in the 1940s and beyond, make it a logical framework for the extension of this project's arguments. This chapter provides an opportunity to clarify the relationship between a specific cinematic element such as the long take and the cinema itself, where each are understood as closed systems, and to illustrate further how closure performs a generative function in the context of systems theory.

System, Relay, and the Long Take

How does the long take continue to illustrate the dynamics of cinema as a relay system, given that it would appear to thwart the progress of the system by halting the serial production of events as processed by editing (the long take as caesura, aporia, or

interregnum)? The notion of a relay implies in the first instance two things, two points or nodes or coordinates, between which something else might proceed. That this duality is always in the process of multiplying or receding does not mitigate its "initiating" function. This is why montage editing can be understood so readily as a synecdoche for the cinema-as-relay itself, because the cut divides and thereby enjoins a relation—a relay—from shot A to shot B and so on. As the previous chapters argue from different angles, the evolution of the cinema system owes an enormous debt to the cut and to all the other operations made possible in an increase of system complexity owing to this most basic of devices. How then does the unedited sequence, the long take, make sense within the framework of cinema as a relay system—a system so clearly driven by montage? Is the long take, or rather its persistence as a feature of the cinema system past the era of the single-reel film, best understood as a kind of atavistic operation, an anomaly perhaps that survives because it stabilizes, serving as a necessary supplement to the fragmentation and discontinuity that prevails? Or are regular appearances of the long take a sign that it manifests the same relay principle as montage and is, thus, not a threat to the system at all? It is this last conjecture that the present chapter will take up and investigate, first by drawing attention to the recursive character of long takes—a balletic interplay of repetition and change, redundancy and development, order and disorder—which the sequence shot shares with montage.

Recursion, as the previous chapters have already indicated, is key to the functioning of autopoietic systems. Before turning to specific examples of long takes to observe how they perform recursively—often by employing feedback protocols—a review of the writings of Luhmann seems in order. It will be helpful to examine further

Luhmann's remarks on recursion and systems to understand better how cinema corresponds to the model of the closed, self-referential system that Luhmann posits—and how the long take is implicated in, indeed an embodiment of, these dynamics.

If cinema is understood as an autopoietic system, one reason montage might at first glance acquiesce to this claim more readily than the long take is that it is more apparently constituent of a process. Watching an edited sequence, one has the impression that something is happening behind the scenes, some form of consciousness is at work, because comparisons are being made and contrasts too, proximity is being investigated and so is distance. It is the cuts themselves that give this impression of meta-activity, of process. In a long take, meanwhile, the sense of an "invisible hand" constantly weighing and measuring and calculating may seem to give way to the illusionism of representation, to the idea that little is happening beyond the level of "first-order observation." A system of the type that Luhmann describes, of the class I argue that cinema belongs to, must be capable of second-order observation. Yet what I hope to show in the analyses that end this chapter is precisely the operational qualities of the long take—evidence of an impersonal awareness organizing the various events that unfold which might typically be read as simply "what happens," rather than, say, "what could have happened otherwise if it were not for a meaning system at work making selections."

A systems analysis would reach beyond the concrete level of the elements in the shot—beyond the limit of semiotics and narratology—to consider what "choice" has been made in terms of how the elements are related. To better observe this choice—admittedly, an abstraction—the analyst can ask "What possible relations of the elements have been rejected?" because, from a systems perspective, the "meaning" of any selection

is little more than the exclusion of other possibilities. The analyst can follow up this question with another: "Now that this relation has been selected, what other relations seem possible?" This second question refers to the fact that, according to Luhmann, the decisiveness of a selection is counterbalanced by the uncertainty that follows from it.

The analyst will want to keep in mind that a selection immediately begins to recede against the ever-advancing tide of contingency. If the initial consequence of a selection is to substitute resolve for uncertainty, the stability that results is only temporary. All systems, therefore, oscillate between order and disorder. Yet, Luhmann cautions, a consequence of a series of selections can be to produce an excess of order or disorder. In other words, balance is not guaranteed by the relay of selections that occur within the system. If the analyst observes a particular long take and notices a quality of inertness, this suggests an excess of order, and what could be expected to follow are selections that somehow surprise; on the other hand, the remedy for a long take in which disorder has reached a saturation point might be a series of predictable cinematic choices.

The selection of a structure by the system brings together particular elements, such that one could be forgiven for mistaking the relation for an assembly or new concrete object. But as Luhmann contends, structures exist on a plane more abstract than that of elements; a selection does not constitute a new element of the system. What the analyst must look for, then, is an abstraction, immaterial, that is nevertheless crucial for the self-reproduction and self-reference of the system. The selection helps to preserve the system by opposing entropy, a state "where every connection between elements is equally possible" (*Social Systems* 285). Furthermore, the repetition of structures enables the system to maintain a manageable number of both structures and elements. Without

this repetition, an excess of possible selections and all that depends on these selections could conceivably overburden the system.

Because selections are marks or distinctions that are repeatable, they traffic with expectations, which are also a kind of abstraction, thus the analyst might attempt to chart the progress of structures by tracing a relay of expectations and their probability—assumptions that answer to rules of form, narrative, physics, ideology, affect, and other such codes, all of which can be said to condition each other. "What is the likelihood that character A will acknowledge character B?" "That the camera will move?" "That the hand will lose its grip?" "That a lamp will be turned on?" "That a ring of optimism will sound forth?" Yet, it is important not to lose sight of the fact that limitation is the primary function of selection in systems theory. And the priority given to constraint is why, if the analyst can make conjectures about system selections by reading traces of expectations fulfilled and unfulfilled, they are simultaneously making conjectures about the system itself. A selection contributes to the self-description of the system as a whole, Luhmann contends, because the system can identify itself with the structures it is able to produce (by contrast with those it is not).

Systems might perform something like a "naming" function in the course of their operations, an activity that pertains to structures and their formation, not to elements. Elements are a substrate essential to the existence of systems, but they constitute a thick soup—a mix too gelatinous by itself to serve as the basis for decisive action. Structures are tasked with reducing this complexity by organizing finite sets of elements into arrangements that can be identified by a shorthand or "name" and thus recalled if and when convenient. Systems, therefore, constantly oscillate between states of complexity

and simplicity. When a system invokes a structure, it draws a distinction. The resulting simplicity—relative to a prior complexity—allows the system to observe itself, to act again and to "stir the pot" so to speak. In other words, the selection of a structure, while it temporarily reduces complexity, sets the condition for a subsequent increase in complexity, requiring another distinction to be drawn. This relay is of course entirely internal to the workings of the closed system.

From the perspective of systems theory, a long take is a relay in the sense that it consists of a series of selections. The selection of one structure by the cinema system leads to the selection of another, and so on. These arrangements of elements, to the extent that they can be called upon by name and hence repeated, are "structures." Yet each individual instance of a structure is an "event." Thus we can also say that a long take is a series of contingent events. Related to the concepts of both structure and event is the further notion of "expectations." According to Luhmann, a system selects a certain organization of elements based on expectations arising from trial and error. We might imagine a scenario like the following: cinema surveys the stock of elements present at a given moment, considers the various expectations it might choose to satisfy under the circumstances, and selects one of these possibilities. This selection is an event, one that will immediately begin to self-destruct like the tapes in *Mission Impossible*. But old and new elements are left in the wake of this destruction, and they serve as the basis for a subsequent selection necessary for the ongoing reproduction of the system.

It is important to explain further what I mean by "expectations," however. Probably the most common way film studies would view "expectations" is from the perspective of narrative or semiotics. Also common, but less so, would be from the

perspective of aesthetics—the view taken by so-called "formalists." But in systems theory, "expectations" can encompass a wide range of disciplines and theories, including science and mathematics—the laws of physics, for example—as these are interpreted by the cinema system. At a given moment, cinema might select on the bases of such queries as: Does the guy get the girl? Does the unbalanced composition get reframed? Does light overexpose the shot? Does wind tilt the branch lower? Does this line intersect that plane? From this description we can deduce a few of the elements involved here: tree, branch, line, plane, wind, success, failure, man, woman, weight, emptiness, brightness, stillness, movement. It is a list of objects—some material, others conceptual—yet a "flat ontology," to borrow a phrase from Manuel DeLanda (also borrowed by Levi Bryant, as seen in chapter two). In reference to promising developments in science, DeLanda notes that "an approach in terms of interacting parts and emergent wholes leads to a flat ontology, one made of unique, singular entities, differing in spatio-temporal scale but not in ontological status" (47).

Luhmann emphasizes "structure" because it helps a system to regulate the steady stream of elements. Structure is what allows the system to make some selections "on the fly," so to speak. As such, structures are readymades of a sort. Some of the many choices facing the system in the imaginary scene I describe above can, then, be relegated to the margins of cinematic consciousness, like the cliché "Does the guy get the girl?" If "Does the unbalanced composition get reframed?" were to become a central concern for a moment, here is an example of what cinema might speculate on in terms of an "emptiness" that stands out on one side of the frame: What will happen to the emptiness if the counterbalancing weight on the other side is eliminated? What is this emptiness in

relation to the clichéd romance? Is this emptiness a spur or an obstacle to something else? Is it too much emptiness, so that the frame should be adjusted in the manner of a zoom-in rather than a wholesale pan?

In this example, the emptiness becomes a "nuclear" element in the context of system operations because selections are taking place around it—which is also to say that not all, or even most, elements can play a significant role at any given moment. Systems theory must be thought in terms of the passage of time, as system operations beget a succession of fleeting moments. When I refer earlier to the "margins of cinematic consciousness," I simply mean to suggest that a system cannot give equal weight to everything at once (despite the fact that all the elements taken together form a non-hierarchical aggregate or assembly). Systems reproduce themselves by making distinctions, and one distinction they make is marginal/nuclear. One thing we should note about this discussion of systems is that it has referenced "cuts"—in precisely the sense in which systems theory uses the word—in relation to the process of a long take (or "selections" and "distinctions"). As cinema manifests an unbroken take it nevertheless selects certain elements—a "cut" that severs other possibilities. In this respect, the discourse on systems has been unsettling the binary that inaugurates the chapter and much discussion of the long take as a cinematic figure: "montage versus long take."

The system of an individual long take is separate from—yet adjacent to—the system of cinema. So the long take could be understood as a structure within the cinema system; and the trope "forming a couple" (in a romantic comedy, for instance) could be a structure within an individual long take. Whatever is a structure for the take is also a potential structure for cinema, but not the other way around. The long take is a structure

for the cinema system (but not, of course, for the long take itself; that would be a tautology). However, while "Does the guy get the girl?" could be a structure for both cinema and a long take, I imagine, channeling Luhmann, that it would have to be formulated somewhat differently at the level of the system, rendered less concrete—for example, in the case of a scene where "The guy wanted the girl, but now the girl wants the guy," the operative system structure would be the abstraction "reversal."

The operations of the cinema system, with respect to a long take or otherwise, necessarily occur in many different contexts: cinema exerts its influence on pre-production, production, and post-production. A key point that needs to be made here is that the decisions humans might make—location scouts, cinematographers, editors—while they may be in concert with the workings of the cinema system, are not the decisions that cinema makes. All cognitive systems, according to Luhmann, are "closed," meaning that cinema cannot know what the director "thinks," the director cannot know what cinema "thinks," and the film scholar cannot know what either of these others "thinks." What systems must do, then, is construct a subjective image—a caricature of sorts—of the "other" thinking, in terms specific to the needs of the system, so as to anticipate how the operations of the system might affect (or not) its environment. What makes a protracted scene without cuts a "long take"—let us be clear about this—is the system of film studies. And yet, somehow, that understanding (or misunderstanding) of this succession of micro events finds its way back to the cinema system, such that cinema can incorporate some version of the "long take" into its repertoire of structures, its horizon of possibilities. The mind of the analyst is like an "alternate universe" to cinema consciousness, and vice-versa, each speculating about the other, for its own purpose (of

survival).

A long take, however much it might be systemic in a manner redolent of cinema itself, is not a system in a true Luhmannian sense, because it is a kind of artifact, not a dynamic process. It is "change mummified," as Bazin would say. The long take is not an autopoietic object, but it is an object that carries with it the systemic qualities of the cinema system—though it should be added that it can still have effects as any object can. The obvious example of this is that it perturbs the analyst (also an object; part of the assembly "film studies"). As a relay system, the long take by itself would seem to represent first-order observation; it is a system that does something, yet does not observe itself doing. Cinema, however, observes the long take doing. Not infrequently in discussions of cybernetics, it is said the first-order observation systems are really just machines or "trivial" objects, meaning that they cannot reproduce themselves. The cinema system exerts an influence on any and every long take; but again, the long take is nevertheless an autonomous object—an allopoietic system (as are all individual films).

In Luhmannian terms, a system connects, but it transports nothing; nothing is moved, but the system reproduces itself by connecting each of its operations to the next one, over time. Luhmann's theory is profoundly temporal, but not especially spatial. Systems are not goal-oriented, which is one reason why narrative explanations of cinematic operations "get it wrong" from a Luhmannian point of view. The stopping point of a long take is contingent on some prior event, which means that it is arbitrary to an extent, inevitable only in hindsight. A caveat: a goal of an autopoietic system is to sustain itself; if we think about this for a moment it becomes clear why the system cannot have another goal in mind, because it has to constantly reorient itself to the ever-changing

conditions of its environment. From a systems point of view, the long take can be difficult to see as a unit or event itself; rather, it looks like as a succession of micro events. So if we are to wonder about how the system joins the final event of the long take to the inaugural event of the shot that follows, we would have to speculate about something microscopic, fleeting, bearing no connection to the long take as a whole except by extension, by the bare fact of the relay.

System, Structure, and Narrative

At the beginning of chapter eight of *Social Systems,* "Structure and Time," Luhmann makes a point of distinguishing his notion of "structure" from the concept of "structuralism," a concept familiar in one form or another to all who work in cultural studies, at least since Levi-Strauss. Luhmann is forthright in his assertion that structuralism is inadequate to the study of autopoietic systems, because systems are dynamic, resisting the structuralist need to identify universal patterns that endure. Another reason structuralism comes up short for Luhmann is that it validates its conclusions on the basis of an order found in the objects under study, one that rises to the surface for inspection like cream on the top of milk; Luhmann asks how this order can be attributed to the objects rather than to the operations of structuralism itself, how in fact structuralism can be sure its findings are not simply self-representations. But even though emphasis is placed on the constant activity of systems in connection with this critique of structuralism, Luhmann is careful to avoid giving the impression that systems are chaotic objects.

On the contrary, according to Luhmann, systems depend on both order and

disorder, each a state that gives rise to the other in reciprocal fashion. Closed systems, we might recall, are constituted by elements that are generated by the system itself and are fleeting in nature. Luhmann contrasts these elements with structure; elements are "concrete" while structure is "abstract." More specifically, Luhmann says that structures "abstract from the concrete quality of elements" (283), and we could understand this to mean that structures reduce the complexity of elements, which are complex because they disappear as soon as they materialize, and thus proliferate not only their own number but the "befores" and "afters" that mark the temporality of the system. In a sense, then, it could be said that structure reproduces the initial distinction between a system and its environment, so that structure is self-reference as an ongoing process. This would help to explain why structure is said to enable the observation of a system, why Luhmann says it is a "precondition" of observation (285).

The precondition of structure, however, is said to be uncertainty. A system must continually make selections from a range of possibilities (potential elements); this plurality of possibilities is a source of uncertainty, but so too is the fact that the range is not given for all time, that it can change. Structure mediates this process of selection by keeping watch on the fluctuation between the virtual and the actual (and here I should emphasize that structure is not the virtual itself—the range of possibilities—as structuralism would likely have it). Because systems are always in flux and susceptible to entropy, they must depend on something that is intrinsic to them, yet not fully identical to their internal operations of selection, in order to help maintain their existence over time. This something else, according to Luhmann, is structure, which he also describes as a "horizon of expectations" (289). Structure, conceived of as expectations, not only works

to delimit the possible selections available to a system at a given moment, but it also crucially serves to insinuate a protective futurity into the system in the form of anticipation.

How does cinema produce its own elements, as an autopoietic system, given that it would appear these are instead generated by its environment—by humans, machines, electronic signals, digital bits, and so forth? The cinema system would not exist, of course, without the external production of certain materials like lab chemicals, lights, digital compositors, costumes and props, yet these are not the elements that constitute the system. Cinema operates on information that it gleans from its environment through what Luhmann calls "structural coupling" between systems. It is important to recognize that not only is cinema perturbed by its environment, such that it is able to construct data necessary for the maintenance of its operations, but systems in the environment of cinema—the star system, the Avid system, the art world and mass media systems—are likewise perturbed by cinema.

As Luhmann continually reminds us, however, "perturbations" are not at all received by a system as "inputs" from another system. Cinema does not operate on the images and sounds produced by the latest Red camera and Sound Devices recorder. Rather, cinema interprets the perturbations of these images and sounds, and the resulting information is what it acts upon. The operational closure of cinema I am describing has implications for the system of narrative as well. If we accept the assumption that systems are perpetually withdrawn from each other, we can say that our understanding of narrative is nothing like cinema's own; cinema does not "do" narrative the way we say it does. And yet it would seem that structures within the cinema system correspond in some

way with narrative, given the privilege accorded to narrative meanings in so many interpretations of cinema.

When a film scholar makes observations about the narrative of a film, such utterances are probably most useful to the system of film studies, though they might make a difference to other systems by means of structural coupling; we might imagine that the studio system and the mass media have observed—each in its own way, according to its own codes—the utterances about narrative thus issued. We might imagine also that cinema interprets these utterances, even if cinema perpetually fails to understand what film studies means, and vice versa. But if what film studies says cinema does is only a caricature of how cinema actually operates, there is no harm done really. On the contrary, the situation in which each system speculates about the activity of the other is a boon to both, because in each case it provides more "grist for the mill." In fact, it could be argued that "narrative" is a particularly good lens for making observations about cinema precisely because it is such a systemic concept itself; thus it is at least an apt metaphor, under circumstances where what is said about cinema can only be accepted as a pale approximation for what cinema does. Film studies speculates about what cinema is doing in the form of a kind of fantasy, and it is primarily useful for the self-reproduction of film studies; but because cinema observes not only itself but its environment, the utterances on the part of film studies are theoretically available as spurs to the cinema system as well.

Oft-noted parallels between systems theory and structuralism are especially apparent in the work of Roland Barthes. In his essay "Introduction to the Structural Analysis of Narratives," Barthes writes:

> We must remember that cardinal functions cannot be determined by their "importance," only by the (doubly implicative) nature of their relations. A "telephone call," no matter how futile it may seem, on the one hand itself comprises some few cardinal functions (telephone ringing, picking up the receiver, speaking, putting down the receiver), while on the other, taken as a whole, it must be linkable—at the very least proceeding step by step—to the major articulations of the anecdote. (101)

In general approach and even specific vocabulary, the passage sounds distinctly Luhmannian. The caution not to forget at the beginning of the passage seems to have as its correlate something Barthes says earlier about the significance of nuclei not being "their spectacularity (importance, volume, unusualness or force of the narrated action)" (94-95). Cardinal functions or "nuclei" are the "hinge-points of the narrative" (93); they are contrasted with "catalysers." The difference between them is that the former "inaugurate or conclude an uncertainty" (94), while the latter are resting points (95). Both units are by definition functional; their significance is tied to what they do, and what a nucleus does is to open up or close a loop.

As Luhmann tells it, the ongoing operations of a system depend on a cycling between stability and instability. Moreover, each decision that the system makes can lead to "failure," meaning that the result the system anticipates does not occur. Barthes's take on narrative is fascinating in part because he says narrative discourse can never fail: the goal of narrative is to "mean," and everything in a narrative will always mean something. Not only are all units functional, all units are always recuperated at some level of the narrative discourse. There are no units that can ever be stranded, or can disrupt the

discourse.

Barthes says that nuclei are "doubly implicative," which means that they move the narrative along, and at the same time, they join together the various parts on a horizontal axis. There is an echo between "doubly implicative" and "first-" versus "second-order observation"; nuclei are engaged in what resembles first-order observation to the extent that they are simply connecting to each other like so many railroad cars, and second-order observation to the extent that they reach backwards and forwards, across segments, to call to or to answer each other. One is also reminded of the distinction between first- and second-order observation toward the end of the essay, when Barthes writes:

> All these elements form part of the narrational level, to which must obviously be added the writing as a whole, its role being not to "transmit" the narrative but to display it.
>
> It is indeed precisely in a display of the narrative that the units of the lower levels find integration: the ultimate form of the narrative, as narrative, transcends its contents and its strictly narrative forms (functions and actions). (115)

Barthes's insistence that writing does not transfer or "transmit" the narrative recalls Luhmann's famous line: "Only communication communicates." What Luhmann means is that the system of communication is closed, self-referential, such that when one person addresses another, they are acting on behalf of communication, not the other way around. The same could be said about Barthes's understanding of the narrative system: narrative means only in relation to itself; when we recognize the connection between one cardinal

function and another, for example, we are acting on behalf of narrative. Thus, Barthes's conception of the operations of textuality decenters the human in much the same way that Luhmann's theory does.

The quotation marks around "importance" in the earlier quotation suggest a reference to some other understanding of narrative, a "popular" understanding (that values only the "good" parts of the story) or some other non-systemic approach. It seems evident that Barthes wants to decouple narrative from the domain of subjectivity, not unlike the way Luhmann wants to decouple action from human agency. Luhmann says that a system begins by drawing a distinction, and theoretically it could carry on in this way for quite awhile; but at some point a system that endures will tend to incorporate an image of itself into its activity—it will draw a distinction between its activity and itself as the doer of this activity. This latter distinction, a second-order observation, can be likened to "narrative, as narrative" which "transcends its contents and its strictly narrative forms" (115).

Like Luhmann, Barthes is also concerned with questions of connectivity: "[The sequence] must be linkable—at the very least step by step—to the major situations of the anecdote" (101). The "at the very least" refers to a single level of implication, the "move the narrative along" part. His use of "linkable" here specifies the "nature of the relations" that determine the cardinal functions. The linkages—what Barthes strikingly calls "an organization of relays"—allow a "functional covering of the narrative." He writes: "The functional covering . . . necessitates an organization of relays the basic unit of which can only be a small group of functions, hereafter referred to . . . as a *sequence*" (101). The word "necessitates" is curious. There is something passive, or insistently transitive, about

it. The verb is not explicitly causal. It suggests that the subject and object could be reversed.

Barthes's attention to "functions" and "operations" is similarly evocative: "any function which initiates a *seduction* prescribes from the moment it appears, in the name to which it gives rise, the entire process of seduction such as we have learned it from all the narratives which have fashioned in us the language of narrative" (102). Previously we said that a system names when it selects a structure from the array of elements available to it at any moment, largely in order to "recall" the structure by name, which is a species of complexity reduction. Barthes seems to say as much himself about narrative's "naming operation" (101). But Barthes always indicates that an external observer names sequences.

By the time Barthes writes, "the structure of narrative is fugued" (103), we have already been told that it takes place on two axes, on multiple levels, that it forms both adjacent and non-adjacent links. Clearly the system is complex—a woven fabric, not a simple string. Considering how many decisions a system makes at every micro moment, one can begin to understand "naming" as part of the drive to "offload" a portion of the work to redundant forms. Obviously there are reasons why a long take might not appear to participate in the constant "passing of the baton" that can be said is characteristic of montage. But when one considers that systems theorists are looking at the relation of one micro moment to another, the difference between a long take and montage evaporates for all practical purposes.

According to Luhmann, "meaning" is not a thing itself but a relation. Specifically, meaning is the relation between an event selected by a system and all the other events

that could have been selected instead but were not. This definition seems to map perfectly to Barthes's discussion of narrative, as when for example he writes that "cardinal functions are the risky moments of narrative" (95). When a telephone rings, for Luhmann and for Barthes, this is an event; it is only when someone answers or not that meaning appears, retroactively, as the difference between the inaugural event and whatever responds to it. Because meaning is a byproduct of the relation between events, and at the same time an implied motive for the occurrence of events in the first place, it participates in the unfolding of a system as an "integrative" rather than an "operational" element. Meaning is a remnant of a distinction—in terms of narrative, something like "not that action but this one." Only the system is concerned with these distinctions. This fact does not preclude a spectator, of course, but we must remember "the spectator" is a system unto itself, and the distinctions it draws are not identical to the ones that cinema or narrative make. One other way to understand meaning as "integrative" is to consider how Luhmann refers to meaning as a "medium," as a kind of ooze upon which system operations are predicated yet certainly not reducible to.

Barthes is an especially significant figure for the present discussion for two reasons. The first is that he is one of the key figures in critical theory to move from structuralist to poststructuralist models in the course of his thinking. The second is that he is a theorist of narrative who is also, essentially, a critic of narrative. It is with some wistfulness that he concludes that narratives cannot fail since they will always mean something, because ultimately he wants them to fail. His elaboration of "classical realism" is the most influential account in film theory; the definition of "classical cinema" in Bordwell, Staiger and Thompson's *The Classical Hollywood Cinema*, and in

the field of film studies at large, derives from it directly. Yet it is an account grounded not by any means in unqualified admiration for classical realism, but rather in a form of complicated enmity. Barthes sought to illustrate that where the classical realist text claims simplicity and transparency, there is actually hidden mediation and untold complexity. In bringing these to light, Barthes unveils what he takes to be the duplicity and false consciousness of the classical realist text. What he seeks are precisely textual gaps, ruptures and failures, so that the narrative forms of classical realism can be shown to "fail" in their efforts to conceal or exclude those very features. *S/Z* (1970) codifies the classical realist text in part in the hope that it will collapse under this semiotic burden, or at least be rent asunder to reveal something more within it—and a text like Balzac's *Sarrasine*, which might seem to be a model of classical coherence and unity, instead becomes a textual monster of unfettered excess.

From the start, Barthes sought to discover such textual excesses, to deconstruct the unities of narrative design so central to the ideology of classical realism. But his work shows an increasing disenchantment with the analysis of narrative structure as a means to that end. Eventually, he turns from an interest in classification of semiotic codes to an effort to unearth textual elements that appear to elude encoding or decoding in ordinary terms altogether—in, for example, his work on the "third meaning." This work continues his interest in locating textual excess as a way of undermining structural determinations, but instead of parsing elements that exceed pre-given codes, he turns instead to "discontinuous" figures that are "indifferent to the story and to the obvious meaning" ("Third Meaning" 61). It is significant that this turn coincides with Barthes's increasing interest in cinema—and that "The Third Meaning" is an essay *about* cinema. This could

also be said to mark the very point at which Barthes leaves his half hearted structuralism behind and becomes a whole hearted poststructuralist.

As the systems theorist Dietrich Schwanitz declares, "Systems theory is not structuralism" (489). That he must make this claim at all is significant. Because it relies on the notion of a nonhuman determining primacy—the "system"—and has recourse to a binary logic, systems theory has sometimes been seen as little more than a byproduct of structuralism. Yet the structuralist conception of binary logic retains a determining force in its own right, often said to form the "deep structure" of human thought itself—and giving rise to universalizing models of understanding of a kind that systems theory pointedly eschews. The binary logic of systems theory points more to the influence of cybernetic modeling, with its alternation of 0's and 1's and its vocabulary of coding and programming; indeed, a system's self-organization, according to Luhmann, is largely a matter of coding and programming according to just such a binary logic. What chiefly defines this binary, however, is its disquieting tendency to evade perception over time, and it could only be called "logic" in a special sense, considering its capacity to operate independently of human thought (*Art as a Social System*, 185-96). Schwanitz goes on:

> [T]he elements of the system are not people, but communications. Communications create problems, which in turn can only be solved by other communications. . . . Structures are created to link communications . . . and the chosen structures determine the selection of other communications. (489)

It should be noted here that volition is granted to the system itself; it is the system that "chooses," though observers in a system's environment are also engaged in their own

continuous operations of selection as they process these communications, from the vantage point of other systems' environments, through the generation of further communications.

Clearly, the terms "structure" and "element" are being used here in a manner quite specialized to systems theory. As previously noted, "elements" are basal features of a system that—like communications—vanish almost as soon as they appear, while "structures" are mechanisms that link them, "solving" the "problem," in however makeshift a way, of their transitory quality. One way to make this necessarily abstract formula more concrete is to consider the relation, in cinema, of a shot to an individual film frame. The latter could be considered an "element" of the system—so atomized as to register as a unit only barely, if at all—while the former could be considered the "structure" that links such a transitory series of elements. In general, in systems theory, it is assumed that only those structures survive in a system that connect transitory events of communication by processing them as "meaning." Yet structures themselves are impermanent and abstract; as Schwanitz asserts, "[S]tructures can only be understood through their relationship to the pressure of other problems generated by the appearance and disappearance of communications . . . " (489-90).

The relative indifference of systems theory to questions of narrative construction has been a sticking point even for some of the most sympathetic critics. N. Katherine Hayles, a longtime student of cybernetics from a "humanities" field (literary study) but a posthumanist perspective, argues that systems theory excludes narrative to its own detriment. She claims an advantage for narrative in that "it renders the closures that systems theory would perform contingent rather than inevitable, thus mitigating the

coercive effects that systems theory can sometimes generate" (98). According to Hayles, one reason systems theory is at odds with narrative is that, as she claims, it lacks interest in causality and denies contingency. If the two could be brought into theoretical alignment, then it would be possible to see, for Hayles, that "[n]arrative reveals what systems theory occludes; systems theory articulates what narrative struggles to see" (72). It is worth noting that this formulation of structural coupling via mutual blind spots is very much in the spirit of systems theory, and Hayles's conclusion is entirely in keeping with progressive readings of Luhmann such as those of William Rasch:

> If [Luhmann's] inclination is toward the closure of the system rather than the contingency of narrative, he nevertheless has the intellectual honesty and generosity of spirit to see that closure too has an outside it cannot see . . . [I]n my reading, a system looms not as an inevitability, but rather emerges as a historically specific construction that always could have been other than what it is, had the accidents of history been other than what they were. (98-99)

Luhmann's admission that there is an "outside" to "the system" is no small point; among other things, it is what places him at odds with thought like that of the Frankfurt School, which mounts its critique of modernity precisely on the grounds that "the system" increasingly has no "outside."

But the crux of the matter becomes more apparent as Hayles goes on. In her own interpretation, she states,

> [O]ne exits the system not merely to enter another system, but to explore the exhilarating and chaotic space of constructions that are contingent on

> time and place, dependent on specific women and men making situated decisions, partly building on what has gone before and partly reaching out toward the new. (99)

Luhmann might well be inclined to agree, but he would likely add one minor and one major caveat. The minor one is that such acts of "reaching out" could happen only in the environment of systems as he envisions them, not "in" systems themselves, and would still depend to some degree on observations about a given system's past operations. The major—and related—caveat is that there is never one Orwellian system in Luhmann but a non-hierarchic, non-integrated and unquantifiable panoply of systems and subsystems, and that one is never really entering and exiting them, as if through so many revolving doors. In fact, it would be closer to Luhmann's sense of things to say that one is never really "in" systems, since—as Hayles notes—systems theory posits barriers between systems and observers, with the observer, as Hayles puts it, in "quarantine" (78) from the system. In fact, it is this barrier that makes the issue of contingency, far from being an absent term, a crucial element of Luhmann's model. In his account of systems theory, Rasch explains the centrality of contingency most incisively—with "descriptions," significantly, standing in place of what Hayles seems to mean by narratives:

> [I]f one can entertain competing descriptions of the world as incommensurable but equally valid, one does so not from a position that can see the adequacy of each position but rather from a position that posits the necessity of competing contingent positions. In a world where descriptions proliferate and faith in the authority of reason has gone the way of faith in the authority of God, contingency becomes the

> transcendental placeholder. "Modernity" is the name we have given to this necessarily contingent world. (20)

It remains the case that systems theory evinces little interest in narrative as such. This is the case even though, as Hayles notes, "The coexistence of narrative with system can be seen in Luhmann's account of the creation of a system [when, that is, an observer draws a distinction, makes a 'cut'], for his account is, of course, itself a narrative" (72). From the vantage point of systems theory, however—and especially its offshoots in object-oriented ontology and speculative realism—it could be said that all things that exist also coexist. Hayles's move, though, is a familiar one among narrative theorists—essentially, to call every account of reality a species of narrative. It may be in part in response to this tendency that systems theory, in turn, implicitly denies the primacy of narrative.

Yet Luhmann hardly ignores narrative altogether. In *Art as a Social System*, in fact, he discusses narrative repeatedly, albeit briefly, without ever either denying or asserting its primacy even in decisively narrative arts like the novel. This is in large part due to the self-referential closure said to define systems, a claim with large implications for the concept of causality. Again, Rasch puts it best, this time making the link between "description" and "narrative" explicit, and recalling Fredric Jameson's notion of "cognitive mapping":

> [T]he narrative we devise to describe reality is not a representation, not a duplication of reality in symbolic terms, but rather a vehicle that allows us to navigate. During the course of our navigations, we leave in our wake a navigable world, one that can be navigated not because we charted it

> beforehand but because we have already navigated it. The world of objects comes into being with its description, not prior to it. (16)

Luhmann's rejection of mimetic models and his commitment to autopoiesis produces an admitted—indeed, necessary—self-reference that blocks "hetero-reference," resulting in a circularity that renders the priority or anteriority of causes and effects a complicated issue. It is precisely for this reason that systems theory tends to characterize what other models would place into a framework of narrative coherence as only a series of "events" that occur in sequence, but remain transitory and provisional, such that no event ever yields a "whole." To the extent that a theory of narrative can be extrapolated from systems theory, it would process events less in terms of a schema like, "This happened, causing that, which in turn caused that, and so on . . . "—but one more geared toward a kind of parataxis: "This happened, this happened, this happened, and so on."

It is not, of course, that causes cannot be adduced, only that they too participate in a logic of contingency. Indeed, as Luhmann puts it in *Art as a Social System*:

> Everywhere we see boundary-transcending causalities. Yet this is not the problem. When we speak of a blockage of hetero-references, we have in mind the requirement that the *internal* operations of an observing activity, when focused on a work of art, *must be intelligible without hetero-reference*. These observations are produced solely for the sake of observing observations. (151)

Part of what Luhmann implies here is that narrative, as the binding term of a sequence of causalities, is less the province of systems than of observers. If our goal is to observe the operations of systems, we may therefore conclude—as Luhmann seems to conclude—

that systems may (or may not) include narratives, but may not "know" what they are, and, in many cases, do not need to. Does a word processor "know" the words it is processing, and if one writes a story on it, does the computer "know" what it is? A film, in particular, does not have to tell a story in order to be a film, unless one follows Christian Metz in claiming that cinema is narrative by definition, simply because it is temporal. In systems theory, by contrast, temporality is precisely what demotes narrative, as it were, by rendering its elements ephemeral.

Metz is an especially important figure to consider in this light. In his early work, with its own commitments to a structuralist/semiotic paradigm, he identifies a principle of "narrativity" that is somehow "intrinsic" to the cinema as a temporal medium, but by the time of *The Imaginary Signifier*, when a psychoanalytic model predominates, he becomes increasingly preoccupied with the idea of "narrativization," whereby narrative is increasingly seen as an external force imposed from without. Narrativity is by no means free of ideological implications in Metz's conception of it, but narrativization is shot through with ideology. In Metz's view, it is allied with the effacement of the camera by means of an unconscious and deceptive conflation between the act of narration and the activity of the camera itself, thus emerging as a quintessential instance of ideology as false consciousness. Part of Metz's project in *The Imaginary Signifier* is to identify precisely the residual "imaginary" elements of cinema—much on the order of Barthes's "third meaning"—those that can be seen to escape the regime of narrativization, which seeks to co-opt every element into its domains of the Symbolic and the Real. In previous chapters, we have already seen that the very theorists who declare the preeminence of narrative in the cinema system, far from being partisans of narrative like Hayles, also

emphasize its delimiting, constraining, and oppressive potentialities. Indeed, with his sense of the fall from grace from "narrativity" to "narrativization," Metz was perhaps the crucial influence on exactly this line of thought in film theory.

Given the way that such anti-narrative attitudes about narrative permeated the field of film studies in the 1970s and 1980s, it is not surprising that conceptual models designed to look beyond narrative began to come to the fore in the decades following. These include work under the influence of deconstruction—itself an anti-narrative, anti-mimetic theoretical program, with a specific emphasis on the "event" as a structural element given priority over narrative sequence. As early as "Structure, Sign and Play in the Discourse of the Human Sciences" (originally a lecture delivered at Johns Hopkins University in 1966) and as late as *Without Alibi* (2002), Jacques Derrida theorized the "event" as constituent of rhetorical formations in a manner suggestive of—indeed, influenced by—systems-theoretical ideas, especially in its emphasis on the machinic dimensions of modern textuality (Wolfe, "Meaning as Event-Machine"). Film scholars like Peter Brunette, David Wills, Tom Conley, and Tom Cohen "applied" deconstruction to film analysis in an anti-mimetic mode beginning in the 1980s. More recent work on the concept of *photogénie* and "intensities" (as in Mary Ann Doane's *The Emergence of Cinematic Time)* continues in a parallel mode, as does Leo Charney's work on the notion of "drift" in film theory, Robert Ray's explorations of systems logics in *The ABC's of Classical Hollywood*, Paul Willemen's and Christian Keathley's reflections on "the cinephilic moment," or Rashna Wadia Richards's work on "cinematic flashes." All of this work attempts to recover significant features of cinematic discourse from apparently fleeting, non-narrative elements, with the implication that—even if we do conclude that

narrative at some point colonized cinema—we are still not obliged to bow to its power. The ideas sketched above provide a framework for similar approaches to the study of film under the banner of systems theory.

Rethinking the Long Take through Systems Theory

As a cinematic figure, the long take situates itself among the fluctuating systemic functions of element, structure, and event, in the senses laid out above. It remains distinct from a narrative function at least insofar as observers can follow a film's story whether or not they register the appearance of a long take in a given instance. (Students in classrooms watching Hitchcock's *Rope* (1948) or the opening shot of *Touch of Evil* (1958), for instance, are capable of understanding the story even if they have not noticed the absence of editing or the length of the shots.) If every shot of a film is an "event" in the systems theory sense of the word, a long take is an event of a special order as a figure of relative duration ("long" having meaning only in relation to concepts of brevity and protraction). Long takes certify the status of cinema as a system partaking of what Luhmann calls "temporalized complexity":

> Systems with temporalized complexity have properties that one cannot find on their underlying levels of reality. They compel themselves to change their states constantly to minimize the duration of the elements that compose them. Thus, viewed temporally, they combine stability and instability and, viewed factually, determinacy and indeterminacy. Every element (event, action, etc.) is then *determinate and indeterminate at the same time*: determinate in its momentary actuality and indeterminate in its

> connectivity (which must, however, also be actualized in the moment). Insofar as this *combination is guaranteed* by the differentiation of a corresponding system, orderings *that are based on them* become possible. (*Social Systems* 49)

As differentiated from shorter shots, long takes establish an increasingly variable relation to time and duration in the cinema system, which is all that is needed to produce "temporalized complexity"—for Luhmann, a state that is apparent in systems in which events limited in time tend to supplant more stable and enduring structures.

In *A Critique of Film Theory*, Brian Henderson discusses the long take extensively at the center of his project, because he sees the long take as a test case for the main question that he examines—namely, "part-whole relations" in film and in film theory. Indeed, his critique of film theory is that it has largely avoided consideration of this issue in favor of another that Henderson regards as a smokescreen of sorts—that is, the effort to "relate cinema to an antecedent reality, the reality out of which the cinema develops" (31). In mounting this argument, Henderson adduces categories very close to the Luhmannian concepts of self-reference and hetero-reference: "For what can relation-to-other mean when relation-to-self, or part-whole relations, has not been established?" (31). The theorist who abdicates a study of self-reference "misses how it is that a work of art can mean—or stand in any relation to—something outside itself, and that is only as a totality, that is, as a complex complete in its own terms" (31).

If we were to substitute here the word "system" for "complex," then this quotation would seem to be a page from Luhmann's book. Henderson himself notes the tendency toward systems analysis suffusing film theory, in work such as Dudley Andrew's:

"[Andrew] stresses the systematic character of the film theoretician's work. . . . Andrew's later book, *The Major Film Theories*, pivots on and extends the notion of system. . . . Andrew assumes that film theory in general and every particular film theory are systematic . . . " (xi). Yet Henderson declares, "We do not assume the systematicity of film theory or of particular film theories . . . " (xi). But this caveat is far from expressing opposition to systems thinking; indeed, it is the ultimate lack of systematicity in film theory that is the problem, according to Henderson: "[I]t does not take a Derridean to realize that film theory consists of fragments of systems (or of fragments posing as systems), themselves riddled with gaps and contradictions . . . " (xi-xii). He criticizes Bazin for "a major breach in his system, permitting a critical activity not at all systematic" (xi), and faults Metz in his essay "The Systemic and the Textual" for insufficient consistency in elaborating the notion of the "textual system" (153-55).

More generally, Henderson insists on a form of operational closure in a manner that makes him something of a strict constructivist; the implication is that films do not represent realities but construct them—a simple way of putting Luhmann's basic argument against viewing art and media forms as representational. Complementing Henderson's analysis of the long take in the cinema system is a sustained critique of "cine-structuralism" (represented by the work of the late sixties and early seventies of Geoffrey Nowell-Smith, Peter Wollen, Jim Kitses, Alan Lovell, and Ben Brewster). His book can be understood, then, as an episode in the struggle to move film studies as a discipline beyond structuralism. The fact that Henderson makes this effort from a quasi systems theory perspective points to an implication of the present project—that systems theory could well provide a vehicle for just such a transition, one that does not require

renouncing prior advances in the field, precisely because a submerged systems logic pervades so much that has already been accomplished in film theory.

The long take is important for Henderson's argument to the extent that he views the long take as a definitively cinematic figure that is produced out of prior operations of the system itself, thus a quintessential instance of cinematic self-organization. In other words, it is something "new" in film that is nonetheless derived not from "outside" but from "inside" the system, at least to the extent that a long take, rather than being a totally novel manifestation, remains a shot, like other shots—only longer in duration than what we have ordinarily taken a shot to be. This prolonged duration is what makes it a test case for "part-whole relations," because it presents a departure from the conventional shot breakdowns of editing that, ostensibly, can regulate the relations of part to part—shot to shot—more manageably. For Bazin, as we have seen, this feature may confer temporal realism on the long take, but it also deprives it of the "expressivity" of editing. That deprivation, of course, was understood by Bazin as a gain, allowing "reality" to speak more fully through the system, less fettered by interference from the "expressivity" of individual artists. (Bazin, we should recall, chides even his beloved Murnau and Welles for being too expressive in their uses of the long take.) Henderson, by contrast, is at pains to return expressivity to the long take and to return the long take to the realm of personal style, especially by showing how long takes effect editing patterns in films as a whole:

> Stylistic combinations of long-take and cutting techniques fall exactly between the two schools [of Eisensteinian montage theory and Bazinian long-take theory], in that they combine elements of the favored style of each; but they are treated as falling outside of each because each prefers

> not to recognize them. This is a prime instance of serious omission in the classical film theories, indeed of an entire *category* of film expression missing from them. This limitation is compounded in importance by the expressive impact that editing has upon the long-take sequence. (53-54)

Despite the systems logic of Henderson's approach, this concern with expressivity shows the persisting humanist and formalist underpinnings of his project, which can only prevent this systems logic from achieving a full formulation.

According to Henderson, films exert an influence on film theory, and vice versa; film theory and film criticism also develop in tandem. Thus there is a triangle of mutual support between films, theory, and criticism, each working to advance its own cause and that of the others. From the point of view of autopoietic systems theory, what Henderson describes are in fact three closed systems that have formed structural couplings with each other. We can wonder whether or not academic study of films is a system that produces evaluations of films; but there is something academic about the question itself. On the one hand, it is certainly the case that film scholars evaluate films. Yet if film studies is indeed closed, whatever judgments are made in the system of film studies remain in the system, are for the system. Indeed, from this perspective, Henderson's distinction between theory and criticism would appear academic—even beside the point—as he is describing recursive operations taking place all within the same system.

It is not only a mise-en-scene style of filming, Henderson argues, that is required to do justice to the film image, but "the duration of the long take" (49). The alleged theatricality of the long take allows a "natural" or "organic" relation among the elements to take hold; whereas in montage the relationship is between images, and is therefore an

"artificial" or "imposed" relation. When Henderson writes that "the *relation between images* . . . is the central expressive category of montage," (49) he establishes a rhyme with an earlier claim that, "[t]he consideration of [directors'] distinctive styles . . . can lead to the recognition and analysis of new expressive categories" (48-49). In other words, the use of the word "expressive" here refers not to the effect of system operations, but rather the effect of an individual's actions. Despite the signs of a systemic tendency in Henderson's thought, he is clearly not a poststructuralist thinker like Luhmann, let alone a posthumanist.

Yet Henderson's description of mise-en-scene does recall the flat ontology of systems that I have remarked on elsewhere. Without establishing a hierarchy among the elements, he writes that mise-en-scene encompasses "the actors, sets and backgrounds, lighting, and camera movements considered in relation to themselves and to each other" (49). This last point is of special interest, because it implies that mise-en-scene can include not only concrete elements but abstract structures as well. If we add to this list characters, actions, and "signifieds"—as well as superimposition, juxtaposition, and alternation—then, but for the absence of editing, "mise-en-scene" becomes almost a synonym for "cinema system."

Bazin, of course, is the key proponent of the notion that film exercises its true powers when it acts in accord with reality, such that the image "reflects" reality; a sense of things "as they are" escapes human perception, but cinema offers this otherwise elusive sense to the spectator as a gift. Henderson quotes the same passage from Bazin glossed here earlier from a different angle: mise-en-scene, as opposed to montage, "strives to bring out the deeper structure of reality, to reveal pre-existent relationships

which become the constituents of the drama" (50). For Bazin, this "deep structure" becomes most visible when the filmmaker pledges fidelity to the becoming of reality—that is to say, when the filmmaker employs a long take without cuts. From the point of view of systems theory, however—despite the already-noted systems logic of Bazin's work as well—Bazin fails to account for the ways that systems are perpetually withdrawn from each other. In other words, the distinction between a "faithful" and a "not faithful" rendering of the environment that surrounds the cinema system is a false distinction, because cinema has no option other than to invent "reality." And for that matter, the same can be said of the spectator: humans cannot know reality "as it is"; nor can they know cinema "as it is."

Given that Henderson is attempting to deconstruct the division between mise-en-scene and montage here, it is not surprising that he does not join with Bazin in valorizing temporal mimesis. Henderson's position aligns closely, however, with that of Alexandre Astruc, a colleague of Bazin whose aesthetic inclined much more clearly toward modernism. According to Astruc, Murnau's shots are filled with a tension arising from multiple vectors all opposed to each other. As Henderson quotes Astruc: "Each image is an unstable equilibrium, better still the destruction of a stable equilibrium brought about by its own élan. So long as this destruction is not accomplished the image remains on the screen. So long as the movement has not resolved itself no other image can be tolerated" (51-52). Astruc's claim too carries systemic overtones, to be sure, as it imagines the film image as a charged particle seeking to dislodge its energy. According to this account, the cut is an event directed toward establishing order—though we might ask, what about other images, not "Murnau's"? We can imagine, for example, another kind of shot that

begins in a state of equilibrium, but rather than build tension, it proceeds to a different kind of disorder, a state of extreme balance or inertness. Here the cut performed by the system would act to incite energy, not to release it. Astruc describes not only the shot as a system seeking balance, but the sequence as well. This claim provides the fullest sense of Astruc's proto-Luhmannian film theory: events within a system are mirrored, sometimes, in some respect, by the structures the system selects. Thus, we find that Astruc too is describing the aspect of the system that Luhmann calls "self-reference."

As we have seen, Henderson wants to draw attention to a long take style that incorporates the cut: "The category of cinematic expression we are discussing, the crucial cut between related long takes, might be called the selective cut or the intrasequence cut" (54). Intrasequence cuts are presented in opposition to cuts that "relate, arrange, or govern the whole of the pieces it joins" (54). Yet when he discusses long take style involving dialogue, he claims that cuts here do in fact "relate" or "arrange." For example, in the case of a cut following a line of dialogue, the line is said to reverberate within the new situation, even as it "belongs to the old context or set of relationships" (57). We might notice here an apparent contradiction between the intrasequence cut that serves no purpose other than to accomplish the segue from shot to shot, and a cut that is both more disruptive and more explicitly reflexive. A similar paradox is noted by Luhmann, and he addresses it by invoking the concept of "re-entry" in systems. According to Luhmann, when a system makes a distinction, the previously marked space suddenly becomes inaccessible, a blind spot. Yet, at some point, systems can develop an awareness of this blind spot, such that the blind spot re-enters the marked space. But, of course, the blind spot re-emergent is never exactly identical to the previously marked space (this is

Luhmann, after all). If we apply this notion of recursivity to what Henderson is saying here, the reverberation of the line spoken before the cut must be distinguished from the line itself. The question then becomes: what is the significance of this distinction between the line before and its re-incarnation? Luhmann might say the difference in this case doesn't matter in itself but "in the difference it makes," something ultimately similar to what Henderson suggests; yet for Luhmann the significance would obtain exclusively for the system, not some other system (like Henderson's "viewer").

"One of Bazin's chief objections to montage is that it breaks down or analyzes the event for the viewer," writes Henderson, reminding us again that Bazin is opposed to cinematic attempts to refashion reality (57). Henderson is somewhat less concerned with the spectator, and much less committed to the "real." Indeed, in his formalist inclinations, he seems to assume that "analysis" as a function of cinematic observation cannot be left to the average spectator, and must be the province of experts, like the auteur endowed with exceptional powers of coordinating elements and relating cinematic structures. For my part, I am arguing that cinema is a perceptual system unto itself—that cinema itself surveys its state moment by moment, selecting events and structures as it unfolds in time. This analytical activity that cinema performs is crucial to the cognition of humans who make films, to the structures of films themselves, but it is separate from these and all other systems or objects in its environment.

The long take stands as a key illustration of just this point. A species of the long take is visible in the earliest films, and one could argue that cinema consisted of nothing but long takes until the earliest experiments with editing around 1899—if it were not for the fact that the system required the codification of shorter shots to produce the long take

from its own elements. One could also say that the cinema system produced the long take well before film theory noted this development. Bazin is not just the first theorist of the long take; he is among the first to mention it at all—and even he does not use that term (which enters common parlance in the field only in the sixties) but instead the term "sequence shot" (*plan séquence*). To see in action the effects of closure between the cinema system and the environment of film theory, it is instructive to examine early efforts to account for the long take as a cinematic element, before it was "known" in the environment of the cinema system. One of the most suggestive yet typical examples appears in Siegfried Kracauer's review of William Wyler's *The Little Foxes* (1941). As Bazin would note later, *The Little Foxes* was the first film in which Wyler combined the deep-focus compositions that he had developed in collaboration with the cinematographer Gregg Toland (as in *Dead End* [1935] and *Wuthering Heights* [1939]) with experiments with longer takes—a combination that appears in all of Wyler's films of the 1940s (and essentially disappears from his work thereafter). What Kracauer sees in the film is a form of entropy, a static, inert reversion to a kind of stagecraft:

> The basic weakness of the film lies in the fact that . . . Wyler always makes brilliant use of film techniques but fails to create from the possibilities inherent in film alone. These are all the more difficult to access since Wyler adopts a subject that was conceptualized for the theater and suggests theatrical staging. (*Siegfried Kracauer's American Writings* 144)

Similar observations attend Welles's films of the forties, as seen by such contemporary luminaries as Otis Ferguson and James Agee, both of whom accused Welles of staginess.

Part of the service that Bazin performed for film theory, clearly, was simply to establish the long take as a decisively cinematic figure rather than a pale and deracinated import from the theater.

Kracauer goes on to argue that this deficiency suggests that Wyler "lacks the ultimate relation to the medium of film" of such directors as Griffith, Stroheim and Rene Clair, "who knew well that a film is only cinema when objects, too, actively participate in the action" (144). This claim prefigures one of the main concerns of Kracauer's *Theory of Film*, published twenty years later—that is, the status of objects in the cinema—but seems in this early formulation to predicate it on editing. While the closeup within edited sequences is a primary vehicle of the cinema's archive of objects, a principal theme of *Theory of Film*, Kracauer has by the time of that book disavowed any strict allegiance to particular cinematic techniques and, in theory, makes common cause with the long take simply as one element among many. Most noteworthy here, however, is his treatment of one of the most celebrated sequences in *The Little Foxes*, in which Regina (Bette Davis) upbraids her weak-hearted husband Horace (Herbert Marshall) with such cold vehemence that her words provoke a cardiac episode, and then she withholds his medicine as he struggles for help:

> Regina sits in the background, brightly lit and motionless, while her husband moves toward the stairs from the front. Then we are presented with a close-up of her face, traversed by the shadow of the staggering man, and a few moments later we see the husband crawling up the stairs behind her like a wounded animal. (144)

This description acknowledges one of the main features of the sequence shot later noted

by Bazin—its activation of a dynamic relation between foreground and background spaces of a given shot—but does not note the shift of spatial relation that takes place in the course of the shot. Nor does Kracauer remark upon the temporal duration and simultaneity of action that was also a hallmark of Bazin's account. In fact, Kracauer gives the impression that the sequence is edited conventionally. The ambivalence of Kracauer's evaluation—noting Wyler's "brilliant use" of film technique yet citing his "failure to create from the possibilities inherent in film alone"—reflects that the long take, already established in the cinema system, has yet to become recognizable in the system's environment.

Observing Long Takes

What follows is a series of exploratory readings of noteworthy examples of the long take, tracing an arc from the 1940s through the 1960s, a crucial trajectory in the evolution of classical Hollywood cinema. Each example is well known among students of the long take and comes from a canonical film. Drawing on what has been established above, the intent is to continue to work through the implications of a systems theory of the cinema for the analysis of particular film texts. Perhaps because efforts to think about the implications of systems theory for the arts and the media—and the humanities more generally—remain at a very early stage, extant examples of the application of systems theory to textual interpretation have remained embryonic. They tend to reproduce familiar analytic strategies within a slightly altered framework. (The same could be said for many structuralist analyses in American academic literary criticism of the seventies, often exercises in New Criticism in disguise.) This may also be because systems theory

aims to revise our understanding of large key concepts (system, communication, observation, and so on) rather than to prescribe attendant approaches to particular circumstances. Indeed, systems theory makes a point of avoiding any such prescription and welcomes, in theory, all communications under the banner of "observation"—though it asks that we think anew about what communications and observations are, and how they work in relation to systems. It is striking to note that Luhmann himself, when discussing individual artworks in *Art as a Social System*, for example, sounds as if he were a late-nineteenth-century aesthete, albeit a progressive one, whereas when he outlines the theory itself, he sounds as if he were speaking from a barely imaginable posthuman future, with large implications for our all-too-imaginable pasts and presents. But such concrete discussions, in any case, are rare in his work, and he never assumes that the validity of a theory (least of all his own) might founder on specific examples.

Like the readings in the previous chapters, then, those that follow are best understood as provisional explorations. On the one hand, one basic appeal of systems theory for the study of film is that it does not place prior observations—nor any particular approaches—off limits, render them obsolete, or declare them newly unfashionable (even if some or all of them may be any or all of those things). Like so many fields of inquiry, film theory has trafficked too long in such declarations, to its own detriment. Instead, systems theory provides an intricate and compelling framework in which to understand much that has been thought in many fields—and the study of film, as has been argued here, is largely governed, in particular, by a systems logic without a systems framework. Even so, these readings do assume that there are attitudes that a systems theory framework promotes in interpretive practice: attention to systems operations in general,

of course, but also a commitment to the fluidity of perceptions; a de-emphasis of mimesis, narrative, and the questions raised by them; a heightened attention to micro moments, among others. Though not necessarily at odds with formalism, these readings stand in contrast to the formalist or neo-formalist practice of locating a "dominant" and measuring other textual features against it, because systems theory typically assumes that such things as a "dominant" are forever receding or transforming at the moment we think we have grasped them, and that we should mark that experience as an element of our understanding. Long takes provide an especially fertile test case because, in some sense, they do try to keep the image "whole," in the simple sense that by definition they preclude literal cuts within the shot. But since they cannot keep it whole, it may be that such goals are not really those of the system in the first place. Long takes assume the forms of "abstract" structures in which multiple, maybe even countless, vectors intersect one another—thus bringing back "cuts" of another sort, the sort that Luhmann says make up the "world." In one sense, a systems theory reading of a film sequence counts some of these vectors, then perhaps takes stock of some of the ones it missed, and finally admits that it could not count them all—the acknowledgment of blind spots being so insistently built into the theory. Texts may never fail to "mean," as Barthes says, but systems theory (or those who "apply" it) might very well fail to "interpret," at least in a conventional sense. Among other things, systems theory counsels a certain humility and discourages dispositions of ultimate mastery.

The previously discussed sequence from *The Little Foxes* is a suitable place to begin. Even before the foreground/background spatial play that Kracauer notes emerges in the shot, a distinction is drawn between two views of the parlor: the view toward the

interior of the house—and the entrance hall with its winding staircase—is selected, rather than the view toward the outside, or a position looking into the parlor from the stairway—or, for that matter, any of a multitude of possible positions. Yet this selection, "concrete" and extended as it may seem, begins to disintegrate almost immediately, as a trace of the view that is not selected—the one that can never be selected, since it is always behind the camera—re-enters in the form of the shadow cast on the seated human figure (Regina). The shadow, and subsequently a disembodied hand that fiercely clasps the frame of the chair, are linked to another figure (Horace) who stumbles into the background, this link effected by two elements: a sound—a wheezing associated with both the shadow and the emergent figure; and an immediate "recursion" of the shadow itself, as it reappears on the wall to the right of the frame.

Following Luhmann, we might think of the background figure as "ego," and the one seated in the foreground as "alter." The labored breathing of ego is selected here; no sound issues from alter, who is frozen and silent—though a moment before, when she rose from the chair, it creaked and produced a rustle of her dress in contact with its fabric. Ego struggles to communicate by repeatedly whispering "Addie, Addie." He is addressing the trustworthy family maid, who is not present and cannot hear him; alter reacts not to what he says, but to what she thinks it means—namely, that no help is forthcoming. The oblique character of this communication squares with Luhmann's general remarks on "double contingency" in the relation of communication to action: "Action cannot take place if alter makes his action dependent on how ego acts, and ego wants to connect his action to alter's. A pure circle of self-referential determination, lacking any further elaboration, leaves action indeterminate, makes it indeterminable"

(*Social Systems* 103). It is certainly the case that alter's "understanding" of the situation does not appear to satisfy or to relax her state of high anxiety. The sounds of the shot join gradually with a musical cue that begins as a kind of drone, but shifts to an excited thrashing of violin strings when alter switches from the seated position in the foreground to a position that joins with ego on the staircase.

At that point, the long take ends, and a cut produces an extreme shift of angle, across the 180-degree axis, to a medium long shot on the staircase above ego as alter joins him. (But is he still ego? Has he become alter? Or is the absent Addie now alter, once she is addressed? Though Luhmann uses these terms to suggest something arbitrary in the volley of individual communications, among other reasons, it is important to recall that they are not fixed.) Such a cut, of course, might have been selected at nearly any point of the shot. In fact, that it occurs means it was always possible. Indeed, the most conventional way to render the scene would have been according to a logic of alternation, cutting between ego's torturous journey to the stairs and alter's unyielding immobility. Instead, the shot stays with alter, refusing to budge. Far from signifying a simple allegiance to alter—though something of the kind could be observed—this selection amplifies the communicative indeterminacy of the sequence as a whole. Are we to sympathize with ego's plight? In that case, why is he made so insistently peripheral in his struggle? Are we to take a perverse pleasure in alter's villainy? Other aspects of the shot suggest a nexus between such possibilities. For example, as if to correct for its own immobility, the camera tilts up very slightly as ego reaches the landing. On the one hand, this motion affords a slightly better view of him in the background, and is rhymed with his own motion; on the other, alter herself begins slowly to stand at the same time,

apparently relenting in her resolve to let her husband die. She rises by the smallest, most agonizing degrees, and the camera's own movement is oddly synchronized between hers in the foreground and Horace's in the background. This intricate correspondence reintroduces the circularity of affect that defines the scene.

At least two events are juxtaposed: the initial emergence from off-screen space of ego in the background, and the subsequent disappearance of alter from the foreground and reappearance in the background. To observe these is to take note not only of the distinction between foreground and background but between appearance and disappearance. As alter makes her way into the shot's background, the focus shifts from foreground to background so quickly that the change is nearly imperceptible. (Contrary to some accounts, this long take uses rack focusing, not depth-of-field.) Before that shift, however, the center of the frame is filled with a crisply focused and highly lit shot of the empty chair—a lingering that opens up a "dead space" of the sort that would usually, in classical Hollywood, demand an immediate cut. But the structure of the take shows that space is divided in a number of ways despite the absence of cutting. Between these two events there is a multitude of shades of difference and distinction—the phases of alter's facial expression: patiently impatient, impatiently patient; dreadfully elated, elatedly dreadful; uselessly effective, effectively useless.

The selection to hold the shot on the empty chair suggests that the status of objects in the shot is more significant than Kracauer admits and does not depend on editing. The chair is plush yet sturdy—with an ornate carving that adorns the top of the back, a kind of garland carved from the dark wood. Before she rises from the chair, the nested leaves of the adornment rhyme with the nested curls of alter's hair, suggesting a

likeness between chair and human; both immobile, presentational by nature, indifferent to union with another figure. The Giddens are well off; we already know this, but now we know it again (a kind of recursion familiar in nearly every narrative), because the furniture is expensive and polished, which helps to explain why Horace tells Regina that she has plenty of money already. Three chairs, in fact are selected here; the one in the foreground is dominant because of its size and position, while the other two are arranged around a circular pedestal table in the entrance hall. Their arrangement serves the distinction foreground/background, and a related one that comes into play with the shift as Regina stands—in-focus/out-of-focus. Not only do the chairs provide information about the characters, however redundant, and not only do they serve to differentiate the space, but they assist the action by serving as resting points for ego along the route to the staircase; the banister carries on this function as ego begins to mount the steps. Thus, the furniture integrates the structure of the shot at a number of levels.

At an abstract level, the structure of the take is a conflict between opposing forces; specifically, it is organized by a tension between power and impotence. This conflict manifests itself in the actions of both characters: Regina has the power to refuse Horace aid, yet she considers this possibility only because Horace has just deprived her of her bid for wealth and security; Horace has the power to block Regina's ambition, yet the inverse of his social privilege is his physical frailty. The fact that each character is locked into a bind, and that this condition of paralysis is doubled by the two characters, makes the circumstance of the take highly entropic, part of what accounts for its strange temporal quality, suspended and protracted.

We could name this fragment of narrative "waiting for fate." The fragment

concludes with Regina's "decision" to join Horace on the staircase and to call for help, because it answers—in the form of a negation—her wish for fate to do what she cannot, which is to end Horace's life. In between the resolve to let fate take its course and its sudden reversal, Horace's zigzag though the space marks the time of deferral associated with Regina's wish. The music begins to swell at the very moment Regina decides to stop waiting. It enlarges upon the structure of the take more than this specific action, however: it draws attention to structure itself, to the existence of an organization where functions and actions—distinctions of all sorts—are fitted together into an assembly. The take is a network of relays, on the one hand; an autonomous object, on the other.

The long take depends on strict and insistent positionality. Even if the camera moves, which it does only slightly in this take, it does not, for its duration, permit a cut to reposition the visual vantage point. In the example from *The Little Foxes*, it registers a certain refusal—the refusal to cut—that amplifies the refusal of the character onscreen to come to her husband's aid. But while this may be an "expressive" function of the shot, the take serves many other system functions, as the analysis above suggests. Welles, too, often uses long takes to suggest limitations of perspective and extended durations; in *Citizen Kane* (1941), long takes are relatively absent from the film's first third, which—after the initial Gothic prologue showing Kane's death—is spirited, buoyant, comic in tone, with fast cutting to convey a sense of the youthful energy of Kane's early days on the newspaper. As this energy runs down—as entropy sets in—long takes predominate, such as the long, lugubrious takes late in the film at Xanadu. Welles remained fascinated throughout his career by entropy in just this sense of systems running down—nearly all of his films start "fast" and end "slow"—so his work provides an especially pertinent lens

on the interplay between "expressivity" and systems function in the long take.

Welles's *The Magnificent Ambersons* (1942) is a film about the rise and fall of a Midwestern family over the early decades of the twentieth century. From about a third of the way through the film (after the iris-out that ends the famous motorcar drive in the snow), it is made up almost entirely of long takes. Among the first of these occurs in the wake of a death—the unexpected passing of Wilbur Minafer, the acting head of the family (by marriage). Among Wilbur's survivors are his son George (Tim Holt) and his sister Fanny (Agnes Moorehead) who are seen here commiserating, each with himself or herself, but together in the family's kitchen. As one of the least showy but most illustrative long takes in the film, this sequence provides an especially significant example.

The take begins with a dissolve from a previous shot of the Amberson mansion, seen at night during a storm with illuminated windows, in a wide shot tilted slightly upward to accentuate the Gothic features of the house. The slowness of the dissolve suggests that the distinction between inside/outside, like others in play such as wet/dry, architecture/bodies—is considered as a constitutive relation rather than a strict opposition. For example, the outside and the rain re-enter the marked space of the kitchen via the window, where the rainfall remains visible. The sound of the rain persists throughout, with a strange effect: we see the kitchen (from a bit of a low angle, similar to how we saw the exterior of the mansion), but gradually we realize the marked space is not in fact limited to what we see because, taking sound into account, it includes both the outside and the inside, the exterior and the interior of the house.

Within the visual field there is, at the start, both a symmetry and asymmetry. The

elements are organized into two halves with a vertical split, but the figure of George on the right side is in the foreground and larger. The relation between the human figures on either side is shortly rebalanced, however, when Fanny crosses over the dividing line with a strawberry shortcake in hand. This event redraws the configuration of elements: Fanny is now on the right and George on the left, and before Fanny sits down at the table, she appears larger than George. Questions of scale are marked throughout the scene, as throughout the film: after she is seated at the table, Fanny says that she hopes the shortcake is big enough.

The relay between foreground and background persists, yet once again in a manner that unsettles expectations. The dominant markers of the background are dark geometrical shapes (pots and pans in silhouette, either hanging down or stacked on a countertop) that segue into the mishmash of plates and bowls, cups and pitchers in the near foreground: there is a continuity between the far background and the near foreground, then, that nullifies a middle ground, which just happens to be where the human figures are seated. George and Fanny are present in this space, but where are they exactly? The location of the humans is marked more clearly by their speech than by their bodily presence, by their conversation which contrasts with the muteness of the objects that swallow them up in space.

In the first half of the take at least, George eats more than he speaks. There could be a great deal communicated by this—his youthful self-absorption, his indifference to others, his pleasure in consumption—but in fact we have already observed these characteristics of George, the data is rather redundant, so we may focus our attention on Fanny instead (who also seems somewhat annoyed by the predictability of George's

behavior). Fanny delivers two main kinds of utterances here: she asks George questions (especially about the behavior of his mother, and of her secret love Eugene) and she chides George. Fanny is both George's "mother" and his nagging "wife"; he is her "source," an object for her to manipulate, but she is also a "victim." The relay between these roles played by Fanny is reflected, albeit obliquely, in the content of the talk itself, a conversation about who drove who where, and who was at the train station, and who was on the train—about travel, in other words, in a scene so geared to the stasis of domestic space, though the film as a whole makes a large issue of the distinction between travel (the rise of the automobile) and stasis (the effort to maintain domestic stability).

George answers Fannie's questions without understanding what she is communicating, but ironically it is Fanny who says, at a certain point, "I don't know what you mean," to George, with an exaggerated, nasal inflection. George is oblivious to Fannie's intentions even after the point that Fannie breaks down into tears and leaves. In literal terms, what is underscored by the conversation is the difference between information and utterance and, moreover, the heightened significance of this difference in two contexts, here superimposed—the family member's discourse and the lover's discourse—where in each case what one means would seem to have to be communicated indirectly, such that one is often misunderstanding or misunderstood. But for all the disjunction that occurs in the exchange at the table, for all the talk at cross-purposes (George thinks Eugene is smitten with Fannie), we also observe an odd rapport between them. In fact, one is tempted to say that the more friction there is in their verbal interactions, the more smoothly they operate as a sort of queer dyad. There is an energy shared between George and Fanny that is steady, balanced, rhythmic, self-sustaining.

When Uncle Jack enters the space, he puts a strain on the motor that is this dyad.

Fanny's departure is an occasion for the shot to rebalance the elements once again: initially, George takes the place of Fanny on the right (though he is made diminutive for the first time, standing in the shadows of the background) while Jack sits in the seat once occupied by George. Between George and Jack there is no attraction. They repel one another, even as their talk is far more successful in terms of common understanding than the previous conversation between George and Fanny. Jack assumes the same position as George, but this is a repetition with a difference: where George was animated (incessantly shoveling spoonfuls into his mouth), Jack is perfectly still. "Fanny hasn't got much in her life," Jack intones, deep in thought; he understands what George does not. With this line of dialogue, a tipping point is reached, signaled by a sudden selection of movement, a sharp, brief pan from right to left—a movement that mirrors the previous pan that follows Fanny's earlier crossing over, left to right, from the sink to the table. In other words, a reversal is executed. This time it is George who crosses the vertical boundary, and takes over the position formerly occupied by Fanny, at the distance in silhouette by the window where it is raining outside.

In a sense, we observe here a spatial equation: X at the sink (Fanny or George), Y at the table (George or Fanny); variables have been selected, but in the end the equation is the same. One purpose of the scene is to address a question about how life will go on in the Amberson mansion after the death of George's father. The answer would appear to be that Wilbur Minafer's death makes very little difference in the short run: his survivors appear to act as they always have, whether person or pot, shortcake or storm. The structure of the take is, therefore, given to the rule of order. Perhaps too much order

obtains, such that the revelation that Wilbur's estate amounts to little is a welcome piece of information, as it suggests the possibility of productive upset. Overall, the take represents an entropic state of things that the striking of the metal worker's tool at the start of the next take is designed to disrupt.

Of Eugene, Uncle Jack modifies a derisive comment by George with, "Oh, he's not dressing better. He's dressing up." Eugene, we know from the prologue, is sensitive to modes of dress, and Uncle Jack shares his own alertness to the fashion system, subtly encouraging Fanny to see Eugene's peacock feathers as an opportunity for herself. Uncle Jack shares all this while wearing a tie that flounces across his chest. The tie is more like a scarf, or an ascot, the part underneath longer than the outermost part, and splayed out to the side. Despite this possible sign of unkemptness, he nevertheless commands an authority over Fanny—looming above and behind her—whose own dress is immaculate, austere. When Uncle Jack a moment later stands alone at the center, he faces away, such that any sloppiness of his tie is out of sight. Sloppy? Perhaps its ungainly spill is the fashion of the day; in any case, his tie redounds upon the napkin draped across George's front earlier on.

Across the front of the table where George and Fanny sit are plates and plates of food, possibly leftovers from the funeral for George's father. The quantity of food is excessive, as if to suggest an even more abstract equation: that a kitchen that big can only produce meals that large. The plates are so numerous that, as in a Dutch still life, they overlap and are hard to count, as vectors, or anything else. One dish—a serving tray—stands above the others. There are two pitchers, one being depleted of milk, the other opaque; each maps to a human in the limbo of the middle ground. The excess of plates

would suggest an imbalance, but they function as an ordering device, a boundary for the space; moreover, they are balanced by the pots and pans hanging in the rear. The economy here is in equilibrium: there is as much food produced as there are the tools to make it. A mute chorus, suspended in judgment over the mortals, the pots and pans gain voice only in the sound that announces the cut to the next sequence, which is also a site of industry, the Morgan car factory from where we can hear, in the black of the dissolve, the sound of banging, mallet striking metal.

The sequential and serial aspects of the long take can render its distinctions even more atomized than those of a sequence of shorter shots because its patterns of configuration and reconfiguration depend far less on the formal instance of differentiation of the cut. One of the only efforts to date to apply systems theory to film makes a similar point: "Movies may try to play down the matter of distinctions by choosing long takes that exploit the spectator's ability to process a wealth of different distinctions simultaneously without necessarily accounting for each one of them separately" (Baecker 570). But this selection does not alter the fact that "the movie is a sequence of distinctions being made. All its takes and shots of situations are chosen, and work by virtue of being chosen" (570). The first part of this claim especially illustrates precisely the recursion function of the long take. In computational logic, recursion refers to forms of repetition that allow the isolation of similar workings of different formulae, so that the computer may continue to draw distinctions without having to perform again and again all relevant calculations (as when "running a program," for instance). The repetition discloses successively simpler versions of itself, if only because the repetition makes it more familiar, as a generalized surround—a field of informational "noise"—against

which new patterns emerge. But this simplification is largely to the benefit of the observer; in order to produce it, the system multiplies its own complexity by continuously replicating its own information. The movement from frame to frame in a movie always illustrates recursion functions in exactly this sense—from frame to frame, only slight changes are perceptible amid multiple iterations of the same information.

The recursion function of the long take can be further clarified by two examples from the work of Max Ophuls, one from a film he made in Hollywood in the 1940s and another from his last film, made in Europe. *Caught* (1948) is a noir of sorts featuring a love triangle between a heroine, Leonora Eames (Barbara Bel Geddes); her quasi-proletarian doctor-lover Quinada (James Mason); and her rich but abusive husband, Smith Ohlrig (Robert Ryan). Ophuls was a master of the long take from his earliest work in the 1930s, but his work in the United States adapts to the forms of the long take specific to Hollywood in the forties; the influence of Welles is directly visible throughout the film, especially in the melding of the long take with compositions in depth. Whereas Ophuls's use of the long take in the 1930s is marked by a quality of Renoiresque spontaneity—the camera's movement often sudden, unpredictable, and even awkward at times—Ophuls's Hollywood films employ a species of the long take that is at once more graceful and more automatic, often tracing back-and-forth movements that play up the recursion functions of cinematic mechanisms.

The beginning of this take is not a hard cut but a dissolve; the system state "superimposition" is selected rather than "alternation." Between the previous shot and this one is an overlap, then—a cross-communication. As is the case with most dissolves in cinema, for the time one shot overlaps with the next, information is multiplied because

the events are—seen together at once—blurred, illegible, unpredictable. Yet in the case of this particular dissolve, the relative bareness of the previous shot (an empty hallway) helps to manage the disorder that results from the layering.

On the other hand, the transition is further complicated by the fact that movement has been selected for the start of this take rather than stillness (the choice for the previous shot); and yet the disorder that results from this choice is also mitigated by the orderliness of the movement itself—a smooth tracking shot from left to right, which is already in progress when the dissolve begins. The movement halts when the two human figures occupy the center: a distinction is thereby marked between a group of people standing and facing backward, and these two persons seated together and facing forward, a distinction that functions as a temporary reduction of complexity, as it insures that only two presences need to be registered fully.

This relative simplicity is a necessarily momentary base from which a number of new selections branch out. A distinction is marked between the woman and the man; between the foreground occupied by the base of a candelabra bisecting the image and the plane where the couple are seated (at a bar); between the bar and the background where men and women are mingling; between the woman eating and the man talking; between speech and murmuring, and between these human sounds and the melodious plinking of piano strings; between her reserve and his cheerfulness; and so on. The disorder attending the proliferation of these vectors is, however, countered by what the man is saying. He refers to a previous scene, a fight between these two persons, introducing a degree of redundancy because we have already witnessed the conflict. The particular framing of the recollection in terms of material wealth versus social responsibility, which is the

organizing contrast of the overall narrative, similarly relies on recursion operations.

The man and the woman—Quinada and Leonora—are having a date. The question is whether or not they will make a transition from a workplace relationship to a romantic one, indicating a broad distinction between "work" and "love" that operates throughout the film; the loose rhyme between their names is another example of superimposition that suggests they may form a couple. Ancillary to this narrative uncertainty is another question, more immediate perhaps, which is whether or not Leonora will reveal what the viewer already knows, that she is pregnant. This question, in turn, is matched to a concern about the secret Leonora is keeping from Quinada regarding her marriage to Smith Ohlrig.

When a woman emerges between Quinada and Leonora, from behind, and asks the doctor for a light, the previously unmarked space of Quinada's "singleness"—his availability as a romantic partner to women other than Leonora—is marked; and Leonora registers this distinction by lifting her eyes, raising her head ever so slightly. Quinada, for his part, as if aware of Leonora's sudden discomfort, compliments her appearance, which indeed seems to reassure her, to restore a measure of order. The "other woman" re-emerges to return a book of matchsticks to the doctor; previously we saw that he lit her cigarette for her but that he did not give her any matches. Thus, the woman's second action seems nonsensical. Yet it is precisely in the mismatch between the two actions that we observe the information: she is actually offering Quinada her phone number or the like, which he refuses.

These interruptions testify to a strengthening of the bond between Quinada and Leonora at this bar, drinking, where they are more relaxed and forthcoming than usual. In

fact, the woman must emerge a third time, imposing her head between them, in order to disturb the stability of the couple seated together in a still frame: she sets down her wine glass and picks up Quinada's drink and takes a swig; "Excuse me," he says; "That's perfectly all right," she replies; "Buenas noches," she adds, with a coy smile; he answers a bit embarrassedly, "Buenas noches."

In this brief exchange, a disjunction of utterances is once again shown to be perfectly intelligible when referred to a level of discourse more abstract than literal language itself—to the figurative level of speech, that is. This brief disquisition on uncertainty that attends language use is juxtaposed, so as to reverberate with, the uncertainty that marks the relationship here between Leonora and Quinada. This exchange too marks a redundancy of sorts: it signifies that the woman recognizes Quinada as Latino. His name and elements of his background have dimly suggested this ethnicity, but nothing else about him does—certainly not the actor playing him, the British James Mason. That the woman addresses him in Spanish twice in quick succession ("muchas gracias," "buenos noches," "buenos noches") exemplifies a mechanism familiar in Hollywood cinema, whereby what is meant to register as "already known" is encoded as redundancy.

After the interrupting woman takes her leave, the camera resumes tracing its trajectory—stopping at the end of the bar and pivoting back to the couple. This movement too figures a redundancy since, from this position, Quinada is seen from the back, the same view we had of the crowd at the start of the sequence. The only face visible now is that of Leonora who says the word "charming," referring back to her etiquette training in "charm" school (a reflection prompted by the behavior of the

flirtatious woman, whom she implies lacks charm). The "content" now focuses on Leonora's past and ends with a direct question from Quinada to Leonora about what she does on Long Island (where she lives with Ohlrig). The bar, then—this counter across which drinks are served—has integrated all of the activities of the scene, the movement along the length of the bar defining the length of the take. Where the take had once gained its orderliness from the couple at the bar's center, here at the end of the take—at the bar's end—the couple begins to separate: Leonora is isolated by her secrets; the sequence loses its equilibrium—and a sharp cut to an off-centered closeup of Leonora brings it to an end.

The awkwardness of this take's conclusion is especially striking because Ophuls is "best known for his sweeping, graceful tracking shots and crane shots" (55), as Henderson and nearly every commentator on Ophuls's celebrated visual style has remarked. Especially in his American films, the camera's movement tends at times toward the ungainly, as in the long take that pivots oddly from door to door in the doctor's office in *Caught*, or the fumbling track that follows the main character of *The Reckless Moment* (1949) dragging a corpse along a beach. In a sense, both examples highlight an interest in the limits of what film cameras can do, but they also realize a certain pleasure in the mechanical nature of the long take—as if asserting, Luhmann-like, that cameras can only do what they can do. In fact, it is because Ophuls accedes certain expressive possibilities to the automatic functions of the long take that his work provides such striking examples in the present context. To that extent, the oft-noted differences between his European and his American films—"Ophuls's camera work in his American films is more closely related to and centered on dialogue than on behavior; whereas his

European films center more on behavior, manner, movement" (55), writes Henderson—become less significant. A look at a representative long take from *Lola Montes* (1955), Ophuls's last film, made in France after his sojourn in Hollywood, illustrates this point. It is an infamous film, having opened to scathing reviews, about an infamous historical figure—the eponymous Lola Montes, a nineteenth-century courtesan. The film employs an unusual conceit: scenes representing Lola's adventures are intercut with a frame story in which Lola, having fallen into disrepute, performs in a circus act based on her life. This sequence toward the middle of the film, which occurs in the circus story, follows a segment depicting her failed marriage to an older military officer; it is a pantomime of Lola's attempt to become a renowned dancer.

The start of this take is an example of *mise-en-abyme*; the observer is "placed into abyss." Lola's emergence into view deselects the area of the circus ring that is out of view of the audience; geometrically speaking, this is a bifurcation of the z-plane. She is under an arch—part of the decorative scrim that hides the backstage—that marks a segment along the horizontal axis, an opening that also encloses. This subdivision of the x-plane is mirrored by the initial square framing that is soon adjusted into a rectangle by the outward movement of the frame's sides, like curtains opening (a motif, in fact, of the film as a whole). Furthermore, under this arch, Lola stands on a platform from which stairs descend. When she walks down the steps she marks a distinction on the y-plane. The proscenium, the scrim, the figurative curtains, and so on, are signifiers of theatricality; the excess of such signs—the profusion of a sameness with respect to their referents—tilts the effect of the signification toward a contrary realism, to balance the effect. And the excess of spatial distinctions, rather than defining a very specific place,

seem instead to undo the locating powers of dimensional coordinates, leaving us precisely nowhere.

This "nowhere" is ironic in relation to the ringmaster's claim that Lola has escaped the intolerable predictability of her marriage. He exclaims: "The countess destined for fame and glory had to make an exit before making an entrance!" Yet it lacks concrete structure because it is strangely overcomplicated, because its elements are all either at odds or redundant mirrors of each other. Thus, the formless quality of Lola's entrance into the ring indicates an inert state identical to the suffocation we observe in the previous shot.

The ringmaster tells the audience that Lola set out to become a dancer, "a ballerina" specifically. This declaration has as its correlate the later revelation that she embraced the bolero, having failed at ballet. What follows is an alleged enactment of Lola's training as a dancer: Lola is seen to take direction from a clownish "maestro" figure, while the ringmaster looks on. The enactment is obviously a caricature of this period of Lola's life, as indeed are all the enactments in the circus performance: a reduction of complexity, on the one hand, but also a translation of experience into another arena that enables an increase of complexity in the terms of the "circus system." She is directed to a miniature barre where she performs a small exercise, then to another one (slightly higher), then to another. After her third "demonstration" of technique, she expresses distress, a pang of dizziness. At this point, a new space is marked further along the relay; the ringmaster and the "maestro" cross the boundary into this space but Lola does not. Lola is ill: this suggestion, combined with the rote display, alludes not only to Lola's general suffering, but to an unhappy ending, and furthermore to the idea that this

ending is fated, beyond anyone's control.

Only after much coaxing does she re-enter into view, holding her head. As soon as she does, the "maestro" exits, crossing the boundary back into the previously marked space; it is as if the addition of the one required the subtraction of the other. Lola then mounts a tightrope that rises gradually to a miniature stage only a meter or so above the ground. The stage is adorned with a small facade of a rose-colored, Corinthian-columned theater: another reduction of complexity that could be argued necessary, but is also comical. The ringmaster announces that Lola gave her first performance—"an overwhelming success!"—in Madrid; Lola does an exaggerated pirouette. Lola continues along a tightrope: from the Spanish theater to a tiny replica of the Roman Colosseum, and from the Colosseum to a somewhat larger facsimile of a theatrical stage located in Warsaw, or so we are told by the "maestro" who reappears for a moment on a platform very high up, near the top of the circus tent. This reappearance, particularly as he is shown—suddenly, impossibly, in a omniscient position—redescribes the prior fatedness in terms of an authoritarian system governed by a male figure.

At this last station of the relay, Lola strikes a ballerina's pose, but instead of spinning on her own foot, she is rotated in a constant circle by a motor-driven device upon which she is apparently standing. The mechanical aspect of this movement reflects back on the impersonal nature of entire episode. It also contrasts with the spontaneous and imperfect qualities of Lola's body movements, compensating for their disorder—a disorder that had served as one of the only signifiers of actual "life" here. At this point in the take, a certain order has supplanted the initial condition of entropy, as the repetition of excesses becomes, paradoxically, a kind of stabilizing structure. The sound of the

gunshot at the end, however, piercing as it is, exerts a catabolic effect on this structure; yet the cut to the next shot—also shrill after the measured progress of this take—helps to maintain the equilibrium of the larger system: the cut is a shock that countermands the shock of the pistol firing.

At the very start of the sequence, Lola comes into view (beneath the archway) on a moving prop that resembles the front of a train. This is the film's first train. Lola has been seen in carriages, on a boat, but not yet a train. She rides the front of the train like a figurehead, like an adornment on the prow of a sailing vessel. The train is remarkably detailed—a red cowcatcher and, magically, smoke rising from the smokestack. The train is rendered economically in that it is presented frontally: not much has to be shown to convey "trainness." But the train's very presence suggests the power of the circus to represent anything and everything. The train conveys Lola into the take in a literal sense; figuratively, it conveys notions of "drive" and the one-track route of destiny.

The ringmaster is armed with a whip: a long red handle—brighter in color than his red coat—with a strip of white leather at the end. (The whip is like a candle: a taper and wick.) He deploys the whip casually, at times letting it rest on his shoulder, other times using it to mark direction, indicating where Lola is to walk or dance. If the ringmaster can be relaxed in his use of the whip, it is in part because he does not need to wield it with more force: other men are similarly armed (the "maestro" is equipped with a baton; so is the conductor of the circus orchestra, who we see at one point in the far background). Or, perhaps the ringmaster handles his whip with such little concern because he is also armed with other weapons. The sequence ends with his brandishing a gun, a gun that he had tucked in his boot. "Tyrants," he explains, "have other means of

seduction," and with Lola standing frozen in a pose—an easy target—he fires the gun into the air.

The movements in space—and of figures, scenery, props—suggest an always-available elsewhere. The ringmaster is definitely a "master" here: there is no shortage of directions in which Lola can be transferred. The orchestra performs four movements—a fanfare to herald her return to the circus ring; another lively melody to mark her turns at the barres; a softer piece to accompany her passage across the tight ropes; and a return to the second movement that played marking her dance instruction. When she was with Liszt—in the affair that opens the recounting of her story—she directed him to speed up his compositions: "I cannot stay on my toes that long!" (He replies, "Dancers dance to my music, not I to theirs.") The orchestra in this sequence plays their version of the Liszt tune, which she has to follow. But, as noted, she has an excess of directors; the music is almost incidental. What matters most on the soundtrack is the narration of her story by the ringmaster. She does not have to keep pace with the music. Rather, she must keep pace with the details of her life as narrated. The only other element on the soundtrack is the gunshot, a report so sharp it seems to suggest Lola's (doomed) fate, and a report so sharp it stops the sequence.

Beyond the ring, deep in the background, there is an audience. Though indistinct, persons can nevertheless be distinguished: there are women and men; some women are fanning themselves; they wear a variety of clothes; they sit in a variety of positions. The audience is regulated in the diegesis by costumed ushers who are stationed at regular intervals along the edge of the ring, standing at attention like so many sentries. The audiences for Lola's performance are numerous: the ushers, the ringmaster, the maestro,

the orchestra, an assortment of clowns and other extras in the ring. On the scale of these observers, the audience in the background is the least responsive to the performance. They function as a stabilizing force. They rationalize the proceedings in two ways: they justify the spectacle by their mere presence in the first place, and they consent to its logic by the silence of their reaction. Lola has another audience too: the company of coin-faced men—would-be suitors—who greet her at the start of the sequence with a shower of money and choreography. Understood as a false choice, Lola rejects them in favor of the art of dance, but this decision is seen to promulgate more of the same: more masters, more audiences. The coin-men's symbolic status is mirrored by the members of the seated audience—also faceless—who are collectively a symbol of the "other" or the "outside," of whatever is not the circus.

The film's last shot redoubles this effect of multiplication of sameness. It begins on a closeup of Lola and then moves out, in a backward tracking motion that seems both buoyant and mournful, disclosing a seemingly endless line of men queuing to touch Lola's hand. As the camera sweeps inexorably away from her, so that she is reduced finally to a tiny image of herself in the far distance of the composition, she appears to be lost amid the infinite advance of these undifferentiated suitors swarming before the camera. Ophuls's long takes may be so resonant in part because of their thematic correlates: his films are about characters' entrapment in systems—legal, social, cultural, marital, patriarchal. The same could be said of a filmmaker who follows him and builds on the model his work provides, Stanley Kubrick—perhaps the ultimate systems theory filmmaker, whose films concern the fate of the human under inescapable systems logics. One of the key long-take filmmakers in Hollywood after the heyday of the long take in

the 1940s, Kubrick crafted a number of highly specialized variants of the long take, marked by affectless repetition, an imposing sense of formal enclosure and insistent visual symmetry, and sleek movements that, in their smooth, inhuman mechanization, emphasize the status of the camera-as-automaton. Most of Kubrick's films assume a dystopian and misanthropic attitude toward "the system," but at least one of them, however ambiguously, embraces the possibilities of a posthuman condition.

2001: A Space Odyssey (1968) is divided into three segments. One significant sequence occurs in the third segment called "Jupiter Mission," which is largely set aboard the spaceship "Discovery One." The crew numbers five: three members are in a state of hibernation; Dave Bowman (Keir Dullea) and Frank Poole (Gary Lockwood) are the two astronauts overseeing operations during the ship's long voyage. Dave and Frank are assisted by HAL 9000, a computer that is said to be the most advanced of its kind, a series endowed with artificial intelligence. HAL informs Dave of a fault in the craft's mechanical system that will require manual replacement of a certain module. This information precipitates the "long take" that follows.

The sequence is actually a series of shots, long takes and shorter shots combined in an intricate complex, but its sense of continuous duration is here defined by an unbroken soundscape, not simply the visual field, as is usual. This terrain is highly ordered at the start. Two sounds predominate. Each is an assembly of sound. The first assembly features the aural residue of human breathing, but only as this breathing is modulated by an audio processing system (in the diegesis, the same system that links communications from the helmets to the HAL 9000 computer). The second assembly is noise—white noise, more specifically, a wave of particles in a fixed bandwidth—

emanating from the life support system worn by Dave Bowman. These two sound assemblies seem to interlock, a coupling assisted by the extreme regularity of each.

The first assembly combines sonic artifacts of a living system and a mechanical system, distinguishing it from the second assembly that is associated exclusively with a machine. The first has a contrapuntal rhythm established by the pitch of Dave inhaling contrasted by the pitch of him exhaling, while the second is arhythmic, or rhythmic to the nth degree so that it registers as flat; the first is unpredictable in its rhythms—though only in the sense that unexpected variation occurs in the human respiratory system itself—while the second is uniform. Thus, while the new assembly they form together could answer to the single name "breathing," each assembly retains a certain autonomy.

The actions in the scene involve Dave's entrance into the pod bay, then waiting for HAL to prepare the pod; entering the pod, then waiting for the pod to exit the bay; navigation of the pod to the site of the repair, then waiting for the pod to align with the exterior of the spacecraft; and so on. The clear two-beat pattern throughout the sequence is analogous to the contraction of the diaphragm that allows air to fill the lungs, then the relaxation of the diaphragm that exhales the air. If the take seems initially to be about "the retrieval of the failing module"—based on the expectations of narrative cinema—an observer soon alters this interpretation, as the information here seems to be about something else: the oscillation between expending energy (an event, like breathing in) and saving energy (a counter-event, like breathing out). This pattern of oscillation expands to include the oscillation of points of view. The cuts from shot to shot are not about advancing the narrative so much as they are about maintaining structural order. The "dominant" here (as a formalist might say) could be "oscillation" or "contrasting

binaries." The expression of a binary principle is on display in the visual field—in the symmetry of the compositions, in the overall black and white color scheme, in the relationship between interior and exterior space, and so forth.

The sound of breathing extends across the sequence, identifying this segment as a long take based on an absence of hard cuts, but with reference to the sound track rather than the image. The sound begins with the start of the shot, with the image of a figure walking down a corridor with some difficulty, and thus breathing is associated with effort, and so with the labor Dave is about to perform. Breathing is connected with work; it might also signify anxiety with respect to the specific task which involves floating in space, untethered to any ship. The rate of the breathing does accelerate as the human figure leaves the pod and enters the environment of outer space.

We observe the sound as we observe the figure sealed in a space suit walking, facing away. The breathing is distinguished before the identity of the figure in the suit, and the suit is selected in advance of its inhabitant. For most of the sequence there is no individual visible in the suit; it is just a suit. Prior to floating to the side of the ship to retrieve the module in question, Dave, upside down, presses a button on his arm, which triggers a shield to form across the visor of the helmet: a shadow darkens, gradually obliterating his face. Through the opening of his helmet, only darkness is visible. Dave disappears. An operating suit, no trace of its occupant, performs the operation.

The duration of this take is determined by the operations of a sound assembly, but there are two additional sound "images" that appear on the track as sonic superimpositions of a sort. Early on in the take Dave says, "Prepare B-pod for EVA, HAL." And shortly thereafter, "Open the pod doors, HAL." These lines of dialogue

appear to functions as “tests” of the durability of the predominant sound structure. They are “sound-parts,” and as incongruous as they are, they threaten to disrupt the assembly of sounds, yet ultimately they have no consequence. They fail to alter the terms of the sequence primarily because they are instances of “noise” on a par with the breathing, because as utterances they carry no real information, they simply duplicate what we already see in the visual field. On the other hand, an argument could be made that their meaning is not “instructions to HAL” but rather “language” or “speech.” Speech, however, depends on breath—it must interact with the assembly “breathing,” in both physiological and auditory terms. Despite the uses of sound here, the film as a whole and in the first and last sequences especially recall silent cinema in their visual constructions of information and in their avoidance of using the soundtrack to convey exposition. This sequence can be said to restore privilege to medium (breath), as opposed to form (speech). That the sequence manages somehow to make apparent something its existence necessarily occludes—a paradox, to be sure—is furthered by the signification of silent cinema, the “dawn of movies” long since eclipsed by the time of the post-classical era.

This sequence could also be said to signify a re-entry of the concept “spectator” through the structure of breathing. Dave is confined—by the spacesuit, by the pod, by the distinction between his need for air and the airlessness of outer space—like the spectator is confined by the environment of the theatre, by the contours of an individual seat, by the distinction between the experience of an illusion and the representation of experience by that illusion. As if to make this re-entry of the spectator even more explicit, the image track includes: shots of Dave looking through the opening in his helmet, which is shaped like a cinema screen; shots of Frank monitoring Dave’s progress on a video monitor; and

if we understand the monitor as a report of what HAL "sees," then evidence of HAL's surveillance.

There is a fourth sound, but unlike the lines of dialogue, it is a part of the second assembly, though on a different frequency, as it were: it is the sound of the life support system on the spacecraft, which registers as "room tone," here a high-pitched whirring noise. The sound serves to distinguish the interior of Dave's suit from the interior of the Discovery. At the same time, and more importantly, it marks a distinction between machine noise and what we might call "HAL breathing." If the admixture of Dave's breath with the air flowing from the portable life support system is not enough to indicate the interpenetration of man and machine—the unity of humans and technology—the room tone, which coincides with an appearance of HAL's "eye" on a display panel, especially with the "edge" supplied by its high-frequency, is a reminder that machines are goal-oriented in their own way, much like humans. Machine goals can be limited to purposes like environmental control, but there is no reason to assume they must be limited by the human needs that engineer them.

Chapter 4

Cinema, New Media, and Systems Theory

In *The Virtual Life of Film*, D. N. Rodowick discusses the long take as a test case for understanding cinematic transformations in the age of new media. Considering Alexander Sokurov's 2002 digitally-shot piece *Russian Ark*, Rodowick argues that

> [t]he movie is mistakenly characterized as an uninterrupted sequence of eighty-six minutes' duration, nor is it a "film" in any conventional sense of the term. . . . [T]o explain why the movie cannot be considered one long take or a single shot goes a long way toward explaining how digital cinema transforms both of these concepts. The key to resolving the discrepancy between *Russian Ark*'s self-presentation and its ontological expression as digital cinema is to understand that it is a *montage* work, no less complex in this respect than Sergei Eisenstein's 1927 film *October*. (165)

Rodowick refers to a claim of the film's producer that *Russian Ark* consists of some 30,000 "digital events" rather than a "single" shot. In other words, the camera's processing of data through digital capture and synthesis "separates" the image into countless modular units that are "open to any number of programmable transformations" (165). Indeed, Rodowick goes so far as to suggest that this development renders the idea of the "shot" as a basic unit of cinematic meaning obsolete, because the "layers" of the image are technically discrete and multiple—a mere collocation of pixels. Thus, according to Rodowick, Sokurov's extraordinary piece is "a failed film" (164). Like any

digital representation, in Rodowick's terms, it "fails" to communicate duration because the image is "already fractured into a discrete mosaic of picture elements, which are then read off as distinct mathematical values" (165).

A brilliant contribution to film theory in the digital age, Rodowick's book nevertheless gives every indication that the discourse on cinema, in relation to the computerization of media, is commencing to reiterate many of the qualms and questions it has rehearsed for the last hundred years. All those decades spent demystifying cinema's illusionist tendencies have apparently gone for naught, as now there appear to be a whole new set of illusions to debunk—now "digital" rather than "indexical." Indeed, the suspicion of the indexical that loomed behind so many grand gestures of unmasking in film theory's heyday, from the critique of Bazin to *Screen*-style anti-realism—including many such gestures performed by Rodowick himself—have given way to a nostalgia for the stability and grounding in the real that the indexical ostensibly provided:

> Like all the other analogical arts, in film the existential powers of duration are sustained in a process of continuous causality wherein their apparent self-making preserves the past in a way that excites memory. All of film's powers as an art of duration are indebted to this analogical causation through which we attribute a past (and passing) existence to the present image. (79)

Central to this problem is the fact that in its digital form, according to Rodowick, "the image is not 'one'" (165). The scare quotes indicate that Rodowick recalls a time when the bogey of a delusory "unity" was held to be one of classical cinema's worst offenses, which any theorist could quickly dismiss as a form of false consciousness. Now, though,

it is evidently a thing about to be lost and therefore worthy of embrace. In an important sense, it was always about to be lost, was little more than a makeshift operation in the first place, and—as any reader of *Screen* would attest—rarely seemed to succeed in concealing films' various ruptures, contradictions, and aporias in any case.

The treatment of the long take in the previous chapter attempts to show, among other things, that the cinematic image is never "one." Thus, the images of space, time, and duration that the long take in classical cinema construct actualize cinematic powers within a context of innumerable distinctions that shift constantly from moment to moment. In earlier chapters of this project, the "cut" was an important feature of the application of systems theory—which, as we have seen, employs the notion of the "cut" to define basic means of constructing the world via the proliferation of distinctions and differences that systemization entails. The "cut" functions in cinema to construct a mode of temporal succession that is particular to the development of the medium, one establishing a relay from shot to shot that persists as a crucial form of self-reference, whatever the "content," but that does not in itself assure communication or secure causality. In fact, in the context of systems theory, it guarantees contingency. The discussion of the long take in chapter three, then, was meant in part to show that—however useful the "cut" may be to ground a systems-theoretical approach to cinema—it is not a necessary condition of that applicability. Even if Rodowick's vision of a future cinema without editing should ever come to pass, that alone would by no means invalidate the relevance of systems theory to cinema. This is especially the case as Rodowick himself concludes that even the passing of film as material will not put an end to cinema itself.

The changes that the digital age bring to cinema have produced a wave of reflection on the part of film theorists through which an elegiac current runs. Though Rodowick follows the general edict to resist "media pessimism," he does not conceal his own sense of loss in this moment of transition. "Despite my fascination with the digital," he notes, "recently my aesthetic and intellectual passion has been much more greatly stirred by films like Terrence Malick's *The Thin Red Line* (1998) and Béla Tarr's *Werckmeister Harmonies* (2002). I am certain there is more philosophically to this fascination than the nostalgia of a middle-aged film scholar for a certain kind of art cinema" (30). Even so, the same ambivalence inflects his treatment of the "death of cinema" discourses that emerged alongside new media in the 1990s. While the year 1993—and, in Rodowick's narrative, the film *Jurassic Park*—marked a shift in the hierarchy of the digital and the photographic, this circumstance has placed into greater relief, in Rodowick's view, the basic question of "What is cinema?"—even if it must now increasingly be posed in the past tense. Though the figure of the voracious cinephile searching after "the unattainable text" may be obsolete, it has transfigured into that of "the video collector and hoarder or home archivist" (29). The losses Rodowick recounts may, in the end, be a benefit for film theory: "The birth of film studies is concomitant with the death of cinema. Can any other discipline characterize its history as rising on the decline of its object?" (29).

Laura Mulvey's *Death 24x a Second: Stillness and the Moving Image* is another work by a well-known film theorist that posits the rise of new media as presaging the "death" of the film medium. Yet this "loss," in her work, entails an even clearer theoretical gain. Mulvey proceeds from a quasi-Freudian or neo-Lacanian notion of

subjectivity that chronicles the subject's efforts to maintain a symbolic integrity against ever-encroaching forces of disintegration and negativity. In this model, the "death of cinema" simply realizes once again an ongoing dynamic. In fact, for Mulvey, new media make possible an awareness of the fact of mortality as it is embedded in the cinematic image, as she sees it, by virtue of a photographic heritage that both captures and preserves indexically a passing or even extinct materiality, and is itself subject to deterioration. That cinema becomes amenable to programmable transformations in its computerization, according to Mulvey, potentially unlocks the previously obscured "stillness" that is, for her, always latent in the cinematic image. The ability to "pause" the image in video viewing, for example, makes manifest the inanimate, death-like sub-structures on which the illusion of movement in the cinematic image depends.

Mulvey can be accused of neither "media pessimism" nor "cyber-idealism," yet her commitment to a version of subjectivity predicated on the death drive places her at odds with new media theorists more generally. On the one hand, in her view, new media does us the favor of potentially bringing to consciousness what film itself long sought to repress. In turn, it places on the horizon a goal that Mulvey herself has long sought—a convergence of the possibilities of commercial narrative cinema with those of avant-garde practices. One example Mulvey considers is Douglas Gordon's *24 Hour Psycho*, an installation piece of 1993—Rodowick's milestone year—which electronically stalls Hitchcock's film to a running time of twenty-four hours rather than its original 105 minutes. For Mulvey, the trouble with mainstream cinema was always that its narrative codes and illusionist bases inevitably indulged the unconscious, while modernist and avant-garde cinemas engaged in acts of making-conscious, fomenting self-conscious

attitudes, however counter to prevailing principles of pleasure. On the other hand, what we are made conscious *of* is precisely the omnipresent threat of extinction, itself being replayed, as Mulvey sees it, in the interaction of cinema with new media.

While the specter of death haunts film theory in the digital age, discourses on new media more generally trade in images of birth and rebirth, giving rise to the "naïve digital utopianism" that, in Miriam Hansen's words, "thrived during the 1990s" (*Cinema and Experience* 203). Often, this meant assuming blithely that the death of cinema was complete, past, and no longer to be mourned; sometimes, it meant mapping the digital onto the cinematic. Lev Manovich, for example, looks back to the "birth" of cinema to resurrect the notion of a "universal language" given new life in the digital age:

> A hundred years after cinema's birth, cinematic ways of seeing the world, of structuring time, of narrating a story, of linking one experience to the next, are being extended to become the basic ways in which computer users access and interact with all cultural data. In this way, the computer fulfills the promise of cinema as a visual Esperanto which pre-occupied many film artists and critics in the 1920s, from Griffith to Vertov. (*Language of New Media* 87)

Miriam Hansen attempts to recapture Walter Benjamin's capacity to imagine both "vast possibilities and deadly risks" (*Cinema and Experience* 204) of media technologies. Mark Hansen embraces Benjamin's vision of media's transformation of the human sensorium, viewing new media as a vehicle toward "an expansion of consciousness and a broadening of the empirical faculty that puts us into sensory contact with the world" (*Embodying Technesis* 251). On the other hand, in part due to his debt to Benjamin, he is virtually

alone among theorists of new media in finding it necessary to come to terms with the death drive.

What makes Mark Hansen especially noteworthy is his turn to systems theory to mount a critique of Freudian concepts of the death drive. Specifically, he argues that while Freud operates from a theory of the psyche as a closed system modeled on hydraulics and other mechanistic analogies, he lacks a corollary theory of the environment. For Luhmann, the environment is a zone of vast complexity that therefore remains incomprehensible until the "cuts" of systemization render it visible and available for observation. Thus, it makes little sense to speak of an "inside" or an "outside" to the environment. Coming at the issue from the perspective of second-order cybernetics, Hansen views the environment as a zone of pure exteriority, to which subjectivities are subordinate. Though destructive or self-destructive impulses may be objectified in the environment—in the use of technology to make bombs, for example—its exteriority makes it a site of radical collectivity, distinct from the imperatives of individual consciousness or will. For Hansen, this decentering of the subject is a necessary condition toward the fulfillment of new media's promise.

Rodowick's speculation that cinema will endure even as film vanishes is entirely congruent with the non-medium specificity of systems theory. In *Art as a Social System*, Luhmann is explicit on this point:

> From a systems-theoretical standpoint . . . both medium and form are constructed by the system and always presuppose a specific system reference. They are not given "as such." The distinction between medium and form, just like the concept of information, is strictly internal to the

system. There is no corresponding difference in the environment. (103)

At best, in Luhmann's system, celluloid might qualify as a form, in the same way that marble, print, or oil paints do. But in keeping with Luhmann's elaboration of a theory of hyper-particularity at a level of daunting generality, media themselves are typically defined as space, time, light, and the like. Indeed, the ultimate medium, for Luhmann, is "the world" itself: "The world becomes a medium for the successive formation of specific forms (including their generation, forgetting and remembering), an elusive 'horizon' of changing constructions which, as medium, outlives these constructions" (*Art as a Social System* 11).

Among other things, this formulation provides a very wide berth for evolution in media and forms. "Literature" can persist even if books disappear; "cinema" can endure even if celluloid disappears—because books and film were never "given as such" as the foundations of literature and cinema. In fact, says Luhmann, "media can be recognized only by the contingency of the formations that make them possible. . . . Observed from within the schema of medium and form, all forms appear accidental; or, to put it differently, no form ever expresses the 'essence' of the medium" (*Art as a Social System* 104). Forms may endure or pass, but their longevity renders them essential no more than their transience makes them negligible, if they are functions of systems that outlast them—and this explains how systems can precede or survive even those elements by which they might seem most defined. Media change, like any evolution, occurs within the environment, only then to be "tested" within the system, through the usual processes of structural coupling. This basic premise of systems theory markedly discourages apocalyptic thinking, which Luhmann, with his characteristic stoicism, is always inclined

to view as idealism in disguise. According to Luhmann, we should never behave as if we have been vaulted out of history into some brave new world; capable of observing change as it happens, we have always lived only in the present, where crises may well be constant but real surprises are rare.

Systems theory derives its basic vocabulary from cybernetics and computer science, from the notions of binary coding to those of operational closure and functional differentiation and so on. The notion of the "event," as Luhmann presents it, is adapted from computer programming, where an event is understood as anything intervening in a flow of information that can be processed by the system, from the stroke of a keyboard or click of a mouse to an incoming message from another program and countless other possibilities. Anyone who has ever seen an "event report" from one's own computer knows that far more events are registered by the system than by its user, and it is this attunement to observation at a molecular level that systems theory most promotes.

That Mark Hansen is the only major media theorist to take up questions of new media via some version of systems theory is striking, considering how systems theory derives its key concerns from computer logics—the computer being, after all, perhaps the quintessential "system." But this lack of interest in systems theory reflects more than the general indifference. It is ironic indeed that humanists have tended to reject systems theory based on a misreading of it as technocratic and neo-totalitarian, because those very tendencies inflect significant writings on new media—and systems theory serves as an indispensible theoretical tool with which to counter them. As cited above, Miriam Hansen was far from being the only scholar to note that efforts to theorize new media in the 90s were often utopian and liberationist; though these grant a certain supremacy to computer

systems, they tend to view the ultimate and most-desired effect of new media to be an escape from prevailing systems. Many major figures in this first wave attributed a joyous anarchy to new media; what was great about new media, such theorists suggested, was precisely that it is *non*-systemic. Although this is not a premise systems theory grants, systems theory still provides a useful vantage point from which to examine the strains of transcendentalism and the repudiation of negativity—especially in the form of death and the death drive—that infuse central lines of this thinking. Before turning to that critique, however, it is necessary to take a backward step to consider the computer network itself in a systems theory context, especially as it has influenced regimes of knowledge and the computerization of media in recent decades. Following that brief review, this chapter goes on to ask the question of what systems theory can tell us about new media, then to hazard, in that context, some final remarks about cinema in the digital age and digital cinema itself.

Computer and System

Behind this project hovers an analogy between cinema and computer logics. By definition, a network is composed of multiple relays. Because a single relay is defined by the connection between two nodes, there are as many relays in a network as there are pairs of nodes. Computer networks are the foundation of digital communications. Yet these networks bridge the distinction between analog and digital, because they belong in part to the material sphere—we can think of actual servers, routers, cabling, satellites—and in part to the digital sphere, with the multitude of digital expressions that are relayed, not to mention the symbolic counterparts to hardware that one finds in a Graphical User

Interface (drive and folder icons, for instance). It is worth noting that digital expressions tend to be indistinguishable from the analog expressions of old media: text, images, sounds. One respect in which computer networks distinguish themselves, however, is the rate at which they allow digital communications to take place—because the symbolic is relatively frictionless by comparison to the material real and therefore less entropic—a rapidity which has as a consequence an enormous increase in the complexity of the communication system and indeed every social system.

With the rise of computer networks, we can observe an exponential increase in the rate of communications within society, and a decentralization of both senders and addressees, putting a strain on social systems to the extent that prior system operations might no longer be sufficient to parse the quantity and type of information queued for processing. On the other hand, we can speculate that complex systems like politics, art, and religion are able to adapt, to maintain an adequate degree of equilibrium to prevent paralysis or collapse, because their functional orientation allows them to manage the demands of this increased complexity. From one vantage point, we can understand systems, after Luhmann, to make only a single primary distinction: "is this information relevant to this system or not." Interestingly, we could say much the same thing about new media—that is, about its underlying simplicity—because at a certain level it can be seen to make only the distinction "0 or 1," since the digital is, at its base, binary code. Thus, there is an equivalence in kind between the operations of social systems and the digital communications that, in part, subtend them—which suggests that the digital revolution is more a remarkable iteration of modernity than a total sea change. This is perhaps only to note a continuity between modernity—the machine age—and

postmodernity—the computer age—that has been highlighted in the work of key theorists from Jean-François Lyotard to Fredric Jameson. Moreover, while corporeal systems like human cognition might appear to register the impact of the digital more than incorporeal systems like mass media—because neural networks are potentially less robust than the rapidly-evolving networks that undergird telecommunications—nevertheless both kinds of systems depend on a materiality continuum and are therefore vulnerable to decline and failure, whether insufficient serotonin in the case of the brain or a "brown out" in the case of mass media.

Lyotard's *The Postmodern Condition* is a "report on knowledge" commissioned by the Council of Universities of Quebec to examine the influence of the computer on modern knowledge. In the report, published in 1979, Lyotard observes a shift in the state of knowledge, from epistemologies based on experience or education in industrial society (prior to the end of World War II) to the advent of knowledge-as-commodity in postindustrial society (since at least the beginning of the Cold War). This "mercantilization of knowledge" poses a problem of legitimacy (5), since the old regulators—the nation-state and the scientific community, predominantly—are deposed in postmodernity by such new legislators of discourse as the multinational corporation. According to Lyotard, scientific and other knowledge discourses within postmodernity are best understood as "language games"; the "moves" that take place within these games crucially serve to form bonds within and among social groups. Lyotard notes how society has typically been represented as either a whole or a divided system, producing either functional or critical knowledge. Against this dualistic schema, however, postmodernity is said to split the difference, as it were, insofar as language games testify to divisions

within society, while gameplay itself constructs provisional bridges between divided knowledge communities.

Despite his skepticism toward dualist models, Lyotard himself makes a distinction between scientific and narrative knowledge. The former is instrumental and constantly subject to verification and falsification, while the latter is traditional and self-legitimating by means of its own internal pragmatics. The scientific community, however, has long relied upon narratives concerning goals deemed "natural" to humanity (and to the organization of the state) for its legitimacy. Yet in contemporary technological culture, the grand narratives of emancipation and speculation appear false or unreliable, such that legitimation may proceed only by way of more modest, localized narratives (positivism, too, is said to offer a partial answer to the problem of legitimation in science). This postmodern condition of knowledge goes hand in hand with a new goal of the state and corporation: the augmentation of power by placing all human activity—including research and education—at the service of globalized networks of capital, information, and technology.

Lyotard's basic ideas in *The Postmodern Condition* derive in large part from a sense of an emerging digital landscape. The diminution of grand narratives he observes can be directly related to an atomization of society that owes to a proliferation of data—with each new piece of information dividing meaning into ever increasing fragments—which is a consequence of the rise of data processing machines. These machines were developed in the era of late capitalism to maximize efficiency and profit. Pitched as it is toward similar utilitarian ends, and without recourse to the shorthand of grand narratives, postmodern society requires some other expeditious means to parse its various

discourses—some set of rules comparable to the algorithms that enable computer processing—and indeed Lyotard's notion of language games (borrowed from Wittgenstein) can be seen to respond precisely to such a need. What prevents these games from simply reintroducing new grand narratives in place of the old is the crucial fact that they are predicated on ruptures within society, the disparate concerns of self-interested groups. This is of course highly redolent of the description of society given to us by Luhmann, which postulates a world carved up into so many discrete systems—each withdrawn from, yet vaguely aware of, the others.

Lyotard's account of narrative knowledge also coincides with concepts belonging to systems theory in that a discipline like history or psychology is said to tell stories about itself, to itself, which amounts to a kind of second-order observation. At the same time, such a discipline communicates with other systems, but only in something like the sense that systems theory understands communication to be fraught with error: history or psychology can seek to advance its own cause, but it must be prepared to do so based on partial or failed understandings of other systems. Communication, then, is characterized by Lyotard in much the same way that Luhmann defines it, as the difference between information and utterance. This understanding of communication is what leads Lyotard to claim that postmodernity has rendered obsolete the distinction between the expert and the inexpert. In the introduction to the report, Lyotard writes: "Postmodern knowledge is not simply a tool of the authorities; it refines our sensitivity to differences and reinforces our ability to tolerate the incommensurable. Its principle is not the expert's homology, but the inventor's paralogy" (xix). "Paralogy" can mean something like "processing" or the execution of recursive operations subject to contingency and open to chance.

Lyotard recognizes that technological change—specifically, the proliferation of computers, file servers, and computer networks—bears on the activities of society to the extent that an increase in the amount of circulating information promotes expansion of social systems. Whereas data once functioned primarily as operands for systems, it now rises to the status of a commodity, thus economic and political and communication systems in particular can be seen to benefit from the multiplication of information in postmodern society. A question, however, is whether or not Lyotard views the systemic nature of postmodernity as an effect of digital technologies (the origins of which many media theorists trace to the nineteenth century) or a cause. Just as digital technologies facilitate new "moves" within the various systems that make up society, that does not necessarily mean technology drives these new possibilities. Lyotard suggests that, alternatively, social systems in postmodernity have advanced in their complexity to a point where they spur the invention of new kinds of machines that can sustain their development—and in large part they accomplish this task by stimulating the field of science. In other words, social systems are responsible for the development of technological systems, just as much as machines foster social change. Indeed, Lyotard indicates that boundaries in postmodernity are constantly redrawing themselves; if we extend this observation to cause-effect relations, we can say that Lyotard observes a reciprocity between technology and society, where each functions as both stimulus and constraint for the other.

We can recall that in systems theory, a field like science, as a closed system and therefore self-referential, will seek to vet its own findings and cannot depend on other systems to legitimate its operations. Nevertheless, such a description of how systems

assign value to the results of their operations is incomplete by itself; we must add communication to this picture, which according to Luhmann is paramount to the functionality of social systems. Lyotard's account of communication can be seen to place the same stress on contingency we find in systems theory when he declares that all communication amounts to language games, where utterances are like moves. A "move" is similar to an "event" in systems theory—a concept including and modeled on what computers do when they process information—specifically in the sense that moves do not necessarily have as their outcome the "new" or "advantageous"; instead, moves are simply "another selection," the consequences of which can be evaluated only in retrospect. If the outcomes of moves within language games cannot be guaranteed in advance, postmodernity, then, cannot necessarily be said to produce "speed" and "utility," even while, according to Lyotard, these aims endure from the modern era.

Lyotard adopts a "systems" vocabulary in the spirit of the computer age and concludes that the competing claims of different systems can be neither generalized to one another nor universally applied across a social totality. Though these attitudes overlap significantly with those of systems theory, Lyotard bluntly consigns Luhmann to the sphere of technocracy in *The Postmodern Condition*: "In the work of contemporary German theorists, *systemtheorie* is technocratic, even cynical, not to mention despairing . . . " (11). This misreading derives in large part from Lyotard's continued understanding of "system" as a precondition of oppression, as a constraint to be resisted, either by locating pockets of redemption within it or discovering an "outside" to it—in other words, by fashioning a new meta-narrative. Lyotard qualifies his own reading of Luhmann substantially a decade later, when he acknowledges Luhmann's constructivist

epistemology as precisely a way to observe the modern machine-and-computer-weighted world without the support of meta-narratives: "What Niklas Luhmann calls 'the reduction of complexity' is not the suppression of complexity at all . . . [S]ystems theory is not a philosophical system but a description of reality, 'a so-called reality' that has become entirely describable in terms of [general physics and cybernetics]" ("Oikos" 98). As William Rasch puts it, "In Luhmann's view, as in Lyotard's, the social world has been 'flattened,' not in the sense that a general egalitarianism has been achieved but in the sense that no single social entity or system enjoys a fixed relationship of hierarchical domination over all the others . . . " (102).

New Media and Systems Theory

In *The Postmodern Condition,* Lyotard examines the storage and reception of information and its dissemination as knowledge in the computer age and finds that the proliferation of incommensurable communications and the collapse of meta-narratives, despite certain threats these circumstances pose, lay a groundwork precisely for possibilities of enhanced egalitarianism in developed societies. Similar themes appear in subsequent waves of writing about digital culture as a democratizing principle. As the Internet "went live" in the 90s, notable writings on this new medium and its effects on media more generally often took on a curious ring of devotion. The tone of writers such as Henry Jenkins and Pierre Lévy in particular was by turns passionate, devoted, hopeful, eager, ecstatic, mystical. As these theorists contemplated changes in society that accompanied changes in technology and media, their intellection often took the form of anticipatory daydreams. For them, the imagined past was linear, hierarchical, and barren;

the imagined future posited as unbounded, nomadic, and fertile. Perhaps even more than the oppositions of old/new and alive/dead, the central binary that animated these texts was mechanical/mystical.

It is not too surprising that this mechanical/mystical binary should become so central to certain writings on media change at this juncture of the ages of mechanical and digital reproduction. Like some early twentieth-century theorists of modernity, figures like Jenkins and Lévy could be seen to adopt a messianic tone in relation to their objects of study. Yet early twentieth-century writings on the virtues of mechanical automatism are also often denouncements of traditional superstition and mythic idealism. Late twentieth-century writings on the virtues of cyberspace, on the other hand, were often predicated on notions of transcendence. For example, virtual reality was typically prized above material reality, because the former was alleged to be liberated from the strictures of physical space-time.

Following the logic of systems theory, we can suggest that such attitudes select only one side of the mechanical/mystical binary, "mystical," such that whatever "mechanical" properties new media might possess become a "blind spot" to the discursive system. Further, this selection functions as a kind of "first-order observation" in the language of systems theory, meaning that the entire form of the distinction does not (yet) enter back into the discourse in such way that might allow an account of the persistence of mechanization within the regime of new technologies. On the other hand, one could claim that these writers' reliance on the term "mechanical" and similar terms for their critique of analog systems might in fact be symptomatic: a habit pointing to the "blind spot"—and to the rote nature of many digital operations—yet indicating only by

way of sublimation. If read as a strategy for helping to fix an object of study and establish its observing system, such a move can be seen as remarkably canny to the extent that "mystical" untethers new media from the muddled ground of contingent operations that we might associate with "old" mass media. What such work imparts by its "mystical" descriptions is a sense of new media as systems that somehow spring into being without the need for an inaugural distinction on the part of an observing system. In other words, I detect a second blind spot within the discourse system, which is cognizance of the role it plays in the construction of its object. And here again the blind spot can be seen to serve the interests of new media theory, because this very lack of self-awareness permits the discourse system to operate under the impression that it too—like new media—can legitimate its operations without recourse to a surrounding environment, which is also to say, without recourse to contingency.

Media theorists like Jenkins and Lévy often imply that the powers of the computer extend to alleviation of human sadness, of the melancholy felt in relation to the contingencies and losses in everyday material life, especially the loss of material life itself. In an essay of 2000 on computer-generated screen actors, the film theorist Barbara Creed begins by drawing attention to how photography and cinema over a century ago first challenged our sense of the material real. The photographic image was uncanny for the way it so closely resembled reality and yet was not reality itself. In keeping with a line of thought that includes Benjamin, Rodowick, and Mulvey, Creed writes that film from its start "brought together the mechanical and mystical," transgressing the presumed separation between physical and spiritual worlds (79). We can speculate that the entwinement of signs of life and death within a single image was comforting on some

level, in the same way that discussions of immortality or reincarnation can provide a pleasant feeling of relief, if only temporarily, from the hard truth of death. But such metaphysical slippage is always doubly valent: a relief, perhaps, but also (pace Mulvey) a reminder of death and our mechanical progress toward it.

As this line of thinking suggests, analysis of new technologies and their social effects was often an anxious response to the painful inevitability of death. By putting pressure on the opposition between "mechanical" and "mystical" here, my intention is not somehow to deconstruct the binary but rather to foster in place of this anxious dialectic the possibility of a dialogue in which death can take its place alongside life. For his part, Jenkins tries to put pressure on the old/new binary in his book *Convergence Culture* (published in 2006 but collecting work from the late 90s to the date of publication). Old media continue to play an influential role in contemporary society, he grants, yet the role of old media is liable to change because of the pressures on society exerted by new technologies. Jenkins is enthralled by the transformational possibilities of new digital technologies, and his reader is asked to conclude as he does, that new media will change public life for the good. The world we have been living in—the world of mechanical reproduction, or what Jenkins calls the world of "one-to-many" communication—is characterized as stale and oppressive by contrast to the abundant world promised by the Internet.

Jenkins understands his project in *Convergence Culture* as in part revisionist: "[C]onvergence seems more plausible as a way of understanding the past several decades of media change than the old digital revolution paradigm was" because "[old] media are not being displaced. Rather, their functions and status are shifted by the introduction of

new technologies" (14). What is "new" is the "participatory culture" made possible by the Internet: "Within convergence culture, everyone's a participant—although participants may have different degrees of status and influence" (137). The result is the rise of new "knowledge cultures" (249), a development Jenkins takes as positive without considering the nature or extent of these cultures' interactions. Like Luhmann, Jenkins rarely laments social fragmentation, but unlike Luhmann, he assumes that a much greater degree of social cohesion prevails than is generally acknowledged, a condition the Internet is poised to realize all the more fully. For Luhmann and Lyotard, incommensurable communications multiplied in the computer age are less significant for the conflicts they may produce than for the differences they substantiate, and it is precisely this feature that makes them the ground of egalitarian possibilities. In the one passage where Jenkins does address the issue of "fragmented" communities, meanwhile, he notes that the "overarching narrative of American political life" is "the culture war": "Every issue gets settled through bloody partisan warfare when, in fact, on any given issue there is a consensus that unites at least some segments of red and blue America. We agree on much; we trust each other little" (249). As it turns out, the Internet is the very instrument that can enhance the missing trust and make the prior consensus more visible to all.

Much of Jenkins's model of media change is influenced by Lévy's notion, elaborated in 1994 at the dawn of the Internet age, of "collective intelligence," which Jenkins takes to mean the "ability of virtual communities to leverage the combined expertise of their members" (27). The term "virtual communities" refers to a group whose bond is not established by nearness in space and time but rather by their access to a

computer network. Mutual interests, attitudes, or beliefs bring these people together, presumably, and supply the senses of affinity, empathy, and belonging necessary for individuals to think of themselves as a part of a social unit. Jenkins uses the word "virtual" to stress that these communities are determined neither by geography nor happenstance but, rather, by the computer network and intentionality. "Virtual," however, can also mean something that is close to the "real thing" but not quite. Such a "virtual" thing is an approximation, simulacrum, phantom. Jenkins does not seem to think his "virtual communities" are pale substitutes for the "real thing," however, but rather something like the reverse: he thinks these communities might be better than groups that are formed as a consequence of mere spatiotemporal proximities.

One reason for this assumption is that the bonds are seen to be independent of many of the most changeable factors of life. The members of a virtual community can communicate with each other—can construct and reconstruct the contours of their group—in any place at any time. Ties that bind virtually can crisscross geography and history; just as maps change over time, so too the Internet, which is both a portal and an archive. Jenkins's point is that the form of the Internet has introduced a radical difference in public life that serves to realize the utopian dream of a global village. Groups that might give rise to positive changes in the shape and conduct of society can finally act together because humans have finally created a viable means to organize, to "leverage the combined expertise of their members." But what does Jenkins mean by "expertise" exactly?

In *Convergence Culture*, virtual communities are more often than not groups of consumers. According to Jenkins, convergence culture inaugurates a change in old ways

of doing business in the capitalist marketplace such that "consumers are encouraged to seek out new information and make connections among dispersed media content" (3). It is not clear exactly how we are supposed to reconcile the book's claim that virtual organizations of individuals can function effectively as so many "consumer unions" with the seemingly contradictory claim that these individuals certify their credentials as expert consumers primarily by submitting to complex aggregating functions designed by corporations themselves. What is clear, however, is that media content is no longer as ready-to-consume as it once was because it is no longer assembled in neat, predictable packages. This is especially true of online content that is often fragmentary, decontextualized, impermanent, and otherwise liable to the vicissitudes of dissemination. What is also clear is that Jenkins is concerned with the ways in which transformation in the contemporary media marketplace is desirable, because it brings people together as consumers, and brings together as many commodities as consumers.

Jenkins not only diagnoses convergence in the mass media and economic systems, he advocates for it. The old formula which required producers to develop new content for each new platform or point of sale is today turned on its head, he says. Computer networks allow corporations to sell the same content across many platforms, which is good for transnational economies in postmodernity, we are led to believe. This process allows the old corporation to survive the new socio-economic material conditions that threaten it. In other words, "extension," "synergy," and "franchise" enable the modern corporation to cheat death. Media companies existing at the turn to the twentieth century persist now, often in the form of conglomerations, into the twenty-first century, past their anticipated life span. It is as if Jenkins believes that, with the advent of the Internet,

corporations can finally take the form they were destined to incarnate—a spectral form, transcending the physical laws governing matter. All these ghostly entities need is for consumers to cross over with them into the interminable afterlife, an eternal market without obstacles.

As Jenkins writes, "The new media operate with different principles than the broadcast media" (208). If we describe the system of broadcasting as a one-to-many logic that took the place of the one-to-one relations in society before the advent of the printing press, we can begin to understand what Jenkins means when he says that new media—no longer dependent on proximity or huge expensive machines—brings about new "peer-to-peer" or "many-to-many" relations (208). However, the logic or principles Jenkins affirms in his work might be seen to constitute, instead, many-to-one relations. Because computer networks are seemingly less subject to the instabilities of material relations, they are better able to conscript the many—variety and difference—into the service of an increasingly powerful monolithic sameness. Thus, alongside the denial of death, Jenkins and writers under his influence tend to promote the proliferation of sameness, ironically in the guise of declarations about "a more democratic society" (247).

Jenkins does not disavow the utopianism that Miriam Hansen imputes, but he qualifies it. "I think of myself as a critical utopian," he writes. "As a utopian, I want to identify possibilities within our culture that might lead toward a better, more just society" (247). At first glance, this objective certainly sounds good. But the society Jenkins promotes is predicated not only on a vision of cyberspace as unitary whole, but on a certain reluctance to take heed of the flotsam and jetsam that our sailing on the information superhighway leaves in its wake.

Jenkins's "convergence culture" owes a special debt to Lévy's *Collective Intelligence*. The subtitle of the book is *Mankind's Emerging World in Cyberspace*, and while this world is painted by Lévy in broad philosophical strokes—by contrast to the case studies that structure Jenkins's book—the abstract picture is positively glowing. For Lévy, cyberspace is a vibrant realm bursting with potential energy. The metaphor of painting is apt to the extent that Lévy is interested in the idea of cyberspace as an art space. By contrast, despite his glorifications of popular culture, aesthetic concerns figure hardly at all in Jenkins's discussion of computer networks. Reading Jenkins, one gets the sense that art practice might retain a cultural identity apart from the dominating influence of new media. Jenkins sees culture as consumer culture whereas Lévy sees it in more general terms, as the complement to bare life and the exchanges associated with such life. Enthusiasm for a better world, beyond the humdrum passage of everyday life and death, is plainly evident in the hyperbolic language Lévy employs. He needs grand language more than Jenkins because he has grander designs to share with his reader.

Jenkins expresses dissatisfaction with old media—print, television, radio—because he thinks that these nodes within society exert too strong an influence on what communications are possible. He proposes that computer networks constitute virtual discourse communities that most anyone can potentially join. Online communication is ideal because it is rich with voices; and because these voices are disembodied, online communication is liberated from certain constraints of material society—markers of class, gender, and race, to name only a few—which suggests that digital communications can transcend at least some of what curtails participation in the public sphere under the conditions of old media. More importantly, however, he claims that computer networks

are less centralized than the networks of communication that characterize non-digital culture. The digital is deemed superior to the domain of the analog because, in the first place, more observers can observe more things, and in the second place, this very proliferation of observations can enable online discourse to legitimate itself, without the need for a small pool of media conglomerates to authorize what counts as information.

Here we can begin to detect a certain contradiction: on the one hand, computer networks have a transcendent potential because they can decentralize communications and thus lead to a more democratic, more free society; yet on the other hand, this very dispersion of authority would be characteristic of a non-transcendent model of society, because there would be no center, no privileged site to which all communications can be referred and vetted. Strangely, neither Jenkins nor Lévy seem to want to focus on the latter consequence of more complex networks—a general and rapid increase in disorder—but it is precisely with this image of the social as so much disarray and flux that systems theory begins to think about communications. As I have indicated, systems theory would not generally view the distinction between digital and analog as meaningful with respect to communication in the first place, because communications as such are viewed as independent from the medium in which they occur. In this sense, the system of communication is already a many-to-many network, largely because communications are always contingent—upon events they are aware of, events they can anticipate, and events that form their blind spots. I suspect a systems theorist would argue that it is naive to think there will not be certain nodes which predominate in the digital realm, like corporations and political parties; yet because all such nodes are closed to each other in a functionally differentiated society, totalitarianism in the context of modernity—in the

form of fascism, liberal democracy, terrorism, and the like—while always a possibility, must be thought in relation to contingency, to the impermanence of selections on the part of social systems.

The discussion in Jenkins's book on media change is more than a little redolent of technological Darwinism with its evocation of cyberspace as a superior public sphere—more evolved because access is made open to all through the democratizing medium of the digital. For Jenkins, computer networks help to dissolve certain obstacles in the material world to equality, active participation, and freedom of exchange, and it is for this reason that he declares cyberspace to be more civil, more "just." His approach posits an essence to cyberspace—the digital—from which all events arise and return. The virtue of this essence is that it universalizes being, eliminates barriers among entities. The unity of cyberspace transcends the splintered reality that characterizes the material world, but Jenkins himself does not draw attention to the distinction between digital and analog, preferring to keep focus on the former term.

From the perspective of systems theory, the digital channels that connect one node to another in cyberspace would be seen to produce gaps rather than to eliminate them, or at least to attest to already existing divides. Thus, far from dissolving those schisms that preclude a seamless, harmonious collectivity, computer networks can be thought to replicate material divisions within the digital realm, thereby multiplying the rifts that rupture society. Yet systems theory would not see this expansion of a pluriverse as problematic. On the contrary, Luhmann attaches great significance to the divisions that construct society as a galaxy of autonomous systems, because functional differentiation is the very form of organization that modernity relies on to preserve "negentropy"—that

force, borne of contingency, which prevents society from collapsing into a tyrannical sameness. Jenkins aims toward a more just society, but it is difficult to read his promotion of convergence culture as other than inimical to his own ends, if indeed justice is understood as having to do with the preservation and cultivation of differences.

Lévy, meanwhile, decries the impoverishment of material existence on the grounds that it is singular, closed, teleological, by contrast to cyberspace which is "plural, open, and nomadic" (207). He promotes instead a desire for "mankind" to supersede material constraints and thus reconfigure the coordinates of its very being. This wish requires an explicit denial of self-reference: "The intelligent collective doesn't analyze itself to understand itself: it understands itself because it lives and only understands itself by living" (207). One way to interpret this statement is to read it as a rebuke of something like Platonic idealism, whereby a thing is divorced from its essence. But for Lévy, reunification involves the conversion of things into essences: his metaphysic of consciousness is so totalizing that "being" verges on a collapse into "non-being" by force of tautology. His vision of reunification, and his emphasis on a vast absorptive collective, recalls the convergence mentality of Jenkins's project and furthers the sense that the first wave of new media theory tends toward a homogenous ideal. This tendency to represent cyberspace as a kind of oversoul—universal and all-encompassing—makes it all the more difficult to understand Lévy's dismissal of material life on account of its singularity and liability to closure: "Our primary goal should be to prevent closure from occurring too quickly, before the possible has an opportunity to deploy the variety of its richness" (122). He does not appear to recognize the way in which his own declaration might appear to hasten closure by virtue of its a priori reasoning.

One way to understand what Lévy is saying is that analog or material society is extremely centralized, meaning that everything is routed through only a handful of institutions. Because all communication and action must answer to the needs and requirements of these few organizations—the Establishment—society is closed. An analogy with software systems can be drawn: material reality corresponds with closed source software, in which the source code—the scripts required for active participation in the system—are withheld from the public by the copyright holder; virtual reality corresponds with open source software, in which the source code is made available to everyone. On the one hand, Luhmann would likely agree with Lévy's diagnosis of society, but only partially. He would likely agree that the actions of an individual or system must take into account something outside itself, an environment: society is composed of entities that are at odds in some respect with each other; society is divided. On the other hand, a basic premise of systems theory is that all social systems are closed, meaning that their operations refer only to themselves, and their awareness of an outside can only take the form of conjecture, an imaginary projection of what the environment might be like. Lévy's estimations of cyberspace do not represent descriptions but rather speculations that ultimately refer to the needs of his theory itself. Luhmann does not exempt his own thinking from the constraints of operational closure, an acknowledgment that manifests in his writing as a form of self-conscious reflexivity (a form, not surprisingly, that does not appear in the work by Lévy referenced here). And because all systems, cognitive and otherwise, are isolated, self-referential—"blind" to each other—the notion of "collective intelligence" is clearly incompatible with systems theory.

It should be recalled that Luhmann also refers to closed systems as autopoietic

systems, meaning that they reproduce themselves over time. Autopoiesis is a dynamic process that involves both the reduction and production of complexity. Even the systems that Lévy regards with disdain—those which he thinks monopolize potentiality under the aegis of materiality, the proprietary or the analog—are, from the vantage point of systems theory, anything but static, determinate, or doomed to entropic collapse. In fact, from the perspective of systems theory, the objects that combine to form cyberspace—real and symbolic—are probably best understood as the products of "old" social systems. Thus it is a misunderstanding to think that the world itself is somehow divided into material and digital spheres. Rather, the analog/digital distinction is one that systems observe within themselves; and if society is made up of countless systems, this very distinction must be seen as multiple and divided because it varies from system to system (Lévy talks about the "digital," rather than "digitals"). Of course, I am not suggesting that there are no such things as digital objects or expressions that enjoy a certain autonomy and therefore must be thought separately from social systems of long standing. However, this autonomy does not free them from being contingent upon "analog" objects. Furthermore, to say digital objects are autonomous is to imply that they are closed, hence whatever assembly they might constitute together is not a wide open sphere but a plane segmented and heterogeneous.

The Question of Digital Cinema

In its application to cinema, as this project has attempted to demonstrate, systems theory promotes an idea of the film image that is fully congruent with emerging paradigms of the digital image. However, rather than mapping anterior elements of film

form forward onto computer operations, as Manovich does, it lays a groundwork for mapping computer operations "backward" onto film form, among many other phenomena. From this perspective, the film image is a mode of data storage, with the image itself conceived as modular, mutable, and profoundly incomplete, never yielding some final "unity"—much the same qualities that Rodowick, Manovich and others attribute to the digital image, which is then best understood as a different mode of storage. For these reasons, systems theory is especially relevant to film theory in the present moment, because it suggests possibilities of continuity between the celluloid-based film image and the computer-based digital image, without implying any need to fix points of convergence or divergence between them.

Systems theory does not call for a radical rethinking of the cinematic image in the digital age except in the sense that it calls for a radical rethinking of subtending notions of system, form, medium, among other crucial concepts. One of the few efforts to meet this challenge appears in Mark Hansen's essay, "Cinema Beyond Cybernetics, or How to Frame the Digital Image." Hansen begins with a critique of Friedrich Kittler's claim that the digital age abolishes media by removing the "frames" that previously allowed media to distinguish themselves from one another and information to take the en-framed forms that could enable it to function as knowledge. Far from being a utopian apologist for digital culture as an unfettered space of freedom, Kittler envisions a future in which the mono-medium of fiber optic cable subsumes all other media and serves interests of military planning and capital expansion and concentration—a pessimistic understanding of "convergence" indeed. Drawing on a notion of "convergence" more complex than Jenkins's, Hansen notes that "convergence emphasizes the 'frameless' equivalent or

seamless translatability among what will formerly have been called media" (69). In Hansen's reading, "the very term 'digital image' involves a contradiction [for Kittler], since it couples the (covertly) operative category for the epoch of media differentiation (the image) with the (explicitly) operative category of optoelectronic posthistory (the digital)" (69). In the end, Hansen finds that Kittler's model holds true for the production of information in the digital age, but that it fails to credit an enhanced role of the *reception* of digital information as a mode of creation:

> Digital convergence cannot betoken the 'frameless' equivalence or seamless translatability among formerly separate media, since without the delimitation of a message—an actualization of the virtuality of information—there would be no information to speak of. . . . Thus the digital image, precisely because it explodes the (cinematic) frame, can be said to expose the dependence of this frame (and all other media-supported or technically embodied frames) on the framing activity of the human organism. What thus becomes clear is that a rethinking of cinema in the digital age will have to proceed by (re)articulating the generalized problematic of framing with the embodied organism in a way that explores the latter's *creative* capacity to enframe digital information, or better, to frame the digital as information. (89-90)

What Hansen and his principle theoretical models—systems-based information theory and second-order cybernetics—posit as "framing," Luhmann calls distinction, the "cut" that reduces complexity and distinguishes information, at the same time that it increases complexity by multiplying "cuts," compelling further selections, and necessitating the

many-to-many relations among and within systems.

In significant ways, this recourse to a posthumanist model of consciousness as a framing mechanism squares with the constructivist tendencies of systems theory. But though both Kittler and Hansen owe a considerable debt to systems theory, they proceed from the assumption that the dematerialization and disembodiment of information as it is channeled by media is a post-digital phenomenon. But Luhmann's more uncompromising constructivism leads him to assume the dematerialization of communication at every level, not predicated on the analog/digital distinction. Even in light of the distinction between form and medium outlined earlier, the cinema system does not operate with external matter, whether film stock or digital information. Rather, it utilizes its own elements, and these cannot be directly observed from outside the system. The "medium" of a system is comprised of loosely coupled elements—imperceptible units constructed by a system, dependent on "couplings," easily separated, yet relatively stable because adaptable—which can be arranged in a multitude of ways. As a perceptual system, cinema draws upon media that consist of optical and acoustical elements, and we might even imagine that phenomena as non-medium-specific as light particles and sound waves (on which digital cinematography continue to rely) belong to the "base" of cinema. However, given the boundary between a system and its environment, cinema cannot make use of such natural phenomena, though it could construct analogs that comply with its internal codes, perhaps by making distinctions like light/dark, sound/silence. In any event, a medium is always elastic, a multiplicity of possibilities. Taking into account this plenitude, systems like cinema are compelled to make a series of selections from among

their own elements, and in systems theory, such selection produces a "form." We must keep in mind that, like medium, form is not "given as such."

A form imprints itself on a medium by arranging its elements into a tight coupling. The multiplicity of the medium gives way to the singularity of the form. As a reduction of complexity, forms have the advantage of being observable and repeatable by the system. At the same time, because forms are less flexible than a medium—indeed, their organization is one of the few systems elements that Luhmann understands as being rigid—they are less stable, liable to disintegrate as soon as they emerge. This instability is crucial to the operations of a system, however, as it compels another in the series of selections. A form represents the distinction between a horizon of possibilities and the actualization of only one of these possibilities. To put this another way, a form is an indication made by a system—a "marked space" that produces a corollary "unmarked space." These descriptions of a form might call to mind the definition of "meaning" in systems theory, and in fact meaning is a form, thus observable yet fragile. As Luhmann sees it, meaning disappears almost immediately, but this a reason why systems like cinema communicate with meaning, because it spurs selections and drives the autopoiesis of the system.

In "The Medium of Art," collected in *Essays on Self-Reference*, Luhmann elaborates a further distinction that can be made within the category of forms itself. We know that forms emerge from the primary medium of a system. But if a form happens to be less rigid than most, it can serve as the medium for another form. Thus, on the one the hand, there are forms-*in*-a-medium, and on the other forms-*as*-medium. In the case of digital cinema, we could look at the paradigmatic special effect commonly referred to as

"bullet time" as an example: the effect is characterized by a radical deceleration of time—such that normally imperceptible events come into view (like the progress of a bullet through space)—paradoxically combined with "real-time" tracking movements by the camera. Cinema depends on digital technologies to create this effect. The effect itself, however, can be constructed by the system in any number of ways. Therefore, "bullet time" can be at once a form composed of elements in the cinema system corresponding to computerized systems in its environment, and a medium itself—a multiplicity of possibilities for the creation of new forms that synthesize extreme temporal shifts and "standard" changes in point of view—think, for instance, of those moments in contemporary movies when a character gradually takes in a landscape in which everything moves at the speed of light.

According to Luhmann, the ability of a system like cinema to use its forms as a medium may be critical for its ongoing autopoiesis. A form-*as*-medium is self-referential, and as such it implies second-order observations that help to fortify the boundary between a system and its environment. In addition, the difference between a form-*in*-a-medium and a form-*as*-medium is observable by other systems and can therefore become a topic of communication; communications function as hetero-reference within cinema, a function which also supports the system/environment distinction. This last point is another reminder that the cinema system is coupled (via meaning) with society, in which case the medium of cinema could also be said to consist of social elements. While the system must translate social information according to its own codes, this very process is what might make such data suitable for the loose couplings of a medium—and what prevents cinema from being understood as a mere reflection of society.

From a systems perspective, concerns about digital technology's threats to the indexical aspects of cinema are misplaced. More to the point is Thomas Elsaesser's suggestion that cinema technologies from the start show a "complex line of development where each marks a step in the severance of images from their material referents" (23). Rather than worry that cinematic images cannot show the world "as it is" because computer manipulation could alter the image, perhaps we will find that digital culture fosters an ever greater awareness of the levels of self-reference that systems thinking always assumes.

To clarify this point, consider a few key moments from a film that is distinctive and unusual yet also, in its way, characteristic of crucial features of contemporary cinema in its treatment of time, space, narrative, and the image itself. A woman dissolves into a throbbing field of white, a surge of pure light that, as it recedes, returns the figure of another woman—or more precisely, the figure of her face. She herself is motionless, transfixed, but her expression changes constantly, by minute degrees. Superimposed on these faint movements is a trace of a spinning dancer. It is a fantasy of coordination in which all parts move together smoothly and efficiently, but the mind cannot hold onto this image for long. It must call it over and over again, for as soon as it begins to materialize, it immediately fades away. The woman makes this dance possible, but she is not the performance itself. She is the witness for another who moves with grace and fluidity. She is not the only audience, however. Applause can be heard, but no one is there. Her look is not only hers, as it contains a memory of being seen by others. She recalls these others' looks, though she might not have seen the others themselves because of a spotlight from which much of the light emanates with its blinding effects, a light that

locates anyone, anywhere, on a stage. And on what stage does the light locate the woman now? She is back in the palatial house where she lived at the very start of the film. There she sees a strange neighbor who had invited herself for an unexpected visit. Then she sees herself, sitting on a couch on the other side of the room, looking calmly back at her. This view in fact presents itself twice—first at a remove, next with less distance.

Another instance: Visible first, again, is the figure of a woman. She emerges from a hallway, walks backward through a doorway and, after shutting the door, turns around. An any-space-whatever becomes an-outside-and-an-inside, a spatial distinction that serves to foreground the ineluctable progress of time: once she was nowhere, now she is inside, soon she will be somewhere else. A figure lies dead outside, beyond the door, yet re-enters the new space in the form of a memory of his body on the ground. The body is glimpsed only by a scattering of light. A reflection, but on what surface? And from where? That the light is linked to the figure, the corpse, opens up the possibility that both issue from a space apart from where the woman now finds herself. The woman takes halting steps forward, uncertain of what to do. A temporary stop in action, then, which crystallizes the resolve of her prior act (the killing of the figure). What she did is now done, but the process of doing something continues, even if doing now means hesitating.

The faint luminous points of reflected light coalesce into a single source that radiates outward in all directions, surrounded by a blue halo. Faces of other women appear, the details of their physiognomy obliterated by the powerful light. Deformations abound, though they serve mostly to reinforce the otherwise familiar contours of the human face. Still, what are these contours but outlines of such recurring forms as eyes, nose, mouth? Under the pressure of the light beam, outlines persist, even if they are not

the usual ones. Thus, between a form and its distortion, a continuity persists—the bare line that separates one thing from another. These other women are escaping confinement, or so it appears on the screen of a monitor. Yet another woman watches the monitor from a bedroom inside the same hotel-like space occupied by the rest. The image on the monitor switches to that of the bedroom itself—a view enclosed within a same or similar view—and the first woman tentatively enters. She is now "other" to the woman before the monitor. The other gently approaches the woman and kisses her. But is the other ever really present? The other who enters the room appears to be the same figure first observed only as a transmission by the closed-circuit TV system. But how do we know if it is the same person? Perhaps it doesn't matter much; after all, both are "live." And yet, as soon as they kiss, the other disappears. The doorway through which the other had entered becomes the exit for the woman. This opening makes palpable the claustrophobic interior of the bedroom itself, enclosed by walls, floor, and ceiling. The woman would be surrounded on all sides, if not for the doorway, though the outside of the room is the inside of a hallway. She escapes this room, but cannot pass beyond the inner side of the structure itself. The architectural structure is like the body, then, in the sense that each marks a limit.

The woman soon arrives at another room, as if by chance, having traveled down a dark, winding corridor onto which many rooms open. Yet this is the living room of the house she once shared with her husband and son, who have just walked inside through the front door. Suddenly the event seems preordained, but its arbitrary nature, which it shares with all events, might be understood in retrospect. As far as there is time, there will be more events to come, and many of these will seem destined at the moment they

occur. But time is also what makes contingency observable. Without thinking, the woman runs over to her husband and embraces him. Her hand feels his face to make him not just anyone, but him. Though, if his existence depends on her touch, how can she be certain that he is not her? That the man and the boy exist, that she has found them, is an impossibility that can emerge only under conditions of a certain undecidability—here figured in part as the darkness of night. The night is itself a condition, however, for a modest lamp on a small table, for the everyday of domesticity that serves as ground for fantasy. The woman is herself, if also a wife and mother; yet she is a wife to the extent that she is not a mother, and herself to the extent that she is neither mother nor wife. The spotlight, with its rhapsodic blue cast, now spreads out from a center, a fixed luminous point that is also the origin of the woman's gaze. Her look is directed toward the man's face, his eyes, but this line of sight could extend otherwise, anywhere, as the radiating beams of the spotlight indicate. To look at something or someone is to make only one selection from a continuous field of possibilities; there is always something or someone else.

The film in question is David Lynch's *Inland Empire* (2006), and the description of these strange, charged interludes shows how the basic vocabularies of systems theory resonate with certain kinds of digital cinematic effect—the textures of the image, its malleability and attendant sense of virtuality. With its mercurial play of light and its coarse-grained, often illegible imagery, the film's various climaxes are shot through with such intensity that the images seem barely able to shoulder the burden of representation they clearly mean to repudiate in any case: they swell, throb, atomize and disperse, as perhaps, indeed, only a digital image can. The fissuring of figures within the digital

image not only depends on a concept of the image-as-figure—rather than as the residue of an indexical materiality—but make instability a guiding principle of the piece. All is contingent; anything might turn into anything else at any given moment. The narrative's self-reference is certified by its film-within-a-film plotting, but even more striking is its paratactic logic: not "this happens, causing that, which causes that," but "this happens, this happens, this happens." Over the action, a line in a song frequently repeats: "Something is happening, something is happening"—and that recursion-loop describes the forward motion of the narrative, more a series of defamiliarized propositions than a story as such, mocking conventional principles of causation. It is herself that the woman sees, yet herself is also not herself. Recognition can be a stillness, or a quaking, but these possibilities fold together in time, which moves both steadily and restlessly. She might recognize this is so in the fluttering of the strange visitor's eyelids. In the blink of an eye, everything can be different, and in case there is any doubt about this, the scene ends with a demonstration: the light that makes things visible quits, along with the music. The return to the start of the film, or rather to a variation of that beginning, leads back to the conditions for the film itself: an absence that compels something to be seen, to be heard—something to happen.

Inland Empire is Lynch's first feature shot and edited entirely on digital video. Using a consumer-grade digital video camera, Lynch was able to work in ways that would be difficult to imagine within the industrial mode of production, even in the digital era. More radical in its experiments than most examples even of digital art cinema, the film was shot over a period of three years, in bits and pieces, without the guide of a completed screenplay. A small camera made it possible to act spontaneously, to travel to

Poland and improvise scenarios in Lódź with local actors, for instance. Any number of dramatic or formal experiments could be tested, elaborate or not, depending on the exigencies of the moment—interest, availability of actors, availability of funds, and so on. Indeed, Lynch shot far more material than what appears in the finished film. Discarded efforts were repurposed for other projects in other forms, like the various short videos Lynch was producing at the time for his website. In fact, Lynch incorporates footage from one of these projects, *Rabbits* (2002), into *Inland Empire*. Conceived as a "sitcom," *Rabbits* features a family played by three human actors wearing rabbit habits. Their lines consist mostly of non sequiturs, delivered in a deadpan that makes the periodic bursts of canned laughter seem incongruous at best, sinister at worst. All of the action (such as it is) takes place in a box set—a living room furnished sparely, without details that might indicate period or place. The rabbits wander in and out through a single door; the only other connection to an outside is a telephone, which they occasionally use. In the film, the rabbits function like a chorus, sometimes commenting on events, other times appearing to presage them.

Lynch's work in general makes a case against the idea that "media" determine the operations of such meaning systems as cinema. Originally trained as a painter, Lynch branched out to sculpture and photography early on in his career and has continued to work and exhibit as a fine artist. In addition to filmmaking, Lynch has ventured into furniture design, interior design, performance art, music, television, and online video, experimenting across a range of media, but more striking perhaps are the intricate parallels and overlaps between the products of these various pursuits. As prolific as Lynch is, one might expect his oeuvre to be something of a hodgepodge; on the contrary,

it appears more like a complex network, a "closed" system of self-reference. Lynch's work may remain anomalous in the landscape of digital cinema, but even this brief discussion points up what it shares with the most typical samples of the day: a conception of narrative as serial time, a sequence of events rather than an integrated causal chain, and of the image as a composite form, with a consequent destabilizing of spatiotemporal reference points and even physiological elements, which can shift and morph in often unpredictable ways. In *Art as a Social System*, Luhmann argues that the art system tends more and more toward self-reference in modernity and postmodernity, following its differentiation from other systems. Ultimately, what digital cinema may reveal most forcefully is how the primary question of cinema was never that of its relation to "reality" but rather that of its relation to itself.

Henry Jenkins referred to "the old digital revolution" in 2006, the year *Inland Empire* was released and a mere seven years after the first digital film projection in 1999 (with *Star Wars I: The Phantom Menace*). If it has already run its course, then it could well have been, as John Belton proclaimed in 2002, a "false revolution" indeed. As of that year, Belton notes, "all that proponents of digital projection are claiming is that it is comparable to 35mm" film projection (105). Five years later in 2007, Rodowick asserts that "[f]or the entertainment industry, movies must remain movies and without significantly changing their aesthetic identity in crossing platforms" (*Virtual Life of Film* 109). As of this writing in 2013, the transformation of commercial cinemas to digital projection is close to complete, yet one could still say, with Belton, that "the only transformation of the motion picture experience for audiences that has taken place in the last forty years or so has been stadium seating" (105).

The changes that are apparent are far from negligible, of course: the proliferation of digital special effects—though most commentators beginning with Manovich in 1995 consider these little more than an offshoot of animation ("What is Digital Cinema?"); the rise of digital sound—though in practice it often remains tied to modes of analog recording even today; the emergence of the DVD—though home viewing was already enabled in differing forms by television and VHS from the 1950s on; an increase in commercially released films shot digitally—though the total was thirty-two when Belton tallied it in 2002 and still numbers only in the dozens; and an incomparably vaster increase in the production of moving-image artifacts across platforms as various as home movies, backyard filmmaking, YouTube videos, art video and forms of avant-garde production, independent cinema and other counter-cinema practices.

This multiplication of objects is especially noteworthy, and it seems undeniable that digital technology greatly expands cultural terrains. Equally striking, however, is the dearth of new cinematic forms, as evident in the precedents of cinematic novelties that digitization enables. Digital special effects are obviously different from those supplied by techniques of superimposition, animation, or optical printing, but those were all new once without producing cries of revolution or forecasts of the medium's demise. In his essay "The Work of Art and the Self-Reproduction of Art" Luhmann notes the following:

> In [the] conjunction of the new with the surprising and divergent more is involved than is immediately apparent. For whatever has to be new has for this reason no future. It cannot remain new. It can only be admired as that which was new. The social system of art [read: cinema] is thus faced from this point on with the problem of the continual disappearance of newness.

(*Essays on Self-Reference* 195)

For Luhmann, systems demonstrate their autopoietic character perhaps most clearly when they withstand challenges to their ontologies, and indeed, "[t]his calling into question becomes itself the execution of the autopoiesis" (193). Especially in light of the fact that most commentators on digital cinema in the last decade, from Belton and Rodowick to Peter Lunenfeld ("The Myths of Interactive Cinema"), have considerably retrenched and markedly qualified earlier proclamations of revolution, this seems like one plausible outcome of the structural couplings between computer and cinema that we are currently witnessing—to reconcile anew, in the longer run, what really counts for the cinema system, whether that domain is greatly enlarged or greatly delimited.

In the shorter run, communications *about* digital cinema proliferate—and the point to note here again, in closing, is that these circulate in the system's environment rather than in the system itself. Thus, if the system of cinema is in crisis, it may be because it finds itself in the position of having to rely too much on its environment rather than on its own operations to produce requisite effects like amusement, astonishment, the mere appeasement of boredom, or artistic excitement. In other words, if there is any reason to be skeptical about the future of cinema, it may be because rather than evolving the new, multi-dimensional forms that digital technologies could indeed make possible, the system leverages its future instead by depending on society and its communications *about* cinema—themselves multiplied immeasurably in the digital age.

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