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THE RESOURCE-BASED VIEW OF THE FIRM IN TWO ENVIRONMENTS: THE HOLLYWOOD FILM STUDIOS FROM 1936 TO 1965

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This article continues to operationally define and test the resource-based view of the firm in a study of the major U.S. film studios from 1936 to 1965. We found that property-based resources in the form of exclusive long-term contracts with stars and theaters helped financial performance in the stable, predictable environment of 1936–50. In contrast, knowledge-based resources in the form of production and coordinative talent and budgets boosted financial performance in the more uncertain (changing and unpredictable) post-television environment of 1951–65.

The resource-based view of the firm provides a useful complement to Porter's (1980) well-known structural perspective of strategy. This view shifts the emphasis from the competitive environment of firms to the resources that firms have developed to compete in that environment. Unfortunately, although it has generated a great deal of conceptualizing (see reviews by Black and Boal [1994] and Peteraf [1993]), the resource-based view is just beginning to occasion systematic empirical study (Collis, 1991; Henderson & Cockburn, 1994; Montgomery & Wernerfelt, 1988; McGrath, MacMillan, & Venkatraman, 1995). Thus, the concept of resources remains an amorphous one that is rarely operationally defined or tested for its performance implications in different competitive environments.

In the interests of testing and advancing the application of the resource-based view, this research develops the distinction between property-based and knowledge-based resources. We argue that the former are likely to contribute most to performance in stable and predictable settings, whereas the latter will be of the greatest utility in uncertain—that is, changing and unpredictable—environments (Miller, 1988; Thompson, 1967). Indeed, in this article we attempt to move from a resource-based "view" toward a "theory" by progressing from description to testable prediction. A view is a product

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of evocative description, but theory demands the formulation of falsifiable propositions.

THE NATURE OF RESOURCES

According to Wernerfelt, resources can include "anything that might be thought of as a strength or weakness of a given firm" and so "could be defined as those [tangible and intangible assets] which are tied semipermanently to the firm" (1984: 172). Resources are said to confer enduring competitive advantages to a firm to the extent that they are rare or hard to imitate, have no direct substitutes, and enable companies to pursue opportunities or avoid threats (Barney, 1991). The last attribute is the most obvious: resources must have some value—some capacity to generate profits or prevent losses. But if all other firms have them, resources will be unable to contribute to superior returns: their general availability will neutralize any special advantage. And for the same reason, readily available substitutes for a resource will also nullify its value. Thus, resources must be difficult to create, buy, substitute, or imitate. This last point is central to the arguments of the resource-based view (Barney, 1991; Lippman & Rumelt, 1982; Peteraf, 1993). Unusual returns cannot be obtained when competitors can copy each other. Thus, the scope of this study will be limited strictly to nonimitable resources.

Clearly, there are many resources that may meet these criteria, albeit with differing effectiveness under different circumstances: important patents or copyrights, brand names, prime distribution locations, exclusive contracts for unique factors of production, subtle technical and creative talents, and skills at collaboration or coordination (Black & Boal, 1994).

There are a number of ways in which the resource-based view can be further developed. First, it may be useful to make some basic distinctions among the *types* of organizational resources that can generate unusual economic returns. By specifying the distinctive advantages of different types of resources, it may be possible to add precision to the research. Such distinctions will help avoid vague inferences that impute value to a firm's resources simply because it has performed well (cf. Black & Boal, 1994; Fiol, 1991).

Second, to complement its internal focus, the resource-based view needs to delineate the external environments in which different kinds of resources would be most productive. Just as contingency theory attempts to relate structures and strategies to the contexts in which they are most appropriate (Burns & Stalker, 1961; Thompson, 1967), so too must the resource-based view begin to consider the contexts within which various kinds of resources will have the best influence on performance (Amit & Schoemaker, 1993). According to Porter, "Resources are only meaningful in the context of performing certain activities to achieve certain competitive advantages. The competitive value of resources can be enhanced or eliminated by changes in technology, competitor behavior, or buyer needs which an inward focus on resources will overlook" (1991: 108).

Third, there is a need for more systematic empirical studies to examine the conceptual claims of the resource-based scholars. Such studies, although growing in number (cf. Henderson & Cockburn, 1994; McGrath et al., 1995; Montgomery & Wernerfelt, 1988; Robins & Wiersema, 1995), remain too rare, perhaps because of the difficulties of pinning down the predictions of the resource-based view and even of operationally defining the notion of resources (Black & Boal, 1994; Fiol, 1991; Miller, 1996; Peteraf, 1993).

This research begins to address each of these tasks. First, we derive a predictive classification that distinguishes between property-based and knowledge-based resources. Second, we argue that the performance implications each of these resources will differ in predictable as opposed to uncertain environments. Third, in order to test these notions, we undertook a longitudinal study of the seven major Hollywood film studios during two very different eras: the first, one of great stability and predictability, and the second, one of much upheaval, change, and uncertainty.

THE CONCEPTUAL FRAMEWORK

Categorizing Resources

Several researchers have attempted to derive resource categorization schemes. Barney (1991) suggested that resources could be grouped into physical, human, and capital categories. Grant (1991) added to these financial, technological, and reputational resources. Although very useful for the purposes for which they were designed, these categorizations bear no direct relationship to Barney's (1991) initial criteria for utility, namely, value, rarity, difficulty of imitation, and unavailability of substitutes. In this article we revisit a pivotal one of these criteria—barriers to imitability—to develop our own typology. Imitability may be an important predictor of performance as, indeed, it is a central argument of the resource-based view that a firm can obtain unusual returns only when other firms are unable to imitate its resources (Barney, 1991; Lippman & Rumelt, 1982). Otherwise these resources would be less rare or valuable, and substitutability would become irrelevant.

Property-Based Versus Knowledge-Based Resources

There appear to be two fundamentally different bases of nonimitability (Amit & Schoemaker, 1993; Hall, 1992, 1993; Lippman & Rumelt, 1982). Some resources cannot be imitated because they are protected by property rights, such as contracts, deeds of ownership, or patents. Other resources are protected by knowledge barriers—by the fact that competitors do not know how to imitate a firm's processes or skills.

Property-based resources. Property rights control "appropriable" resources: those that tie up a specific and well-defined asset (Barney, 1991). When a company has exclusive ownership of a valuable resource that cannot be legally imitated by rivals, it controls that resource. It can thereby obtain superior returns until the market changes to devalue the resource. Any rival wishing to obtain the resource will have to pay the discounted future value

of its expected economic returns. Examples of property-based resources are enforceable long-term contracts that monopolize scarce factors of production, embody exclusive rights to a valuable technology, or tie up channels of distribution. Property-based resources apply to a specific product or process. And many such resources buffer an organization from competition by creating and protecting assets that are not available to rivals—at least not under equally favorable terms (Black & Boal, 1994: 134). Typically, it is only the fortunate or insightful firms that are able to gain control over valuable property-based resources before their full value is publicly known.

Most competitors will be aware of the value of a rival's property-based resources, and they may even have the knowledge to duplicate these resources. But they either lack the legal right or the historical endowment to imitate successfully. Indeed, it might be argued that in order for property-based resources to generate unusual economic rents, they require protection from exclusionary legal contracts, trade restrictions, or first-mover preemption (Conner, 1991; Grant, 1991).

Knowledge-based resources. Many valuable resources are protected from imitation not by property rights but by knowledge barriers. They cannot be imitated by competitors because they are subtle and hard to understand—because they involve talents that are elusive and whose connection with results is difficult to discern (Lippman & Rumelt, 1982). Knowledge-based resources often take the form of particular skills: technical, creative, and collaborative. For example, some firms have the technical and creative expertise to develop competitive products and market them successfully. Others may have the collaborative or integrative skills that help experts to work and learn together very effectively (Fiol, 1991; Hall, 1993; Itami, 1987; Lado & Wilson, 1994).

Knowledge-based resources allow organizations to succeed not by market control or by precluding competition, but by giving firms the skills to adapt their products to market needs and to deal with competitive challenges. Economic rents accrue to such skills in part because rivals are ignorant of why a firm is so successful. It is often hard to know, for example, what goes into a rival's creativity or teamwork that makes it so effective. Such resources may have what Lippman and Rumelt (1982) called "uncertain imitability": they are protected from imitation not by legal or financial barriers, but by knowledge barriers. The protection of knowledge barriers is not perfect—it may be possible for competitors to develop similar knowledge and talent. But this normally takes time, and by then, a firm may have gone on to develop its skills further and to learn to use them in different ways (Lado & Wilson, 1994).

Contrasts. The respective advantages of property-based and knowledge-based resources are quite different. Property rights allow a firm to *control* the resources it needs to gain a competitive edge. They may, for example, tie up advantageous sources of supply, keeping them out of competitors' hands. Such control of a specific asset, in effect, is the only source of value for property-based resources. Knowledge-based resources typically are better

designed to respond and *adapt* to the challenges facing an organization. Creative skills, for instance, can be used to interpret customer desires and respond to emerging market trends. Of course, property- and knowledge-based resources are not always independent, as the latter may sometimes be used to develop or procure the former.

A key theme of this article is that the benefits of property-based resources are quite specific and fixed and thus, the resources are appropriate mostly for the environment for which they were developed. For example, a process patent ceases to have value when it has been superseded by a new process; a prized location becomes useless when customers move away. In short, a particular property right stops being valuable when the market no longer values the property. Thus, when the environment changes, property-based resources may lose their advantage. This is especially true if the environment alters in ways that could not have been predicted when the property was developed or acquired or when the fixed contract was made (Geroski & Vlassopoulos, 1991). Thus, an uncertain environment—one that is changing and unpredictable—is the enemy of property-based resources.

Knowledge-based resources, on the other hand, often tend to be less specific and more flexible. For example, a creative design team can invent products to meet an assortment of market needs. Such resources can help a firm respond to a larger number of contingencies (Lado & Wilson, 1994). Many knowledge-based resources are in fact *designed* to cope with environmental change. Unfortunately, these resources are not protected by law from imitation, and many are unduly expensive in predictable settings, where more routine but far cheaper response mechanisms can be equally effective. Also, in placid environments, a firm's knowledge may evolve so slowly as to be subject to imitation by rivals. In short, property-based resources will be of the greatest utility in stable or predictable environments, whereas knowledge-based resources will be most useful in *uncertain,* that is, changing and unpredictable, environments.

HYPOTHESES

In order to establish the robustness of our distinction between property-based and knowledge-based resources, we will examine two varieties of each category: discrete resources and bundled, or *systemic,* resources. Discrete resources stand alone and have value more or less independent of their organizational contexts. Exclusive contracts or technical skills are examples of such resources. Systemic resources, on the other hand, have value because their components are part of a network or system. Outlets in an integrated distribution network or skills within a well-coordinated team, for instance, are especially valuable within the context of that system (Amit & Schoemaker, 1993). Stores in a retail chain may have extra value precisely because they benefit from a national brand name and economies of standardization, promotion, and administration. Scientists may be especially productive because of the multidisciplinary synergies and team skills they develop with their coworkers within the context of their organizations. Brumagin (1994) contrasted

discrete and systemic resources, calling them respectively elementary and higher-level resources, and Black and Boal (1994) referred to traits versus configurations.

Discrete Property-Based Resources

Discrete property-based resources may take the form of ownership rights or legal agreements that give an organization control over scarce and valuable inputs, facilities, locations, or patents. Some resources, for example, take the form of leases or contracts that give companies exclusive access to especially valuable materials or to inputs of exceptionally low cost. Such resources are protected by rule of law. And typically, the utility of any exclusive right or contract will be a function of the ease and costs of its enforcement as well as of its duration (Conner, 1991: 138).

Of course, not all firms can obtain such lucrative resources. The fortunate ones may be those that were first to discover value in a resource or gain access to it, or that once had the power to negotiate favorable long-term agreements (Lieberman & Montgomery, 1988). As most discrete resources are independent of one another, a firm stands to gain by amassing as many of these as it can, subject of course to their marginal costs and benefits. For example, some companies tie up so many sources of supply that their rivals must settle for inferior substitutes.

Because discrete property-based resources are primarily designed to provide an organization with a high degree of control, they are likely to be of most value in stable or predictable settings where the objects of control maintain their relevance. In such environments it is simpler to estimate the life expectancy and thus the value of most properties, claims, and contracts. It is also easiest there to plan for additional resource acquisition. Predictability ensures that property-based resources will continue to buffer a firm from its competition for quite some time (Wernerfelt & Karnani, 1987).

Where the environment is changing unpredictably, however, property-based resources are in greater danger of obsolescence. A changing group of competitors may devise new products or processes that nullify existing resource advantages. Customer tastes that alter rapidly may have the same effect. All such changes may be very difficult to foresee at the time of contracting. Exclusive sources of supply, for example, may lose their value when they are replaced by more up-to-date substitutes. Long-term leases on retailing space may be more of a liability than an asset when the targeted customers shift to another type of store or location (Geroski & Vlassopoulos, 1991). Similarly, discrete resources that rely on contracts supported by laws and statutes are in danger of obsolescence the moment these laws change.

> *Hypothesis 1: Discrete property-based resources will produce superior financial performance in predictable environments but will not do so in uncertain environments.*

Systemic Property-Based Resources

Some property-based resources are in the form of systems and their interwoven components; these typically include physical facilities or equip-

ment. By themselves, most concrete facilities are easily imitable: thus, much of their value relies on their role within and their links to an integrated system whose synergy is hard to duplicate (Barney, 1991; Black & Boal, 1994). This is true of some integrated supply, manufacturing, and distribution systems. The units of a distribution network, for example, may be valuable because of their connection with a steady source of supply or with economies of administration and promotion engendered by a well-respected parent company (Barney, 1991; Brumagin, 1994: 94).[1]

In the case of systemic resources, managers do not aim to tie up more and more individual assets, but to enhance the range and comprehensiveness of a pre-existing system. Resources are added not to substitute for existing assets but rather, to strengthen a system or competence that is already in place. For example, one might acquire more distributors or outlets to bolster a distribution system (Lado, Boyd, & Wright, 1992: 86–87). The more elaborate the system, the more market penetration it can provide, the more economically it can allocate marketing, administration, and even operating expenses, and the more it can make use of an established brand image or reputation.

Like discrete property-based resources, systemic resources will be more useful in predictable than in uncertain competitive environments. When an environment is predictable, it is easier to appraise the value of systems and to augment them in an orderly way with the aim of increasing the scope of market control. Predictability also allows a firm to determine the steps that it needs to take to fortify its system. Indeed, it is only when the environment is predictable and the existing system is secure that it makes sense for a firm to develop that system.

When the environment is changing unpredictably, however, managers may be reluctant to build onto a system whose longevity is difficult to estimate or that is at risk of becoming obsolete. For example, if distribution technology changes unpredictably, one cannot build onto existing networks. And in an uncertain environment in which clients' demands are ever-changing and hard to anticipate, most property-based systems are threatened with obsolescense (Wernerfelt & Karnani, 1987). Here the useful life of systemic resources may be short and hard to predict, and a firm may find itself controlling assets that generate little revenue (Geroski & Vlassospoulos, 1991).

Hypothesis 2: Systemic property-based resources will produce superior financial performance in predictable environments but will not do so in uncertain environments.

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[1] Of course, most fixed resources are eminently imitable. Superior mechanical equipment, for example, can usually be copied, as can most processes that are well understood (Nelson & Winter, 1982). Reed and DeFillippi claimed that "a competitor can simply observe site-embodied performance effects and, through technological deduction, can deduce the same for physical assets" (1990: 93). Competitors may then gain access to the personnel or capital needed to develop or buy the desired asset (Conner, 1991). Such imitable fixed resources are not the focus of resource-based theory and thus are beyond the scope of our study.

Discrete Knowledge-Based Resources

To parallel our analysis of property-based resources, we examine both discrete and systemic knowledge-based resources (Black & Boal, 1994; Brumagin, 1994). Discrete knowledge-based resources may take the form of specific technical, functional, and creative skills (Itami, 1987; Winter, 1987). Such skills may be valuable because they are subject to uncertain imitability (Lippman & Rumelt, 1982). It is often hard to discern just what it is about these skills that generates economic returns or customer loyalty. Therefore, competitors do not know what to buy or imitate. This advantage is protected precisely because it is in some way ambiguous and mysterious, even to those who possess it (Lado & Wilson, 1994; Reed & DeFillippi, 1990). As with discrete property-based resources, firms can benefit from simultaneously developing as many of these knowledge resources as possible. For example, firms can at the same time pursue expertise in design, production, and marketing.

Although unforeseeable changes in markets may render many property-based resources obsolete, knowledge-based resources such as unusual creative and technical skills may remain viable under varying conditions. Indeed, they may actually help a firm adapt its offerings to a changing environment (Wernerfelt & Karnani, 1987). Some creative skills are also quite flexible as they apply to different outputs and environments. And this makes them especially useful in a changing, uncertain setting. For example, where the environment is particularly competitive and rivals are introducing many new offerings, the skills of experts who can adapt and create better products will be especially valuable.[2]

In a stable or predictable environment, firms may also benefit from discrete skills. But these afford less effective, less efficient, and less secure advantages than do discrete property-based resources. Where a firm can enforce its legal property rights, it possesses almost perfect protection against imitation. This is not true of the protection given by knowledge, which can be lost, especially in stable settings in which knowledge and its application evolve more slowly and are thus easier to copy. Moreover, the high costs of retaining very talented employees may not produce much net benefit in stable contexts that do not demand the full exploitation of their unusual abilities. Predictable settings do not typically call for as deep or extensive a set of skills for product or process innovation and adaptation as do uncertain and changing environments (Miller, 1988; Miller & Friesen, 1984).

> *Hypothesis 3: Discrete knowledge-based resources will produce superior financial performance in uncertain environments but will not do so in predictable environments.*

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[2] A changing environment may itself confer uncertain imitability on some flexible resources. In uncertain settings, the situations facing each firm are constantly varying, as are the organizational processes used to compete. It would be difficult, then, for firms to imitate the superior talents of a competitor simply because those talents are forever being manifested in different ways.

Systemic Knowledge-Based Resources

Systemic knowledge-based resources may take the form of integrative or coordinative skills required for multidisciplinary teamwork (Fiol, 1991; Itami, 1987). Some organizations not only have a depth of technical, functional, and creative expertise but are also adept at integrating and coordinating that expertise. They invest in team-building and collaborative efforts that promote adaptation and flexibility. Indeed, it is not just skills in any one domain, but rather, the way skills from several domains complement one another in a team, that gives many firms their competitive advantage (Hall, 1993; Itami, 1987; Teece, Pisano, & Shuen, 1990; Winter, 1987).

Collaborative skills are most subject to uncertain imitability (Hall, 1993; Peteraf, 1993: 183). According to Reed and DeFillippi, "ambiguity may be derived from the complexity of skills and/or resource interactions within competencies and from interaction between competencies" (1990: 93). There is much subtlety in effective teamwork. The systemic nature of team and coordinative skills makes them especially firm-specific—more valuable to a firm than to its competitors (Dierickx & Cool, 1989: 1505). Team talents, therefore, are difficult for rivals to steal as they rely on the particular infrastructure, history, and collective experience of a specific organization.

Collaborative skills typically do not develop through programmed or routine activity. Instead, they require nurturing from a history of challenging product development projects. These long-term projects force specialists from different parts of an organization to work together intensively on a complex set of problems. And such interaction broadens both the technical and social knowledge of organizational actors and promotes ever more effective collaboration (Itami, 1987; Schmookler, 1966).

The above arguments suggest that team building is apt to be more necessary, more rewarding, and perhaps even more likely in uncertain than in predictable environments (Hall, 1993; Porter, 1985). Collaborative talents are robust—they apply to a wide variety of situations and products. In contrast with fixed routines, teamwork enables companies to handle complex and changing contingencies (Thompson, 1967). Moreover, "unlike physical assets, competencies do not deteriorate as they are applied and shared. . . . They grow" (Prahalad & Hamel, 1990: 82). Collaborative skills not only remain useful under changing environments, they also help firms to adapt and develop new products for evolving markets (Lawrence & Lorsch, 1967; Thompson, 1967). Indeed, the flexibility born of multifunctional collaboration will help firms to respond quickly to market changes and challenges (Mahoney & Pandian, 1992; Wernerfelt & Karnani, 1987).

In stable environments, on the other hand, the returns to collaborative and adaptive skills may be small. Where tasks are unvarying, coordination can be routinized very efficiently, and thus coordinative or team skills will be less important (Thompson, 1967). Moreover, when customer tastes and rivals' strategies are stable, there is little need to constantly redesign or adapt products. In such contexts, the modest benefits of intensive collaboration may not justify the costs.

Hypothesis 4: Systemic knowledge-based resources will produce superior financial performance in uncertain environments but will not do so in predictable environments.

Table 1 summarizes our analytical framework.

RESEARCH METHODOLOGY

Sample and Historical Eras

Our sample consisted of the seven major Hollywood film studios from 1936 through 1965. These studios included MGM, Twentieth Century–Fox, Warner Brothers, Paramount, United Artists, Universal, and Columbia. Although United had few production facilities, it helped finance and distribute movies by independent producers, some of whom had part ownership in the company. The only other potential major, RKO, was deleted from the sample because it terminated operations in 1956, a full nine years before the end of our study. Prior to that, RKO had gone through frequent reorganizations and changes in form and management (Lasky, 1989).

Our study encompasses two rather different periods: one of stability, lasting from about 1936 to 1950, and another of challenging uncertainty, occurring between 1951 and 1965. Although uncertainty was not the only difference between the two eras, respected industry scholars such as Balio (1985), Gomery (1991), and Mast (1992) have attested that it was an important one. By conducting separate analyses for the two eras, we hoped to show the differential utility of property- and knowledge-based resources in stable and uncertain contexts.

TABLE 1
A Contingency Resource-Based Framework

Resource Type and Example	Value from	Created or Protected by	Suitable Environment
Property-based			
Discrete: Patents and exclusive contracts	Control of factor	Law Preemption Intrinsic scarcity	Stable or predictable
Systemic: Integrated production or distribution systems	Control of an entire system	Property rights First-mover advantages Complementarity of system parts	Stable or predictable
Knowledge-based			
Discrete: Functional and creative skills	Adaptation and renewal	Uncertain imitability Flexibility	Uncertain
Systemic: Coordinative and team skills	Adaptation and renewal	Asset specificity Uncertain imitability Robustness	Uncertain

The period from the early 1930s to the late 1940s is considered to be the Golden Years of the major studios. Before then, there had been growing consolidation in the film industry (Bordwell, Staiger, & Thompson, 1985: 403). But the last significant merger took place between Fox and Twentieth Century in 1935. Around the same time, Paramount reemerged from bankruptcy as a new organization. Thus, by 1936 the industry had matured into the oligopoly that became known as the studio system. And for the next dozen years or so, demand for films remained strong, reflected both by stable patterns of attendance—80 to 90 million admissions per week throughout the entire period—and by gradually increasing box office revenues (Steinberg, 1980). Also, stable customer preferences meant that studios could predict that particular stars, directors, and genres of films would remain popular for a considerable time (Bohn, Stromgren, & Johnson, 1978; Gomery, 1991). Thus, the production process became quite routine as similar crews worked together under the supervision of a single production head or a few key producers (Staiger, 1985: 320).

All of the studios of the day developed their own stables of talent by signing a wide variety of stars to exclusive, long-term contracts. Four of the major studios also owned or leased theaters in significant locations across the country. Collectively, the majors controlled fewer than 3,000 theaters of the 18,000 operating nationwide. These, however, included the preponderance of first-run cinemas in big cities that drew 75 percent of the national box office (Balio, 1985: 255). Cinemas not associated with the major studios were mostly in small towns and showed second-run films. Because many studios controlled their stars and were guaranteed distribution for their films via their theaters, they were able to plan well in advance a steady stream of film offerings (Gomery, 1991; Whitney, 1982). Stable demand brought a very reasonable chance of success, and control over theaters made sure all of a studio's films would have an audience.

The period from the early 1950s to the mid 1960s brought about significant transformations in the industry that greatly enhanced the level of uncertainty (Balio, 1985; Mast, 1992). By 1950, television sets had entered 25 percent of homes, and this penetration had doubled to 50 percent by 1952. As a result, cinema attendance declined significantly from 1949 to 1953 and then stabilized at only about 40 to 50 million admissions per week. Firms began groping to find new ways to attract moviegoers and soon started to differentiate their films from television programs by making grander and more lavish productions (Mast, 1992: 275; Stuart, 1982: 295). They experimented with new techniques involving color film, wide screens, and stereophonic sound. Thus, the technical and creative skills of studios became ever more important as growing entertainment alternatives made moviegoers more discriminating. Also, cycles of popularity had became much shorter as jaded audiences quickly grew tired of particular genres or stars (Bohn et al., 1978; Gomery, 1991). Box office failures became common as falling demand made studios compete fiercely for increasingly unpredictable audiences.

The concentration on more complex and expensive projects cut down on the number of films produced and made the success of each production more important. In response, some studios began to search for the few key stars, directors, or producers who could reduce the risks of their big budget films (Kindem, 1982: 88). But now they were less apt to hire such people on a permanent basis as the popularity of talent could be rapidly eroded and because talent would be underutilized with the few films made. As a result, the coordinative skills needed to assemble and direct *nonpermanent* cast members in very complex productions became invaluable (Mast, 1992; Staiger, 1985). This was especially true as the complexity and variety of productions increased.

To contribute further to this climate of uncertainty, the studios began to lose control over their distribution outlets and their stars. Although the major studios were first targeted by antitrust proceedings in the late 1930s, the first truly effective steps to reduce their power were only taken in the late 1940s. These culminated in a ruling by the U.S. Justice Department in 1948 that ultimately forced the majors to sell off their theaters by the late 1950s. But by then the movement of the population to the suburbs had already reduced the value of many of the studios' downtown theaters (Mast, 1992: 277). This declining control over distribution increased the burden on the studios to produce only those films that would have the best chance of being distributed—a great challenge in the more discriminating market (Whitney, 1982).

In the face of their reduced output, the studios began gradually to abandon the practice of signing stars to exclusive contracts, and in fact drastically cut back on the number of stars during the late 1950s. These reductions gave studios less control over a key production factor. Moreover, given the more rapidly changing customer tastes, stars tended to have shorter productive lives, while at the same time, stars' independence from studio contracts bid up their value more quickly (Kindem 1982).

To recap, the era from 1936 to 1950 was one of much stability, but 1951 to 1965 witnessed a far more uncertain (that is, changing and unpredictable) environment. We terminated our period of analysis in 1965, as after that conglomerates began to buy up many of the studios. These purchases in large part occurred because so many studios had fallen in value, and some were approaching bankruptcy. Also, by the late 1960s the studio system was replaced by one dominated by independent producers and directors (Bohn et al., 1978).

In order to confirm these differences in uncertainty between the two periods, we assessed year-to-year industry stability in revenues, market shares, and profits: this volatility was reflected by the correlation between a firm's results in year t and its results in year $t - 1$ for each of the eras. For the first era, the interyear correlation coefficients for revenues, market share and profits were .97, .97, and .80; for the second era, the numbers were .78, .70, and .31. Clearly, the first era shows greater stability among these measures than the second period ($p < .10$, $< .05$, and $< .01$, respectively). Another

indicator of industry uncertainty, turnover in studio production heads, was 40 percent higher in the second than in the first era ($p < .01$). In part this was because of more frequent flops at the box office and because of the more pressing need to introduce new kinds of films.

Although industry concentration ratios remained about the same for both periods, the two eras differed greatly in uncertainty. This difference was due to declining demand, which resulted in greater rivalry for audiences, more fickle and rapidly changing customer tastes, increased emphasis on fewer, larger, and more risky film projects, and a loss of control over factor inputs and distribution. These qualitative contrasts seemed to be mirrored by our quantitative indicators. Of course, because industry environments are so multifaceted, our two eras no doubt also vary in aspects other than uncertainty.

Variables

Discrete property-based resources. In the film industry, long-term contracts for stars represented a key discrete property-based resource (Kindem, 1982). Each studio tried to develop its own pool of potential stars from among individuals who were recruited early in their careers at relatively low costs. Even during the peak years of moviegoing, fewer than a hundred contracts controlled stars who accounted for the lion's share of box office revenues. Studios thus competed with each other to obtain exclusive long-term (typically, seven-year) contracts with such stars (Shipman, 1979). Often, stars were signed simply to prevent other studios from being able to benefit from their talents. If rival studios wanted to borrow a star, they would have to pay a substantial price and sometimes even split profits with the studio that held the star's contract. Stars who threatened to break a contract would usually be punished by being given poor roles or by banishment from the industry (Huettig, 1985: 253).

We obtained data on the number of long-term contracts with stars that were held by each studio or its producers for each of the years studied. The sources of these data were two volumes by Shipman (1972, 1979) containing biographical profiles of all the stars who had appeared in any significant films in either leading or supporting roles. These biographies were all coded individually to link the relevant stars to all the major studios for every year of the study. All contracts for stars that ran for four or more years during the period between 1936 and 1965 were included in the data.

Systemic property-based resources. Some might argue that studio plant and equipment represent valuable discrete resources. But resource-based theorists would maintain that these assets are imitable and purchasable and thus cannot confer any true competitive advantage (Conner, 1991). Every one of the major studios either owned or leased production lots, props, sets, and camera equipment (Huettig, 1985). In fact, some of these studios even rented out their facilities and equipment to producers who could not afford to buy them.

Theaters controlled by each studio, in contrast, did represent a systemic property-based resource. Well-situated theaters that were either owned or leased long-term by the studios afforded control over valuable distribution outlets. Indeed, theaters owned by the studios were almost all situated in prime locations: collectively, the studios owned over 70 percent of the theaters located in cities of over 100,000 people (Whitney, 1982: 166). Inferior locations in rural communities were left to the independent cinemas. Also, studios tended each to concentrate their theaters in different cities from one another to reduce direct competition. More important, a network of theaters provided studios with an extensive and compliant showcase for films and denied competitors equal access to films and customers (Conant, 1960). The close integration of a studio and its theaters ensured that a firm's own cinemas were given a steady supply of top-ranking films while independents were left with second-run movies. A network of theaters also gave studios reliable outlets for *all* of the films they produced. In addition, studio-owned theaters benefited from parent support of advertising, promotion, and administration, and economies of operation were effected by allocating costs across a large network of cinemas. Even popcorn purchases were centralized. The result was that theaters controlled by the studios averaged annual revenues that were *15 times* those of the independents (Balio, 1985: 255). Theaters, then, were made more valuable through their integration into a network and their association with studios. Such systemic asset specificity and the control of key locations made theaters an especially hard-to-copy resource (Black & Boal, 1994).

We obtained information on the number of domestic theaters owned or under long-term lease for each studio for each year from figures provided in *Moody's Industrial Manuals.*

Discrete knowledge-based resources. In the film industry, the discrete knowledge-based resources of each studio lie in the creative and technical skills that it has been able to build up. Each studio tried to develop unique abilities in various areas of film production that it could use to differentiate its films from those produced by its competitors (Mast, 1992: 230–231). These diverse skills included expertise in script development, set design, direction, camera work, sound, and editing. Studios created large pools of skilled individuals that they could draw upon to work on the many films that they produced each year. MGM, the largest studio, developed a workforce of 6,000 skilled employees distributed among 27 departments (Balio, 1985: 264).

Many studios tried to develop reputations around their various technical skills in order to attract more talent. The level of these skills is in part reflected by the number of Academy Awards that a studio won each year. The majority of such skills were in creative and technical categories such as screenplay, cinematography, editing, costumes, set design, and sound. Although these awards were given to individuals of exceptional ability, they also reflected a studio's success in recruiting, developing, and supporting talent. We gathered data on the percentage of Academy Awards that were won annually by each studio. The primary source for this data was a complete

listing of Academy Awards published by Michael (1968). It might be argued that Academy Awards also represent an outcome measure of performance: but for the purposes of this study we used awards to infer the existence of talent that might later enhance financial returns.

Systemic knowledge-based resources. Although studios could try to build discrete abilities, they also needed to integrate these by developing coordinative team skills (Balio, 1985). This was especially true in the second era, when studios had to assemble large groups of temporary employees who had little experience working together to collaborate on each complex, big-budget project. Such large, long-term projects with huge casts and crews operating on elaborate sets required studios to learn a great deal about how to get people to work together effectively. Studios with a history of such large projects were most apt to learn the coordinative and integrative skills needed for success (Staiger, 1985: 300–336; Stuart, 1982: 294; Robins, 1993). This process was a prime example of learning by doing.

Team, coordinative, or integrative ability therefore may be reflected, albeit imperfectly, by a studio's former investments in complex, large-scale film projects. Large projects develop coordinative skills because they require the management of many talents and resources from many specialties over long periods of time (Stuart, 1982: 295–296). A history of having worked on such major films promotes new learning about project management; it also creates team synergies that can be used to good effect in subsequent projects (Robins, 1993).

The scale and complexity of past projects is reflected in the last two years' average production costs per film (Huettig, 1985: 306). We obtained this data on film costs and producers' fees from the annual financial statements of each studio. We averaged production costs for the films that had been released by the studio over the previous two years to reflect the recent history of expenditures.

Trends in demand. The annual level of demand is a key index of industry health that can influence performance. Therefore, all of our analyses included a control variable that measured the percentage of household recreational spending devoted to movie attendance. These data were obtained from the U.S. Department of Commerce, Social and Economic Statistics Administration (Steinberg, 1980).

Performance indexes. There are many alternative indexes of economic returns—return on assets, return on sales, operating profits, market share, and even total revenues. For purposes of this study, we decided to look at a variety of financial performance indexes in order to establish the range and robustness of our findings.

We could not use return on asset measures because of differences in the asset reporting and composition of the film companies. Some studios were diversified and did not segregate assets from nonfilm businesses in their financial reports; United Artists did not own any production facilities. We did, however, compute annual return on sales, both with and without theater revenues and profits. We also examined operating profits, but without the

theater operations. We did not measure operating profits with theaters as this would have artificially penalized and rendered noncomparable the studios that did not own any theaters. Finally, we included the domestic market share figures for each of the studios. In every instance, we were concerned only with the revenues and profits from a studio's *film* business.

Data on revenues and profits for each studio were obtained from *Moody's Industrial Manual* and from company financial reports. For studios that owned theaters, separate revenue and profit figures were obtained for the production and distribution of films and for the operation of theaters. Revenues and profits were also adjusted for any television business reported. Annual market share data for each studio were derived from its revenues as a percentage of total box office receipts for the year. This information was obtained from the U.S. Department of Commerce, Social and Economics and Statistics Administration.

Analyses

The data consisted of 30 years of observations across seven studios. Separate analyses were conducted for the predictable (through 1950) and uncertain (1951 onwards) periods. Each of the two periods consisted of 14 years, after one year per era was lost as a result of the lagging and averaging of variables. Given the longitudinal nature of our study, it was necessary to transform our data to avoid any problems of autocorrelation and heteroscedasticity. To do this transformation, we used pooled time series cross-sectional analyses (Kmenta, 1986: 616–625). This procedure first adjusts the data for autocorrelation using the Prais-Winsten (1954) iterative transformation. To establish the adequacy of a first-order autocorrelation adjustment, we inspected the correlograms for the analyses. These declined rapidly at higher lags, confirming both the stationarity of the time series process and the adequacy of a first-order correction. Separate autocorrelation adjustments were done for each firm.

A second transformation of the data was then employed to correct for heteroscedasticity. We divided the dependent and independent variables by the firm-specific error variances obtained from the regressions on the autocorrelation-corrected data. The twice-transformed data could then be pooled and analyzed using ordinary-least-squares regression analysis (cf. Judge et al., 1988: Section 11.5; Sayrs, 1989).

To avoid specification error in the models, all of the analyses incorporated measures of performance in the prior ($t - 1$) period. Because of the inclusion of this lagged dependent variable, we employed Durbin's H test to ensure an absence of bias in the estimates of the residuals (Judge et al., 1988: 401). Plots of residuals were inspected to confirm the absence of patterns due to heteroscedasticity or autocorrelation (Sayrs, 1989). We also ascertained that multicollinearity was not a problem in our analyses using the diagnostics of Belsley, Kuh, and Welsch (1980). Finally, to establish that the results were not overly sensitive to our choice of ending dates, we reanalyzed the data after changing the termination date from 1965 to 1959. The results did not alter.

FINDINGS

Tables 2, 3a, and 3b present the descriptive statistics and correlation matrixes for the two eras. The hypotheses were tested using the autoregressive heteroscedastic models of Tables 4 and 5.

It is worth examining some basic contrasts between the two eras. First, Table 2 shows that consumer spending on films as a percentage of annual entertainment budgets declined from 19.5 percent in the first period to 6.6 percent in the second. Second, profitability was lower in the second than in the first period ($p < .02$). Third, as we indicated before, there are striking differences between the two eras (compare Tables 4 and 5) in the interyear relationships of all the performance variables. The earlier, more predictable era shows strong relationships between all performance measures and their lagged values, thereby suggesting stability in the competitive environment. By contrast, the second, more uncertain era produced much lower interyear correlations for the performance variables, substantiating the notion that the competitive environment had become more uncertain. Thus, these results again appear to bear out our characterization of the two periods as, respectively, stable and uncertain.

Property-Based Resources

Hypothesis 1 suggested that discrete property-based resources such as long-term contracts for movie stars would help performance in predictable settings but not in uncertain settings. This hypothesis was supported for all four of the performance measures: return on sales with and without theaters, profits, and market share. Tables 4 and 5 indicate that long-term contracts for stars contributed broadly to performance in the early, predictable era, but not in the uncertain era. These results support the utility of long-term

TABLE 2
Descriptive Statistics

	1936–50		1951–65	
Variables	**Mean**	**s.d.**	**Mean**	**s.d.**
Financial performance				
Return on sales without theaters	0.11	0.10	0.07	0.09
Return on sales with theaters	0.12	0.09	0.07	0.09
Profits from films	7.08	7.40	5.34	8.22
Domestic market share	11.35	4.68	12.55	3.04
Domestic film revenues	34.60	15.66	39.78	10.81
Resources				
Stars under long-term contract	12.49	8.91	4.79	5.94
Theaters owned or leased	208	216	14	55
Academy Awards won	12.61	13.21	13.03	14.36
Production costs per film	2,111	1,289	5,074	2,117
Control variables				
Consumer spending on films	19.53	3.67	6.61	2.41

TABLE 3a
Pearson Correlations, Early Era: 1936–50

Variables	1	2	3	4	5	6	7	8	9
1. ROS without theaters									
2. ROS with theaters	.94								
3. Profits	.93	.86							
4. Revenues	.49	.55	.67						
5. Market share	.37	.39	.50	.76					
6. Stars	.34	.30	.53	.72	.85				
7. Theaters	.29	.45	.38	.56	.54	.29			
8. Academy Awards	.12	.09	.25	.36	.44	.40	.21		
9. Costs per film	−.07	.02	.31	.74	.34	.44	.41	.22	
10. Consumer spending	.50	.42	.40	−.10	.02	.09	.02	.05	−.38

TABLE 3b
Pearson Correlations, Late Era: 1951–65

Variables	1	2	3	4	5	6	7	8	9
1. ROS without theaters									
2. ROS with theaters	.99								
3. Profits	.94	.94							
4. Revenues	.18	.17	.33						
5. Market share	.08	.08	.22	.87					
6. Stars	.02	.00	.06	.59	.40				
7. Theaters	.09	.03	.08	.27	.17	.55			
8. Academy Awards	.05	.04	.10	.25	.29	.10	.11		
9. Costs per film	.07	.07	.03	.09	.31	−.25	−.06	.06	
10. Consumer spending	.18	.16	.20	.37	−.05	.50	.28	.02	−.64

contracts during an era when studios aggressively managed stars' careers and thoroughly exploited their popularity by casting them in two or three films per year. By contrast, during the uncertain era, long-term contracts with stars became more risky in part because of the increasingly fickle tastes of moviegoers.

As we noted, by the late 1950s, studios began to abandon the system of long-term contracts. Because of this change, our analyses of the second, uncertain era may have been biased—but mainly in the years after 1958, when the number of stars under contract had begun to decline precipitously. To assess this bias, we reran the analyses whose results are shown in Table 5 using only the years 1951–58. The earlier results were replicated: stars did not relate to any index of performance in the uncertain era.

According to Hypothesis 2, systemic property-based resources, such as control over theaters, and thus over film distribution, would also contribute to financial performance—again in predictable but not in uncertain contexts. Tables 4 and 5 indicate that this hypothesis was borne out for three of the four performance measures: the two return on sales indexes and

TABLE 4
Autoregressive-Heteroscedastic Models, Early Era: 1936–50

Resources	Return on Sales: Without Theaters	Return on Sales: With Theaters	Profits	Market Share
Property-based				
Stars under long-term contract	.18**	.12*	.18*	.18***
Theaters	.11†	.18**	.06	.07*
Knowledge-based				
Academy Awards	−.01	−.02	.02	.03
History of per-film production costs	−.12†	−.11†	−.00	−.07†
Controls				
Lagged dependent variable	.57***	.69***	.57***	.80***
Movies as percentage of entertainment budget	.16*	.11*	.14**	−.07**
Buse R^2	.60	.73	.62	.96
F	23.1	40.2	24.3	424.6
p	.000	.000	.000	.000

†$p < .10$
*$p < .05$
**$p < .01$
***$p < .001$

TABLE 5
Autoregressive-Heteroscedastic Models, Late Era: 1951–65

Resources	Return on Sales: Without Theatres	Return on Sales: With Theatres	Profits	Market Share
Property-based				
Stars under long-term contract	−.04	−.01	−.02	.09
Theaters	.05	−.02	.04	−.04
Knowledge-based				
Academy Awards	.06*	.06*	.10**	.23***
History of per-film production costs	.11*	.12*	.27***	.07
Controls				
Lagged dependent variable	.31**	.29**	.17**	.69***
Movies as percentage of entertainment budget	.16*	.16*	.32***	−.01
Buse R^2	.23	.22	.39	.75
F	4.6	4.2	9.8	46.0
p	.05	.05	.002	.000

*$p < .05$
**$p < .01$
***$p < .001$

market share. Operating profits did not relate to theater ownership, however, perhaps because of the lower rental charges that studios levied against their theaters (Conant, 1960: 134–135; Huettig, 1985: 296–297). These results confirm the value of theaters during the earlier, more predictable era when the theaters served as outlets for a studio's own movies. During the second era, as demand became more selective and erratic, theaters became less valuable.

In examining results for the later, uncertain era, it is important to remember that studios divested themselves of theaters during this period because of pressure from the U.S. Department of Justice (the number of theaters controlled by the majors went from 2,871 in 1936, to 3,084 in 1949, to 1,156 in 1953). By 1959, all studios had disposed of their theaters. To establish whether the impact of theater control on performance was higher before that date, we dropped the years 1959 to 1965 from our analyses of the second era. As before, and as predicted, all results remained nonsignificant. It is encouraging that our findings remained stable even after we changed the termination date of the analyses from 1965 to 1959. Still, given the sharp reduction in the number of theaters controlled during the uncertain second era, these last results must be interpreted with caution.

Knowledge-Based Resources

Hypothesis 3 states that discrete knowledge-based resources such as technical and creative skills—here reflected by the Academy Awards a studio earned—would contribute to financial performance in uncertain environments but not in predictable environments. This hypothesis was borne out for all four indexes of performance: that is, all predicted relationships attained significance in the uncertain era, none in the predictable era.

It seems that during the predictable era, when audiences were hungry for film entertainment and less discriminating in their viewing preferences, excellent or distinctive productions contributed little to economic returns. However, with the advent of television, movies stood a better chance of success if they had something special to offer: excellent acting or directing, good screenplay, and captivating cinematography and musical scores (Mast, 1992: 288–289).

Hypothesis 4 concerns systemic knowledge-based resources such as the coordinative and collaborative skills produced by a history of big, long, and complex film projects. These skills were expected to contribute to financial performance in uncertain environments but not in predictable ones. Our surrogate measure for a history of such collaborative projects, average production budgets per film for the prior two years, correlated with all of our performance measures, save market share, during the later, uncertain era ($p < .05$). The results were strikingly different for the earlier, predictable period when returns on sales bore significantly *negative* relationships with production budgets. High production costs appeared to represent an expendi-

ture during this early period that was simply not justified by the market response.

In the early period, the majority of films were produced quickly and cheaply in order to meet a constant and relatively undiscriminating demand. Smaller projects did not demand great integrative skills; centralized filmmaking made coordination easy; and mega-films did not justify their higher expenses in an easy-to-please market. In the later, more uncertain period, by contrast, films required bigger investments in both development and execution in order to stand out and do well. These distinctive projects required elaborate and expensive coordinative efforts among a wide range of specialists, many of whom were hired by the studios only for the duration of the project. Consequently, coordinative skills that were developed through recent experience with bigger film projects tended to yield superior returns.

DISCUSSION AND CONCLUSION

For the past two decades, the field of management strategy has been much influenced by concepts and insights from the literature on economics and industrial organization (Rumelt, Schendel, & Teece, 1991). Indeed, the resource-based view is itself firmly rooted in economic notions of market power and competition (Conner, 1991). Unfortunately, there remains much to be done to test empirically the relevance of some economic notions for firm performance, and this is true as well of the resource-based view. Although there are long lists of candidates for valuable resources, there have been very few efforts to establish systematically if, when, and how these resources influence financial performance. Perhaps more important, the literature contains many generalizations about the merits of some resources, conjectures that often fail to consider the *contexts* within which these resources might be of value to an organization. Thus, after years of interesting conceptual work, we are still at an early stage in knowing what constitutes a valuable resource, why, and when (Amit & Schoemaker, 1993).

This article endeavors to make some progress in those directions. It shows that both property- and knowledge-based resources that are hard to buy or imitate contributed to performance: to returns on sales, operating profits, and market share. However, the environmental context was all-important in conditioning these relationships. Periods of stability and predictability favored firms with property-based resources but did not reward those with knowledge-based resources. Precisely the opposite was true for periods of uncertainty, even though the sample of firms was identical. It follows, then, that whether or not an asset can be considered a resource will depend as much on the context enveloping an organization as on the properties of the asset itself. It is misleading to attempt to define resources independent of the tasks they are to serve and the environment within which they must function (cf. Barney, 1991).

This study also shows that property-based resources may quickly lose their value when an industry changes (Barney, 1986; Geroski & Vlassopoulous, 1991). Static resources that are used for control usually demand institutional or legal protection that is beyond the influence of a firm. Once this protection lapses, or as soon as the environment changes to devalue the resources, all competitive advantage is lost. This liability may not accrue to the same degree to the more adaptable knowledge-based resources.

An auxiliary object of this research was to show how one might operationally define and measure various potentially valuable resources. It is, it seems, possible to identify key resources for a particular industry and then derive quantitative indicators that reflect, with greater or lesser accuracy, a firm's wealth in such resources. Doing so is not a simple task, however. Considerable ingenuity no doubt will be required of subsequent researchers if they are to avoid trivial or tautological indexes, especially in assessing elusive notions such as skills and learning.

This study, however, is just a beginning. And as such, it has its share of shortcomings. First, it is limited to a single industry: research in other industries will be needed to confirm the generality of its conclusions. Second, we have focused on only four kinds of resources, albeit ones that have been shown to be most relevant to the film industry. Further research will be needed to examine the usefulness of this framework with other types of resources. Third, there may have been environmental differences between our two historical eras that have little to do with unpredictability or uncertainty yet contribute to our findings on the differential superiority of our categories of resources—in short, there may be alternative explanations for our results. A final limitation is that in historical studies such as this, much use has to be made of secondary sources and archival records. Use of such sources leads to problems of data availability. In this analysis, for example, historical reporting of assets was too aggregated to allow us to accurately measure return on assets.

We hope that these shortcomings will spur others to initiate more refined research into the resource-based view. And we are indeed pleased that many of the notions of that view do seem to be important to the way organizations must craft their strategies to succeed in different environments. Further research might investigate whether tailoring resources to industry uncertainty contributes to superior performance. Do knowledge-based resources have an edge in turbulent industries such as software, semiconductors, and biotechnology? Are property-based resources more useful in stable sectors such as mining, utilities, and industrial chemicals? And can mergers of companies with complementarities among both kinds of resources—media and film production companies, for instance—create especially powerful combinations?

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