Resources and Transaction Costs: How the Economics of Property Rights Furthers the Resource-based View

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CKG WP 9/2004

June 2004
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6 June 2000; 18 December, 2000; 5 May 2001; 26 June 2001;
1 November 2001; 8 March 2002; 14 July 2002; 30 October 2002;
12 February 2003; 10 October 2003; 29 June 2004

Acknowledgments
We are grateful to Yoram Barzel, Jean Jules Boddewyn, Eirik Furubotn, Lasse Lien, Sara McGaughey, Joe Mahoney, Claude Ménard, Jackson Nickerson, Dan Spulber, seminar audiences at Copenhagen Business School, Norwegian School of Economics and Business Administration, Southern Denmark University, and Université Paris (Sorbonne) as well as two anonymous reviewers for comments on numerous earlier versions of this paper.
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Abstract
The economics of property rights furthers the resource-based view in a number of ways. Resource analysis is refined by conceptualizing resources as composed of multiple attributes to which property rights may be held. A resource owner’s ability to create, appropriate and sustain value from resources depends on the property rights that she holds to those resources and on the transaction costs of exchanging, defining and protecting the relevant property rights. While transaction costs are major sources of value dissipation, value may be created by reducing such dissipation. Implications for the RBV analysis of sustained competitive advantage are derived.
Introduction

According to Nobel Prize winner, Ronald Coase (1992: 716), “[b]usinessmen in deciding on their ways of doing business and on what to produce have to take into account transaction costs … In fact, a large part of what we think of as economic activity is designed to accomplish what high transaction costs would otherwise prevent.” To illustrate Coase’s idea, consider the practice that a major player in the World’s diamond industry, the DeBeers cartel has adopted for organizing sales to its customers. The customer informs DeBeers of her wishes with respect to the number and quality of stones. DeBeers then offers the customer a packet of stones, a “sight,” that roughly corresponds to the customer’s wishes. The sight is offered on a “take-it-or-leave-us-permanently” basis. The price is calculated on the basis of the overall characteristics of the stones, and no negotiation over the price is allowed.

Does this strategy reflect the raw exercise of market power on the part of a player that controls 80% of the World’s market for raw diamonds? Economists (Barzel 1982; Kenney and Klein 1983) writing from the perspective of property rights economics have argued that it does not. Rather, it is a practice that maximizes the created value in firm-customer relations by reducing the costs customers otherwise would have expended on sorting and negotiating. The practice arguably exists for this reason (it would be superfluous in a zero transaction cost world). DeBeers sorts, but only in a coarse manner. The “take-it-or-leave-us-permanently”-practice and the posted price mean that costs of negotiation are effectively eliminated. Because only minimum resources (i.e., transaction costs) are spent on sorting and negotiating, DeBeers’ practice maximizes the total created value that the parties to the transaction can split between them. Similar practices can be observed in many other industries, such as prepackaging of fruit and vegetables in grocery stores or block booking in the movie industry; arguments pertaining to their existence that are similar to the explanation of the DeBeers sales practice can be advanced (Barzel 1982, 1997; Kenney and Klein 1983).

Strategic management research has paid little attention to such transaction cost reducing practices. However, their theoretical explanation has important implications for strategic management, perhaps particularly the resource-based view (the “RBV”) (Barney 1991; Peteraf 1993). First, transaction costs and value creation appear to be linked. That is, sorting costs (an instance of transaction costs) reduce the value that is created through exchange. However, certain sales practices may reduce transaction costs, increasing created value. In other words, they “accomplish what high transaction costs would otherwise prevent.” Second, transaction costs and value appropriation appear to be linked. Suppose DeBeers posts prices that reflect
the mean quality of the diamonds in a given sight. If DeBeers then allows customers to sort between the diamonds in a sight, customers will only pick high-quality stones. DeBeers’ sales practice raises customers’ (transaction) costs of sorting to infinity, allowing DeBeers to maximize the share of created value that it can appropriate from its resources.1

Our purpose in this paper is to explore the relations between transaction costs and value creation and appropriation, relating the discussion to the RBV. In the process, we proffer concepts that are new to strategic management. Specially, we focus our arguments through the economics of property rights (the “EPR”) (e.g., Coase 1960; Alchian 1965; Demsetz 1967; Eggertson 1990; Barzel 1997). Property rights over resource attributes consist of the rights to use, consume, obtain income from, and alienate these attributes. Property rights matter to strategy, because a resource owner’s ability to create, appropriate and sustain value from resources partly depends on the property rights that she holds to those resources and how well protected these rights are. In turn, transaction costs — the costs of exchanging, protecting and capturing property rights — matter to strategy, because they influence the value that a resource owner can appropriate. This conceptualization unifies the theoretical constructs of resources, property rights, transaction costs, value creation and appropriation.

Our aim to contribute to the clarification of the micro-foundations of the RBV is related to Lippman and Rumelt’s (2003a&b) recent attempt to construct a cooperative game theory foundation for the RBV. They point out that prices, and therefore the share of created value that is appropriated by a particular resource owner, are the outcomes of bargaining processes, and they perceive of value creation as mainly driven by search for new uses of resources. We broadly agree with this view. However, unlike Lippman and Rumelt we stress the crucial importance of transaction costs for value creation and appropriation. Our explicit focus on transaction costs throws light on how value can be created by reducing transaction cost. It also brings attention to ways of appropriating created value that go beyond bargaining. The sales strategy of DeBeers provides an example of a means of increasing the appropriated value (relative to a situation in which this strategy were not adopted) from customers. Note that DeBeers raises the value it can impute to its bundle of resources solely by reducing overall transaction costs, without altering its bargaining power.

The design of the paper is as follows. We begin by applying the basic tenets of the EPR to the notion of a resource. This leads to an understanding of resources as bundles of property

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1 In fact, the sales practice may itself be seen as a valuable resource to DeBeers.
rights to resource attributes. This conceptualization provides insight into value creation and value appropriation: the value that a resource owner can create and appropriate depends not only on the use, scarcity and outside options of the resource (Barney 1991; Lippman and Rumelt 2003a), but also on the transaction costs of trading and protecting the property rights to the attributes that make up the resource (Refining Resource Analysis: Property Rights and Resource Value). Further implications of the EPR for the RBV are then developed by first examining value creation and appropriation in a setting where transaction costs are zero, that is, the setting underlying the Coase theorem (Coase 1960, 1988), and then add transaction costs, tracing the implications for value creation and appropriation. The questions we address and seek to answer through this exercise are these: How do transaction costs influence value creation and appropriation? And which new insights in opportunities for value creation and appropriation are provided by a transaction cost focus? (Relating Transaction Costs to Value Creation and Appropriation). In Transaction Costs and Sustained Competitive Advantage, we relate the EPR to the key RBV model (Barney 1991; Peteraf 1993). Finally, avenues for future work are discussed (Conclusion).

Refining Resource Analysis: Property Rights and Resource Value

Applying the Economics of Property Rights to Strategic Management

The EPR has only been explicitly applied to the strategic management field in a few previous papers (Mahoney 1992; Foss and Foss 2000; Kim and Mahoney 2002; Foss 2003), although property rights notions appear in the analysis of the strategic implications of intellectual property issues (e.g., Teece 1987; Argyres and Liebeskind 1998; Oxley 1999). However, the EPR goes far beyond issues of intellectual property. We therefore state the fundamentals of the EPR, particularly as these relate to resources and resource value. Note that our aim is not to be comprehensive; only those aspects that are relevant to the RBV are discussed and used.2

Units of Analysis

The EPR stresses that transactions involve the exchange of property rights rather than the exchange of goods per se (Coase 1960). Hence, the unit of analysis is the individual property right. Although the units of analysis of the EPR and the RBV differ, the EPR view is not at variance with the RBV position that for the analysis of sustained competitive advantage,

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2 See Eggertson (1990) for a comprehensive presentation.
resources matter. Rather, the EPR refines the RBV understanding of resources and of how resources create and appropriate value.

Different definitions of “resources” are provided in the literature (e.g., compare Wernerfelt 1984, Barney 1991 and Grant 1991). However, what is common to them is that they tend to see resources as “elementary particles,” that is, as irreducible units. However, resources are often better thought of as “molecules” that are composed of bundles of property rights over attributes. Attributes consist of the different functionalities and services (Penrose 1959) that assets can supply. Property rights are held to such attributes (Barzel 1997). Property rights over attributes consist of the rights to consume, obtain income from, and alienate these attributes (Alchian 1965). For example, a Hi-Fi system can be used for playing different kinds of music, with different levels of bass or treble, at different volumes, and so on. All of these functionalities can be thought of as attributes over which the owner of the Hi-Fi system holds property rights. However, the functionality of a Hi-Fi system that allows it to deliver the service of playing extremely loud music may not be realized if the law or neighborhood norms prevent this service. The relevant use rights are constrained. Strategic assets, such as a brand name, may also have multiple attributes, some of which may be similarly constrained. An owner of a brand name can decide in which contexts she wishes to deploy the brand name in the non-virtual world. However, her use rights may be constrained, for she may be prohibited from using the brand name as a domain name on the Internet. How property rights are constrained by the law, agreements or by norms influences how much value a resource owner can create and appropriate from the resource.3

**Resources as Bundles of Property Rights**

These examples suggest that it is useful to think of resources as bundles of property rights to attributes. The resource is an important aggregation of the unit of analysis (the individual property right), because often resources rather than individual property rights over attributes are traded or accumulated. The way in which attributes are bundled in goods often reflects production costs and technical constraints. However, transaction costs also play an important role.4 Economizing with the costs of specifying and trading individual resource

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3 This adds a property rights dimension to Penrose’s (1959) distinction between resources and the services they yield: the services that a firm can derive from its resources (i.e., the fungibility of the resources) are not just constrained by path-dependencies, the functionalities of the resource, and managerial imagination (Penrose 1959), but also by the transaction costs of realizing the economic potential of the property rights and the way in which property rights are constrained.

4 Relevant transaction costs are costs of drafting contracts (i.e., contracts become incomplete), costs of monitoring (which make moral hazard viable), measuring attributes (which induces adverse selection), and costs of protecting.
attributes explain why attributes are usually traded in bundles (Foss and Foss 2001). Firms often acquire the entire bundle of property rights to a resource, such as a production facility, because of the costs of specifying and trading only those attributes that are of economic interest to the firm. However, the other side of the coin is that such transaction costs hinder the resource owner in realizing the full potential value of the resource, because some attributes that are not used by the current owner are not traded (e.g., production time may be costly to trade). If the relevant transaction costs are somehow reduced, so that such attributes can be specified and traded, it can make the resource owner capable of appropriating more value from the resource.

An important implication of thinking of resources as composed of property rights to valued attributes is that resources are not somehow given, but are *outcomes* of processes of economizing with transaction costs. Obvious examples are those resources that only exist because of transaction costs, such as contracts, or the DeBeers sales practice.\(^5\) Seemingly identical resources may be economically different, as when the resources are controlled by different firms that are not equally capable of protecting the relevant resource attributes. For example, the “same” kind of employees, employed in different firms with different incentive systems, will engage in different morally hazardous activities. From an economic point, they are different resources, and will be paid differently.

**Resource Value and Transaction Costs**

Another implication of the property rights view of resources is that transaction costs influence the value that a resource owner can create and appropriate. The resource value that an owner can create depends on the bundle of property rights that she holds to the attributes of the resource, the constraints imposed on these property rights, and the costs of trading the property rights. The value that a resource owner can appropriate also depends on transaction costs: Value appropriation presupposes that the owner can exclude non-owners from using or destroying attributes to which he holds property rights. While the resource owner has the legal right to exclude non-owners from using and obtaining value from his resources, he may still find it too costly to exclude non-owners from all possible uses of the resource. In effect, she cedes the relevant rights (Barzel 1997). Relatively, given costs of protecting property rights against entry and imitation (which reduce property rights to income streams from controlling certain market shares and resources).

\(^5\) It has long been known that whether goods such as copying machines and servicing agreements are sold as a combined good (i.e., a “tying arrangement”) depends on the costs to the seller or lessor of monitoring the impact of non-standard servicing on the machine (Elzinga and Mills 2001).
over attributes, owners often choose to control the relevant property rights to varying degrees, and the value that a resource owner can appropriate will reflect this. For example, in a franchise chain the value of a brand name to the franchisor will be eroded (Dierickx and Cool 1989) when it is too costly to the franchisor to exclude franchisees from using the name to sell low quality products.

When resources are conceived of as bundles of property rights, it becomes clear that the potential value that a resource owner can create and appropriate do not just depend on supply and demand conditions for the entire bundle of property rights, but also on how this bundle is constrained, the transaction costs involved in realizing the value of individual property rights, and the transaction costs of controlling the property rights to the attributes that make up the resource. Attempts to maximize resource value must take such transaction costs into account.

Controlling Property Rights: The Capture and Protection of Property Rights

An important part of transaction costs are the costs of using legal and/or private means of protection. Positive transaction costs imply that most property rights are not fully protected and can be subject to capture efforts (henceforth, “capture”). By “capture” is meant resource-consuming activities of appropriating value from other strategizers without compensating them. Moral hazard, adverse selection and hold-up are familiar examples of capture. While capture is different from exchange, it may take place in exchange relations. For example, two parties to a transaction agree on a price for a resource with certain attributes (such as a certain quality level); however, the supplier may deliver a resource of a lower quality. Such moral hazard on the part of the supplier amounts to capturing (some) valued resource attributes from the buyer (Chi 1994).

Given this definition of capture, “protection efforts” (henceforth, “protection”) can be defined as the resource-consuming activities that strategizers undertake in order to reduce others strategizers’ incentives to capture property rights. Since capture takes many forms, the notion of protection in the EPR goes significantly beyond making and keeping resources costly to imitate or substitute (Teece 1987; Barney 1991). In addition to such protection strategies, property rights may be protected by choosing governance structures (in order to reduce capture in the form of moral hazard or hold-up) (Mahoney 1992; Chi 1994; Hart 1995; Williamson

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6 Thus, capture creates what economists call “externalities.”

7 Note that there is also a dimension of capture to competition: Competitive imitation and substitution, as well as competition in terms of quality, technology and price may be seen as capture, because these competitive activities reduce the value that a resource owner can appropriate without compensating the owner of that resource (Barzel 1994; Foss 2003).
1996), using the legal system or by establishing private orderings (Williamson 1996), deterring entry (Tirole 1988), writing contracts, and adopting sales strategies to hinder adverse sorting (as in the DeBeers example) (Barzel 1982; Roy and Kenney 1983). The RBV mainly considers a subset of these protection activities, namely protecting against imitation, but stands to gain from considering a broader set than it presently does.

To illustrate, consider an insurance company that is the first to market a particular kind of accident insurance concept. The concept becomes heavily demanded. It can be fully protected from imitation by legal means. Moreover, assume that suppliers on factor markets and customers can only bargain for a small part of the value created by the new concept. Given all this, the insurance company would seem to implement “… a value creating strategy not simultaneously being implemented by any current or potential competitors and … these other firms are unable to duplicate the benefits of this strategy” (Barney 1991: 102), that is, to realize a sustained competitive advantage. However, this may not be the case. Because of transaction costs, the price of insurance contracts cannot perfectly reflect the true accident risks of each individual who takes out insurance. Given variation in risks, some customers, namely those with high accident risks, capture value in excess of what they pay for (i.e., “adverse selection,” Akerlof 1970). At the limit, all of the rents from the new strategies will be eroded through the value capture/adverse selection of customers.

The example implies that protection of resource value goes beyond keeping resources inimitable: resources are not fully protected from value erosion unless they are protected from all kinds of capture. In the example, the proper way to protect value is to segment the customer base. The example further suggests that the EPR contains implications for value creation and appropriation, and therefore sustained competitive advantage, that adds to the RBV. In order to explore these implications, we first examine value creation and appropriation in a setting where transaction costs are zero. This is the setting underlying the Coase theorem (Coase 1960, 1988). The zero transaction cost setting serves as a useful benchmark, because it represents a state in which maximum value is created. We then explicitly consider transaction costs and examine the implications for value creation and appropriation relative to the benchmark situation.

Relating Transaction Costs to Value Creation and Appropriation

The Coase Theorem
A compact way of stating the Coase theorem is that in the absence of transaction costs, all the value that can conceivably be created from the exchange and use in production of the available goods in the economy will, in fact, be created. An underlying assumption is that in such a surplus-maximizing equilibrium, strategizers have full information, there are no costs of defining and protecting property rights to (all attributes of) all resources and there are no costs of bargaining over the value created by resources.

Because the costs of exchanging property rights are zero, all property rights to all attributes can be exchanged and are optimally bundled into resources. In this situation, there will still be constraints on the use rights over resources, but these constraints will be defined in a value maximizing manner; in other words, there are no avoidable losses of value caused by externalities. Because of the optimal constraints and costless exchange, resources will be used in their best possible uses. In this benchmark situation, *the maximum value that resources can create will be realized.*

Another way of stating that the cost of exchanging property rights is zero is that the prices for all those resource uses that are realized in the value-maximizing equilibrium emerge immediately from costless bargaining processes. As an example, consider a parking space that is located adjacent to a supermarket. Since information and bargaining costs are zero, the owner will bargain with all users of the parking space so that all property rights over attributes of the parking space will be priced. Relevant attributes may be the time, date and how close one can park to the supermarket entrance. Different prices for different bundles of property rights over attributes will likely emerge. Since prices are perfect signals of scarcities, all attributes will be perfectly rationed, so that no queues emerge and re-allocating the use rights to the parking lots cannot increase created value. However, while the zero transaction cost condition implies that total resource value will be at its maximum, it does not directly speak to the issue of value appropriation. For this, further theoretical apparatus, namely bargaining theory (Lippman and Rumelt 2003a), is required.

Because bargaining is costless, the value created by the use of resources is always independent of the value that each individual resource owner appropriates. One may think of parties to transactions (i.e., resource owners) as first agreeing to maximize the value that can be created from their resources, and afterwards splitting this value through bargaining that defines

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8 We adopt a strong version of the Coase Theorem (as in Coase 1988 and Barzel 1997).

9 However, the very notion of a “resource” becomes somewhat redundant in this extreme world, as many exchanges will involve property rights over attributes rather than resources *per se.*
each party’s share of the created value (Milgrom and Roberts 1992). Since all promises are enforceable, resource owners will always receive at least their opportunity costs and resource investments will always be covered (Hart 1995). In other words, *value creation is independent of value appropriation when transaction costs are zero*.

The zero transaction costs setting does not imply long-run perfect competition, and is therefore compatible with resource owners earning rents. As Coase (1960) notes, rents may be earned when the supply of input resources is not perfectly elastic, independently of whether transaction costs exist or not. Because property rights are perfectly protected, these rents are sustainable. However, since bargaining (and forming coalitions) is costless it is unlikely that the owner of a scarce resource will appropriate all rents.

While the rudiments of the resource-based view of sustainable competitive advantage (Barney 1991; Peteraf 1993) are thus consistent with the zero transaction cost assumption, this assumption only leaves limited room for understanding the links between resources and sustained competitive advantage. In order to explore more of these links, the assumption that transaction costs are zero must be abandoned.

The introduction of transaction costs means both bad and good news for strategizers. The bad news is that in a positive transaction costs world, it will never be possible to realize the full potential of all resources with respect to value creation. Moreover, resource value can be eroded in numerous ways by the creative attempts of other strategizers to capture value. The good news is that the presence of transaction costs generates sources of value creation and appropriation (i.e., strategic opportunities) that would not exist if transaction costs were zero. Consider the bad news first.

**Value Dissipation and Value Erosion: Bad News for Strategizers**

In a positive transaction costs world some *value dissipation* is strictly unavoidable. Dissipation results because it is costly to protect property rights and because lack of protection induces strategizers to expend resources on costly capture. If a strategizer increases the protection of her property rights in order to reduce other strategizers’ capture, he may reduce one kind of value dissipation but will increase another one. Similarly, reducing protection in order to save on protection costs increases other strategizers’ capture efforts. This tradeoff means that for a given strategizer there is an optimal amount of dissipation, namely the amount that maximizes appropriated value.$^{10}$ Given such an optimum, changes in the costs of

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$^{10}$ An implication is that value creation requires that resource owners consider not only their own costs of protection, but also the costs to other strategizers of engaging in capture (Skaperdas 1994).
protection and capture change the amount of dissipation. For example, a strategist’s cost of protection may be lowered because it adopts or innovates new sales practices (as in the DeBeers example), contractual forms, sorting or monitoring technologies, etc. Capture and protection efforts will be different in the new equilibrium.

**Direct and indirect dissipation.** Two kinds of dissipation may be distinguished. Protection and capture *directly* reduce realized value compared to the zero transaction cost situation, because the efforts themselves are costly and therefore consume value. Protection efforts, such as measuring attributes and excluding non-owners from resource attributes, are examples of direct dissipation. Customers sorting between unsorted goods of varying qualities in order to select only those that have a higher value than the posted price is an example of capture that directly dissipates value.

Protection may also give rise to *indirect dissipation* to the extent that value-creating exchange of property rights is hindered. An example of this is when knowledge is kept in-house in order to protect it from imitation (cf. Reed and DeFilippi 1990) instead of becoming an object of know-how exchange within a network of reciprocating firms (von Hippel 1988). Losses in the form of unrealized gains from knowledge exchange constitute the indirect dissipation. Capture may also give rise to indirect dissipation. Thus, if many consumers sorts there will be a waste of value compared to having the goods sorted only once (e.g by the first customer). Moreover, customers may engage in costly competition, such as spending time in a queue, over unprotected property rights (Barzel 1997). If capture is sufficiently intensive, indirect dissipation emerges in the form of reduced transaction volume in the market. Other sources of indirect dissipation arise from morally hazardous behavior that causes indirect dissipation because it induces sub-optimal level of production, or hold up and imitative efforts that diminish investments.

**Value erosion.** The RBV notion of value erosion (Dierickx and Cool 1989) is easily aligned with the EPR notion of dissipation: it is value dissipation as seen from the perspective of a resource owner. Specifically, value erosion refers to the reduction in the value of a resource that is induced by a reduction of other strategizers’ capture costs or by an increase in the resource owner’s own protection costs. Value erosion thus defined measures the change in a resource owner’s appropriated value due to changes in the equilibrium amount of capture efforts and protection costs. For example, producers of digital products experience value erosion due to private users’ declining costs of copying such products. Value erosion is caused
by both direct dissipation (i.e., users’ capture costs and producers’ protection costs) and indirect dissipation (i.e., investments in intellectual assets decline).

**Unowned resources and value erosion.** In the RBV, it is sometimes argued that unique locations are sources of rents (e.g., Lippman and Rumelt 2003b). For example, a unique non-imitable riverside location of a production site would seem to have the potential of creating sustained competitive advantage due to the low transportation costs it provides to the firm. However, the interdependence between the resource (the site) and the public good (the river) creates problems of sustaining rents that have not been considered in the RBV literature. Note that while the location may stay inimitable, *ex post* competition may develop with respect to the use of the river as other firms located further in-land develop means of reducing their costs of bringing goods to the river (i.e., the equilibrium is disturbed by a technological innovation). These other firms will then also use the river for transportation of their goods. If congestion occurs the actual cost to the firm of transportation is high although the money price it pays is low. In the extreme, the firm’s locational rents may be completely eroded due to queuing costs.

The example illustrates a situation in which a firm can fully protect its own property rights to resource attributes — except its income rights to the attribute of the location of the land parcel. Rents are initially earned because of complementary relations between resources; however, only one resource is under the control of the firm which makes it hard for the firm to limit indirect dissipation. However, even if all resources were owned by the firm, efficiently rationing the use of resources (e.g., pricing the use of the river) may also be costly and some property rights over attributes may be left uncontrolled with respect to the use internally in the firm. In those instances, resources are not necessarily sources of sustained rents (even if they fulfill the requirements of being non-imitable, etc.), since increases in the demand of some attributes may result in value erosion of other resource. In sum, the EPR adds to the understanding of value erosion in the RBV (Dierickx and Cool 1989: 1108).

**Sources of Value Creation: Good News for Strategizers**

The above reasoning points to two main (related) sources of value creation that emerge with the introduction of transaction costs. The first is to reduce protection costs so that *direct* value dissipation is diminished. The second is to reduce *indirect* dissipation. The following example illustrates how the reduction of direct and indirect dissipation translates into value creation.
Consider a uniquely located (hence, inimitable) parking space that is placed adjacent to and owned by a supermarket. Customers value a combined good, namely the combination of what the supermarket offers and parking spaces. This will be reflected in both the demand the supermarket faces and the prices it can charge. The supermarket will earn a profit from being located next to the parking space. The source of the profit is the positive externality in consumption. Thus, use rights to the parking lots are unprotected in the sense that non-owners can use these attributes without directly compensating the owner. However, it will still be rational for the owner to make available the parking space to non-owners when she can appropriate the value it produces through its complementarity to the supermarket’s offerings.

Assume now that the supermarket’s pricing decisions can be represented in terms of the monopoly diagram familiar from economics textbooks (see Figure 1).

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\text{D}_1 \text{ is the demand curve for its goods that the supermarket would face in the absence of the parking space. Created value is represented by the area IJHC. However, if the supermarket constructs a parking space but does not restrict its use, D}_2 \text{ is the combined demand curve for the goods offered by the supermarket and the free services of the parking space. The price is lower in the absence of the parking space (p}_1\text{), because consumers value having access to a parking space. Total created value increases by BFHC to IJFB. The supermarket can appropriate EFHG (= BFHC) by charging the higher price (p}_2\text{) for its goods. However, when a limited size parking space is offered for free, customers queue for the un-priced parking lots. This results in direct dissipation of value in the form of waiting time and indirect dissipation in the form of a smaller transaction volume than would have obtained if queuing costs were zero. (In Figure 1 it is assumed that not all value is dissipated in this way).}
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Value dissipation can be reduced if the supermarket extends the parking space or if it protects its property rights and charges patrons for parking. The demand curve will shift outwards, because customers have to expend fewer resources on queuing. Total created value increases by ADFB to IJDA. If the supermarket charges the equilibrium price that fully rations parking space (i.e., p}_3 – p}_1\text{), and prices supermarket goods at p}_1\text{, it can appropriate the extra

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\[11\] If instead the supermarket did not own the parking space, it would be more costly for it to take measures to control dissipation of the value created by the parking space: Patrons of other shops would compete with the supermarket’s customers for the parking space, and such competition would gradually erode the rents earned by the supermarket on its location. This is the same situation as in the above example of the riverside location.
value (CDFE) that pricing the parking space generates.\textsuperscript{12} The cost of pricing the parking space has to be subtracted from CFDE; in other words, as long as these costs are less than CFDE, it will pay to price the parking services.

So far, we have assumed that the value of each parking space to customers is independent of location and time. However, it is much more realistic to assume that customers value parking space adjacent to the entry of the supermarket higher than other spaces and that they value parking at peak-shopping hours higher than at other hours. A single price will therefore not perfectly ration the use of high valued parking spaces. If the supermarket can devise means of reducing the cost of pricing and enforcing property rights to these attributes, it will appropriate an even greater part of value that the resource can create. In the case of a parking space, this may require investments in developing resources such as ticket systems and control systems. The ability to reduce indirect dissipation and capture a greater share of the value of attributes provides incentives to invest in such transaction costs-reducing technology.\textsuperscript{13}

Pricing the parking lots is not the only means by which the supermarket can limit indirect dissipation. Alternatively, it can limit the time cars are allowed to park or it can limit access to the entire parking space. However, the only way of fully limiting indirect dissipation is to price each parking lot according to its attractiveness to costumers. This may suggest that resource attributes should always be priced to fully realize their value-creating potential. However, this intuition is incorrect, for the reason that in the presence of transaction costs, pricing is costly (Coase 1960, 1988).\textsuperscript{14}

Resource attributes are unpriced when it is prohibitively costly to exclude non-owners from capturing property rights to the attributes, or when attributes are costly to define and measure in ways that are verifiable to the parties to a potential transaction and/or a third party,

\textsuperscript{12} Here we have assumed that extending the parking space is more costly than pricing parking services. In the example, although customers are never worse off, the monopolist supermarket captures all created value from the parking space and from pricing parking lots. In other words, customers have no bargaining power. Also, we have assumed that customers have similar queuing costs and valuations of parking lots. Relaxing these assumptions does not compromise the overall conclusion.

\textsuperscript{13} Will the supermarket earn rent on the parking lot? The answer to this question depends on 1) its ability to keep the transaction costs reducing resources inimitable, 2) the costs of acquiring these resources, and 3) on its bargaining with land owners and constructors as well as other strategizers who are interested in acquiring the land for resale to the supermarket. It may be common knowledge that parking spaces adjacent to supermarkets creates value for the supermarket although the supermarket is unable to price each parking lot. Rents may then be captured by suppliers, or by strategizers who acquire the land for resale to the supermarket. How much rent will be captured by these parties depend on the specificities of the bargaining situation.

\textsuperscript{14} Cf. Lippman and Rumelt’s (2003a: 1085) observation that “… intuition suggests that a resource bundle will be more valuable if it can be accurately priced.” Whether resources “can be accurately priced” depends on transaction costs.
or when resource attributes are not demanded. More generally, some attributes, or entire resources, are more costly to accurately price than others. It is therefore more costly to constrain dissipation for these resources. However, by restricting access to such resources firms can limit dissipation and maximize value they can appropriate from them. Notably, this is done by keeping such resources in-house, a key theme in the RBV (Dierickx and Cool 1989; Reed and DeFilippi 1990).  

Transaction Costs and Sustained Competitive Advantage

The EPR is not a strategic perspective *per se* and does therefore not directly address the issues of why some firms are persistently more successful than other firms. Thus, the issues of why firms are heterogeneous and pursue different strategies are not directly addressed in the EPR. In contrast, firm heterogeneity is central in the RBV and much of the research effort has been directed towards establishing the circumstances under which firms earn sustainable rents from superior resources. The EPR does not make the distinction in the RBV between the resources that give rise to sustained rent and those that do not a central one; nevertheless, the EPR can contribute directly to strategic analysis.

A starting point for an EPR contribution to the analysis of sustained competitive advantage is the central point of the preceding discussion: the value that strategizers will realize and appropriate from resources depends on transaction costs. Thus, the rent differentials that resources create are partly a function of the differential costs of protecting resource attributes from capture. If a resource owner is able to create and appropriate more value from her bundle of resources compared to the competition, she has the potential of enjoying a sustained competitive advantage. In other words, sustained competitive advantage depends on transaction costs.

Determining the conditions under which firms enjoy a sustained competitive advantage is one of the main issues in the RBV. Barriers to competition are particularly important here (e.g., in the notions of *ex ante* and *ex post* limits to competition, Peteraf 1993), and much effort has been put into the identification of factors (such as the nature of the resource or the resource accumulation process) that create such barriers. Competition is also important in the EPR (Alchian 1965), but the main focus is on competition for less than perfectly protected property.

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15 Resources may also be un-priced because they are extremely firm specific (Lippman and Rumelt 1982). Such resources are necessarily in their best use in-house and the fact that there are no prices on such resources is not a sign of a potential for value creation. However, we doubt that such resources are common.
rights (Barzel 1997; Hirshleifer 2001). As has been argued, such competition is important in determining the value that a resource can create and the value that the owner of the resource can appropriate. Analysis of how transaction costs influence competition over less than perfectly protected property rights therefore provides important contributions to the RBV with respect to understanding the conditions for sustained competitive advantage.

Peteraf (1993) has elegantly summarized much of the RBV into “four cornerstones of competitive advantage” that represent necessary conditions for sustained competitive advantage. In the following these cornerstones serve as a means of more precisely identifying what is the contribution of the EPR with respect to furthering the RBV analysis of sustained competitive advantage.

Heterogeneity. The RBV analysis of heterogeneity stresses inherent efficiencies of resources (Peteraf 1993) and differences in resource complementarities (Dierickx and Cool 1989; Denrell, Fang and Winter 2003) as sources of firm heterogeneity. The EPR contributes a further dimension to resource and firm heterogeneity by stressing that resources are composed of property rights to attributes. Property rights are typically bundled in resources because of costs of exchanging individual property rights, including the costs of protecting these rights. Thus, resources are outcomes of processes of economizing with such transaction costs, and vary in their efficiencies and potential for being combined in a complementary manner because they encompass different attributes.

By implication, resource heterogeneity changes under the impact of innovations in sales practices, contracting practices, and other transaction cost-reducing technologies as well as changes in legislation and norms. This implies that firms have heterogeneous resources not just because of different initial resource endowments and subsequent learning effects, but also because they are subject to different regulations (i.e., constraints on use rights), and face different costs of protecting and thus utilizing resource attributes in production or exchange. When resources change with changes in transaction costs and legislation, so does the value that they can create and that the firm can appropriate.

Barriers to ex ante competition. The RBV stresses informational barriers to ex ante competition as a necessary condition of the existence of rents (Barney 1986; Makadok and Barney 2001). The EPR adds a different mechanism by which discrepancies between value and price may be established on strategic factor markets.

In the EPR, resource heterogeneity is caused by variation in the types and levels of valued attributes that resources embody. Such variation causes costly measurement (Barzel
Costly measurement implies that not all attributes are priced and that some strategizers may be able to capture value from un-priced attributes (Barzel 1982). Strategizers on strategic factor markets that have low costs of capture because of superior efficiencies in searching and/or low opportunity costs of search will be able to purchase resources — that is, bundles of property rights over attributes, including the highly valued one — at prices below their value to the seller. This indicates that rent capture is connected to transaction costs (in this case measurement costs), and that variation in the attributes of resources is a resource dimension that is important for understanding rent capture.

**Barriers to ex post competition.** The general lesson from both the RBV and the EPR is that barriers to *ex post* competition are a necessary condition for the sustainability of competitive advantage. However, *ex post* competition may be conceptualized in a broader manner in the EPR compared to that in the RBV. In the RBV *ex post* competition is mainly a matter of competitive imitation and of resource substitution (Barney 1991).

The EPR adds to this by pointing to *ex post* capture in many other forms than competitive imitation, such as moral hazard, adverse selection and hold up, as well other as elements of competition over less than perfectly protected attributes (see further Barzel 1997). All of these capture activities can be subsumed under *ex post* competition for unprotected property rights over resource attributes. The value that the focal firm can appropriate from its resources is determined by the capture activities of other firms, the firm’s bargaining power vis-à-vis suppliers, buyers and employees, and the capture of employees. If capture activities are fully foreseen before the resource is acquired, their impact on value creation and appropriation will be taken into account in the reservation price of buyers (or sellers). However, if there are (transaction) costs of estimating capture or unforeseen changes in transaction costs, value erosion will occur. Thus, when forming expectations about future resource values (Makadok and Barney 2001), managers should also assess the capture potential that is associated with these resources.

The EPR can expand the avenue of research pursued in the RBV with respect to identifying characteristics of resources that may limit *ex post* competition and contribute to sustained competitive advantage. In the RBV, causal ambiguity is often seen as a characteristic that supports sustainability (Lippman and Rumelt 1982). However, from an EPR perspective causal ambiguity may also make it costly to write contracts and enforce performance norms. Causal ambiguity may therefore reduce value creation and appropriation. This creates a tradeoff between protecting against imitation and protecting against other forms of capture.
**Immobility.** While the RBV suggest that from the firm’s point of view resource immobility is preferable, transaction costs may imply that immobility leads to under-investment. Granting resources outside options, such as giving patent rights to research scientists, may increase their bargaining power (make them more “mobile”) and improve their investment incentives (Hart 1995). This points to a tradeoff in certain situations between immobility and value creation, and therefore refines the analysis of immobility as a condition of sustained competitive advantage.

**Conclusion**

**Contribution to Theory**

Coase’s (1992: 716) insight that “… a large part of what we think of as economic activity is designed to accomplish what high transaction costs would otherwise prevent” has important implications for the RBV. Incorporating transaction costs more fully into the RBV introduces new sources of value dissipation and erosion. As suggested by the Coase quotation, strategizers will actively seek to reduce the value dissipation and erosion caused by transaction costs. Strategic opportunities from reducing transaction costs arise.

The purpose of this work has been to clarify how transaction costs create opportunities for value creation and appropriation. The argument began from applying the EPR lens to develop a more refined understanding of the notion of a resource and of the determinants of resource value: resources can usefully be conceptualized as bundles of property rights to resource attributes, where the relevant property rights are subject to potential capture and therefore need protection. Capture and protection are costly activities and directly and indirectly diminish created value relative to the maximum it would attain if transaction costs were zero. Thus, transaction costs influence resource value, along with conditions of scarcity, demand, imitability and sustainability. Strategizers will have incentives to create value by reducing dissipation, taking into account that such reduction is also costly and provided they can appropriate a sufficient part of the created value. The reduction of dissipation takes various forms, including pricing and protecting resource attributes. These insights refine the RBV analysis of sustained competitive advantage by adding new dimensions to notions of resource heterogeneity, *ex post* and *ex ante* competition, and immobility (Peteraf 1993).

Taken together, all this indicates that the EPR can significantly contribute to the RBV analysis of strategic opportunities. According to Lippman and Rumelt (2003a: 1080), the RBV predicts that firms will focus their energies on developing “… complex ‘homegrown’ resources
… Yet a glance at corporate reality reveals that much more effort is devoted to combinations, deals, mergers, acquisition, joint venture and the like.” They therefore suggest that more attention be devoted to such resource assembly, particularly under conditions of super-modularity. We concur, but submit that created value is not only constrained by knowledge about resource complementarities, but also by the transaction costs that attend the exchange aspects of “combinations, deals, mergers, acquisition, joint venture and the like.” Even more generally, the EPR indicates that resource value is significantly influenced by transaction costs, and that strategic opportunities therefore arise when the transaction costs of defining, protecting, capturing and exchanging property rights change.

**Future Work**

The present paper is among the first applications of the EPR to the RBV (see also Foss and Foss 2000; Kim and Mahoney 2002; Foss 2003). Much work therefore remains to be done. Among the many new avenues for development of the RBV that are implied by the EPR are the following ones.

*Further theoretical development.* This work has primarily examined how notions of transaction costs and property rights refine the understanding of resources and value creation and appropriation. Further theoretical development may proceed along at least three paths. The first one begins from observing that resource value is threatened by all sorts of capture efforts and that competitive activities may be understood in terms of the capture and protection of property rights (Barzel 1994). Thus, the EPR may help to integrate the RBV with strategic theory that is more concerned with the external environment (Porter 1980). A second path of development is to address those resources that create value because they economize with transaction costs, such as specific ways of sorting goods (e.g., in the retailing and industries such as fruit and vegetables), sorting customers (e.g., credit classes in banking), contracting, the use of private orderings, etc. (Barzel 1997; Williamson 1996). While such resources have been neglected in the RBV (but see Mahoney 1992; Chi 1994), they are important sources of value creation. A third path is to connect to the huge literature on technological spillovers (externalities) (Shy 2001). This literature highlights the central tradeoff of how much to try to limit spillovers to other firms (i.e., protect property rights to knowledge resources) *versus* how much to share with these firms (and under what circumstances), and links this tradeoff to incentives for R&D investments. While the EPR can frame the central ideas of the spillover

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16 We are grateful to an anonymous reviewer for this suggestion.
literature, the latter adds an emphasis on competitive dynamics that is so far missing in the approach we have developed in this paper.

**Formal modeling.** The development of mathematical RBV models has recently begun (e.g., Makadok 2003). The EPR draws attention to many variables, margins and tradeoffs (Foss and Foss 2001). Formal modeling is necessary to fully clarify the potentials and limits of this approach with respect to furthering the RBV. One attractive line of research is to apply and develop formal game theory models on contests over insecure (i.e., costly to protect) property rights, and how such contests dissipates value (e.g., Skaperdas 1994; Hirshleifer 2001). In these treatments strategizers are explicitly modeled as having (in our terminology) capture and protection functions and differential endowments of resources to spend on these activities. This makes it possible to produce predictions as to which player will win in contests over insecure property rights, how much value will be dissipated, and how alternative kinds of social organization may reduce such dissipation. The relevance of this formal, game theoretical approach to the non-formal approach developed in the present paper is that the formal apparatus can give precise meaning to such key EPR concepts such as capture, protection, and dissipation, and can model the interaction between strategizers that have differential resource endowments and differential capture and protection efficiencies (i.e., differential capabilities in these activities).

**Empirical research.** One avenue of empirical research in the RBV has been to pursue the implications for performance of different resource types. For example, Miller and Shamsie (1996) discuss the sources and sustainability of competitive advantage in the Hollywood film studios in terms of “property-“ and “knowledge-based” resources. Empirical RBV work can accommodate the unique insights that the EPR brings to the RBV by incorporating in such exercises the “transaction cost resources” mentioned above, that is, forms of contracting, sorting systems, credit rationing systems, and other practices that firms adopt to protect resource value. While there is reason to suspect that such resources are very important in a number of industries, extremely little is empirically known about their contribution to sustained competitive advantage. Work on this issue may utilize operationalizations and measures that have been developed in the empirical literature in transaction cost economics (David and Han 2004).
References


**Figure 1:** Value-creating price rationing

![Diagram showing value-creating price rationing with various price points and demand curves.](image-url)
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