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When does the Underdog Win?

by

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Abstract

In several celebrated examples, incumbents with significant resources have been beaten, in their own core businesses, by young start-ups. We identify a general mechanism that explains how these entrants can succeed against seemingly impossible odds. Specifically, we argue that they circumvent the entry barriers by using new business models that do not depend on the hard-to-imitate resources protecting the incumbent. While the entrants are gaining experience with their business models, they develop their own hard-to-imitate resources and these eventually allow them to expand into the incumbents' core markets. We formalize the argument in a model, derive several comparative static predictions, and illustrate it with a number of examples. The mechanism does not work if the incumbents react immediately, but we will draw on the literature on corporate inertia to argue that three of the mechanism's properties make it especially likely that incumbents will be slow to adopt new business models.

[1] bwerner@mit.edu. I am indebted to Richard Rumelt for getting me interested in the topic, to Giovanni Gavetti for many helpful comments, to two anonymous referees, and to students in the 2019 and 2020 versions of my Marketing Strategy class at MIT.

I. INTRODUCTION

We are interested in cases in which an initially much smaller entrant ultimately outcompetes a large incumbent firm with significant resources. (To fix ideas, think of Amazon vs. Barnes and Noble, Netflix vs. Blockbuster, General Motors vs. Ford in the 1920s, or Nike vs. Converse in the 1970s). Some such cases are perfectly consistent with standard theory and need no further explanation: In particular, it is not a big surprise to see a small entrant win if it started out with a unique and important resource (as was the case for Google).[2] It is harder to explain cases in which the entrant, at least initially, had no unique resources, other than perhaps a brilliant manager. The purpose of this paper is to propose a general mechanism that can explain some of these real but seemingly implausible outcomes.

The phenomenon has attracted a lot of attention in the literature and several examples have been described in great detail. A striking, and widely noted, property of the examples is that the strategies of successful entrants exhibit two regularities. First, they do not start out attacking the core business (main customer segments) served by the eventually displaced incumbents, but initially enter segments that are of little interest to them (Christensen, 1995). In our examples, (i) Amazon initially sold primarily technical and hard-to-get books, categories that made up close to zero percent of Barnes and Noble's sales. (ii) When Netflix stared renting DVDs, they focused on older movies and did not offer any of the recent releases that accounted for 78 percent of Blockbuster's revenue. (iii) Immediately after taking the reins at General Motors, Alfred Sloan decided that GM could not beat Ford at its own game and therefore concentrated on skimming off demand at the high end.[3] (iv) When Nike entered the athletic footwear industry in 1964, they were focusing on runners at a time when Converse was concentrating on basketball shoes.

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[2] In another class of cases, external forces cause a reduction in the equilibrium level of concentration or integration and thus the demise of past champions. For example, in the European market for pre-packaged vacations, the internet caused a large integrated operator, Kuoni, to be displaced by smaller specialists.

[3] "In 1921, Ford had about 60% of the US car and truck market in units and Chevrolet had about 4%. With Ford in almost complete possession of the low-price field, it would have been suicidal to compete with him head on." (Sloan 1963, p. 76). By 1925, GM was more profitable than Ford, and by 1928, its revenues were higher as well.

The second regularity is that the eventually successful entrants do not use the same business model as the incumbent (Christensen and Raynor, 2003). For example, (i) Amazon sold online rather than in retail stores, (ii) Netflix also did not use stores but first the US Postal Service and then the internet, (iii) GM focused on design rather than costs, and (iv) Nike outsourced production.

The mechanism proposed in this paper is in the spirit of the resource-based view of the firm (RBV) in the sense that the resources are the driving force. In particular, we will make use of two properties of resources. First, hard-to-imitate resources give rise to entry barriers and thus protects firms from challenges. Second, the efficiency of a firm's business model depends on its stock of those resources that it needs to perform its activities as prescribed by the business model. These are not assumptions, but simply implications of the fact that resources are factors of production.

The second of the above-mentioned properties does not depend on any specific definition of what a business model is. However, since the business model concept plays a big role in our theory, we nevertheless want to state a precise definition that the reader can keep in mind while reading the paper. To this end, we follow Amit and Zott (2020) and define a business model as *"a system of interdependent activities that are performed by a focal firm"*.[4] For our purposes, the critical point is that different business models depend on different sets of resources and we will think of these resources as being leveraged in the activities referred to in the above definition.

We make three central assumptions about the two different business models (of the entrant and the incumbent) and the resources they leverage. First, as the entrant invests in and operates its new business model, she grows non-rival[5] resources that enhance its performance, both in the original niche (segment) and potentially in the main customer segment as well. Second, the incumbent's business model does not depend on one or more of the hard-to-imitate that are used by the new business model. (This means that he cannot instantly use the new business model in an efficient way.) Third, the new business model does not depend on the hard-

[4] The literature contains a large and rapidly growing number of articles about business models (2500+ by Amit and Zott, 2020) offering many different definitions of the concept. The recent book by Amit and Zott (2020) provides an excellent survey and many references.

[5] A resource is (fully) non-rival if use in one business does not limit its availability to another business.

to-replicate resources used by the incumbent's business model. (This means that the entrant can avoid the entry barriers that have protected the incumbent in the past.) Given these assumptions, the entrant can postpone a frontal attack while she is accumulating resources by investing and operating in the niche. She bides her time wait until she has enough resources to make the new business model competitive with that of the incumbent. This takes less strength and less time to the extent that the new business model is more efficient (in terms of value created for a fixed resource stock) relative to the traditional one.

Since the entrant cannot win a confrontation until she has grown her resources, the mechanism relies on the additional assumption that the incumbent does not immediately react to the emerging threat. Based on the literature on corporate inertia, we will argue that three properties of the model go a long way towards explaining why the incumbent is slow to adopt the new business model. First, since the entrants do not start out in the incumbents' core markets, they may be able to escape detection, at least for a while. Second, because the threat faced by incumbents comes from a business model they have not seen before, one or more resources that are less important in their own business model, and a small niche in which they do not compete, it is perhaps understandable that they pay limited attention to it, at least initially. Third, when they finally do pay serious attention, they find that the new business model does not use one or more of the resources that are underpin their historical competitive advantage, making them less likely to embrace it.

The theory contributes four things. First, it offers general framework within which we can understand and explain the phenomenon and the examples identified in the literature. Second, it endows the phenomenon with boundaries: what is a set of necessary properties of the business models, resources, and technologies in which this is possible? Third, because the main idea that the entrant can develop resources in a different segment and only later transfer them to the incumbent's core market, it connects the theory of disruption to the RBV (Wernerfelt, 1984; Barney, 1991). Fourth, it yields several comparative static predictions. Specifically, we show that the entrant is more likely to win if the incumbent is slower to react and has a lower maximal rate of investment, and if the entrant can invest at a higher rate. Under a weak and natural condition, the entrant is also more likely to win if the innovative business model is comparatively more efficient, and if the incumbent's initial lead is smaller.

Literature

The first of our two regularities has been independently discovered by two different scholars, both at the Harvard Business School (though separated by more than fifty years), and both looking at low end entry in vertically differentiated industries. In the 1930's Malcolm McNair took his inspiration for "the Wheel of Retailing" (McNair and May, 1976) from several examples in that industry. He noticed that retailers tend to enter the low end of a given category essentially as discounters, but then gradually move up, thereby leaving room for new entrants in a perpetual circle. [6] The "Disruptive Innovation" phenomenon identified by Clayton Christensen in the 1990s (Christensen, 1995; Christensen and Bower, 1996; Christensen, Raynor, and McDonald, 2015; Christensen, Hall, Dillon, and Duncan, 2016) is based on several examples from the technology sector. Entrants offer simple products at low prices and gradually migrate into more up-market segments - segments that are being abandoned by incumbents who themselves are moving ever higher.

The second stylized fact, that the entrants tend to use different business models, was established later by Christensen and his co-authors (Christensen and Raynor, 2003; Johnson, Christensen, and Kagermann, 2008). They particularly stress that many of their business models were enabled by new technology.

The main idea in the present paper is to explain these phenomena as results of resource dynamics. That is, the entrant can win because she has acquired resources which, when combined with an appropriate business model, makes her stronger than the incumbent.

Before continuing, we want to acknowledge that several papers in the literature mention specific mechanisms that could explain why the entrants are able to move into, and succeed in, the incumbents' core markets. For example, in applications of the Wheel of Retailing it is often suggested that retailers gradually gain consumers' trust and thus the ability to sell higher end products. Similarly, Christensen and others in the Disruptive Innovation stream write about the

[6] Their upward move may be motivated by a desire to add more high margin customers and/or be a result of upward migration of the price pressures that are originating in the low end. It should, however, be noted that some retailers and sellers of search goods, such as Walmart and (at least until recently) IKEA, resist any temptation to move up market. So while the behavior perhaps can be understood, there is nothing inevitable about it.

entrants gaining technical skills. However, while it is possible to interpret the arguments as special cases of ours, as far as we are aware, nobody has offered the kind of general formulation we do here.

Plan of the Paper

In the next Section, we will present our proposed mechanism, formalize the argument in a model, and derive several comparative static predictions. We summarize a set of necessary conditions for the mechanism to work and look for them in our four motivating examples in Section III. In Section IV we draw on the literature on corporate inertia to argue that a delay in changing the business model is particularly likely in the cases where the underlying assumptions hold. We close by offering some concluding thoughts in Section V.

II. THE MECHANISM

As mentioned in the Introduction, the proposed mechanism takes the perspective of the RBV. The fundamental premises are these. (1) If different business models are used to compete in the same market, they require different sets of resources. Specifically, each business model requires some resources that are not needed by the other. (2) If a specific business model is used in two different markets, some of the same resources will be needed in both, (3) some of these resources are non-rival, and (4) they grow through a learning-by-doing effect combined with investments. For example, if the business model requires retail outlets, the stores may become more valuable over time if management invests in improving their reputation. On the other hand, if you sell online, you do not need physical stores at all, but do better as your technology, stock of loyal customers, and data improve. Similarly with other resources, their importance depends on the business model and the market in which it is used, they are partially non-rival, and they grow through use and investments.

The main idea is that the entrant can use her first niche to develop business model specific resources that she later can transfer to the main (incumbent's core) market. She is able to bypass

the entry barriers in that market because her business model does not depend on some of the hardest-to-replicate resources used by the incumbent's business model. For this to be possible, it is necessary that her business model, if supported by the appropriate resources, is reasonably efficient both at small scale and in the main market. It is obviously not easy to find business models meeting all these conditions and this is presumably one reason why the phenomenon is rare.

While the mechanism makes economic sense, it is important to acknowledge that the incumbent, if he becomes aware of the entrant's plan sufficiently early, can defend himself at least by adopting the new business model and maybe in other ways as well. So the mechanism is not consistent with equilibrium in the sense that it only can produce the predicted outcome if the incumbent makes a "mistake" in the sense of being slow to change its business model.

Basic model

Before laying out the model, we warn the reader that we have gone to great lengths to keep it as simple as possible. The resulting gain in transparency involves losing some "realism". However, we do not believe that any of the simplifying assumptions are knife-edge in the sense that a small deviation would change the results. For example, the model considers three periods because this is the shortest (and thus simplest) setting in which we can compare "faster" and "slower" reactions by the incumbent.

So we look at a three-period game and use subscripts *0, 1, 2,* and *3* to denote values at the start of the game, at the end of period *1,* at the end of period *2,* and at the end of period 3 (and thus the game). An incumbent ("he") and an entrant ("she") can compete in two segments, a small niche, and the main market, using either a traditional or an innovative business model. We assume that each business model depends on one supporting resource no matter which market is it is used in and we will use *t, T* and *i, I* to denote the amounts of these resources controlled by the entrant and the incumbent, respectively.

To keep things simple, we assume that the firms only care about the main segment and that this is "won" by the firm that, at the end of the game, is "strongest" in that segment.[7] If the incumbent uses the traditional business model, its strength at the time is T_3 and if it uses the innovative business model, its strength is βI_3, where β is an indicator of the relative efficiency of the innovative business model. For the entrant, the corresponding magnitudes are t_3 and βi_3.[8] To fit the environments we want to study, we make two special assumptions. First, the resource supporting the innovative business model is non-rival.[9] Second, the incumbent will react immediately to any incursions into the main market, but could otherwise be ignoring the game until the end of period p.[10] So p is the last period before the incumbent reacts, such that $p = 3$ means that he never reacts, $p = 0$ means that he reacts immediately, etc. This is a key parameter in the model; it summarizes how the incumbent acts as a result of the information available him and his interpretation of it.

The initial resource stocks, (I_0, T_0) and (i_0, t_0) are $(0, \tau)$ and $(0, 0)$, respectively, and a firm can grow its stock of the resources in two ways. If it uses the corresponding business model in one or both segments, learning-by-doing effects mean that its stock of the resource automatically will grow by 1 (one) unit per period.[11] It can also invest in its resources, but investment is expensive, and firms would prefer to avoid it. The incumbent's total investment in all resources can at most be K per period, while the entrant can invest at most $k \leq K$, reflecting a lower level of profitability and limited access to capital markets.[12] So the parameters of the model are $\beta > 0$, $\tau \geq 0$, $p \in \{0, 1, 2, 3\}$, and $0 < k \leq K$,

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[7] Specifically, suppose that two firms, each with its own set of resources and its own business model, compete in a given market. Their relative "strengths" is then an abstract construct that allows us to identify the "winner". We do not specify what winning means, but the meaning of strength clearly depends on it.

[8] To keep the analysis uncluttered, we will assume that the resources are equally effective in both segments.

[9] We do not need to make any assumption on the other resource, but if is rival, it could explain the fact that the incumbent does not compete in the niche.

[10] It is reasonable to assume that the incumbent, for any value of p, would react at once if the entrant were to attack his core market. However, since the firms only care about winning at the end of the game, the entrant will never attack prematurely. (Attacking earlier does not make her any stronger at the end since she either way is using and thus growing, her resource.)

[11] A constant rate of learning is obviously unrealistic, but a variable rate would not change the results in any material way.

[12] It is clearly realistic to assume that the entrant has access to less capital. The gap may change over time but adding that richness to the model would not change the qualitative results.

With this notation, the incumbent will see no reason to incur any investment expenses prior to reacting and by then his stocks will be $(I_p, T_p) = (0, \tau + p)$. Since only the maximal strength matters, once the incumbent reacts, he will either start using the innovative business model and invest as much as possible in the resource supporting it, or he will stay with the traditional business model and invest there. His strength at the end of period *3* will thus be $Max \{\beta(3 - p)(1 + K), \tau + 3 + K(3 - p)\}$. The entrant will use the new business model throughout and invest as much as possible, giving her a final strength $\beta 3(1+k)$. So the entrant will beat the incumbent in the main market iff

(C) $$\beta 3(1+k) > Max \{\beta(3 - p)(1 + K), \tau + 3 + K(3 - p)\}.$$

Condition *(C)* gives us the following comparative static results:

Result 1: *The entrant is more likely to win if*

-the incumbent is slower to react (p is larger),

-his maximal rate of investment is lower (K is smaller), and

-she can invest at a higher rate (k is bigger).

Result 2: *If $(\beta - 1)(3 - p)(1 + K) - p < \tau$, such that the incumbent prefers to stay with the traditional business model, the entrant is also more likely to win if*

-the innovative business model is comparatively more efficient (β is bigger), and

-the incumbent's initial lead is smaller (τ is smaller).

Result 3: *If $p = 0$, the incumbent can always win by immediately adopting the innovative business model and investing to grow the supporting resource at rates higher than $1 + k$.*

Extensions

The model is obviously extremely stylized and while it gives intuitively pleasing results, at least three extensions are useful. Two of them are motivated by the possibility that the incumbent does not immediately know the precise value of β. [13] While this could be mechanically handled by replacing β with its prior expectation, $E\beta$, in the expression governing the incumbent's choice of business model, it raises two deeper points about the incumbent's alternatives.

First, the incumbent might want to "take out an option" to hedge against the possibility that the ex-post value of β turns out to be large. To this end, many incumbents evaluate alternative business models by setting up autonomous business units, thereby "disrupting themselves" without going all in and betting the profit stream from their core business on the possible superiority of the entrant's idea (Gans, 2016a). In our model such options benefit incumbents in two ways; by helping them gather information about β and by allowing them to grow resources needed by the innovative business model. Walmart is a good example of this. They tried some supercenters early on and after a while changed their discount stores to those. They later launched Sam's Club to test out/insure against warehouse clubs and Walmart.com to look at on-line retailing. Similarly, Blockbuster could have launched a mailing option for hard-to-get movies in its central inventory. In other cases, it is much less easy to conduct experiments. For example, Ford would have to manage huge culture clashes to span both high-design and low-cost models and still be effective at both. In such cases, the incumbent may be slow to react simply because he initially under-estimates β.

The second possibility is that the incumbent *rationally* decides to disregard the entrant. This would be optimal if the prior probability distribution assigns a high probability to β being very small and it is expensive to take out an option. This is not inconsistent with the model and clearly explains some apparent examples, but I do not think that is convincing in all of them. For example, the market cap of Amazon was $1.7 Trillion in February 2021, while Barnes and Noble

[13] We are indebted to an anonymous referee for this observation.

was sold for $475M in June of 2019. Beliefs would have to be extremely low to justify ignoring that kind of upside.

Third, as mentioned in footnote 8, we have assumed that the resources are equally effective in both segments. This may well be true in some examples, but surely not in others (think about a brand name or loyal customers). We could model this by replacing β with $\alpha \leq \beta$ in the expression for the entrant's strength in the main market.

Testing

The three Results, and those we could obtain from various extensions, can in principle be tested, but it is not easy to get an unbiased sample. In particular, it is hard to identify long dead entrants that met the conditions of the model, tried, and failed. To do so, we would need to look at historical documents to find examples in which firms aimed for industry dominance but failed. As suggested by Result 1, the problem with doing this is that firms will be interested in keeping such plans to themselves at least for a while; you do not want to announce a challenge to Goliath the day you are born. This makes it hard to identify start-ups that had plans to eventually beat out a dominant incumbent but failed along the way. The best we have been able to do so far is to look at a couple of examples in which entrants failed after they had announced plans to become dominant in markets served by several smaller incumbents. Masco's venture into furniture (Porter and Montgomery, 1989) is one such example. After successes in several low-tech consumer durables, including faucets, the company spent $2B from 1986-96 on a failed attempt to become the "Proctor and Gamble of the furniture industry". The idea was to transfer "management skills" from the faucet industry – not from a niche in the furniture industry. It did, however, not work. Masco never became more efficient than the incumbents, presumably because the resource did not transfer from faucets to furniture (implying that Masco's real strength in the industry was smaller). A more obscure example is Prelude Lobster (Weigle, 1972). The company wanted to become the "General Motors" and the "Proctor and Gamble of the lobster business" by using scale economies (many large boats catching many large offshore lobsters), branding their lobsters, and vertically integrating into distribution. While such business

models have led many other firms to success, it did not work well in the lobster industry (in the language of the model, it had a small β).

Since we can find parameter values such that condition *(C)* holds, we have established that the mechanism *can* work on paper. To show that it can work in reality, we would like to show that there exist cases in which all its assumptions hold simultaneously.

III. CASES WHICH THE MECHANISM CAN EXPLAIN

To evaluate if the mechanism applies to a set of cases, we start by listing the key assumptions underlying it.

Key Assumptions: *The key assumptions underlying the mechanism are these:*

(a) The entrant starts out in a niche that was unserved by, or unimportant to, the incumbent (McNair, Christensen).

(b) The entrant uses a different business model (Christensen).

(c) This business model can be used in both the niche and the incumbent's core business.

(d) The entrant's business model depends on some resources that are not used in the incumbent's business model.

(e) The entrant's business model does not depend on the hardest-to-replicate resources that are used in the incumbent's business model.

(f) At least one resource leveraged in the entrant's business model is non-rival, grows through learning-by-doing effects, and capable of being transferred from the niche to the incumbent's core business with little loss of efficiency.

(g) [-Since (C) is "unlikely" to hold if $k << K$ and $\beta \leq 1$, the entrant's business model is not too inefficient at small scale and most likely more efficient than that of the incumbent.]

To demonstrate existence, we look at the details of our four motivating examples and compare them to the Key Assumptions. Since we already argued in the Introduction, that these entrants were successful, that they started out in small niches, and that they used innovative business models, we will focus on assumptions (c) – (g).

Amazon

(c) The online business model can be used to sell technical and hard-to-get books as well as best sellers etc.
(d) There are many relevant resources, but it is important that a big group of customers have used the site and have had good experiences. This gives you an email list and saves on customer acquisition costs.
(e) Amazon does not need physical retail stores.
(f) Since the same people buy in both markets, the resources have value in both and they are, to a fair approximation, non-rival.
(g) Apart from the software there are few fixed cost (such as real estate and sales assistants).

Netflix

(c) Both the mail order and streaming business models can be used to rent older and hard-to-get movies as well as current block busters.
(d) As in the case of Amazon, it is important that a big group of customers have used the service and have had good experiences. This gives you an email list and saves on customer acquisition costs.
(e) Netflix does not need physical retail stores.
(f) Since the same people buy in both markets, the resources have value in both and they are, to a fair approximation, non-rival.
(g) The software is the only significant fixed cost.

General Motors

(c) Once people are willing to pay a bit more for stylish cars and trust that they work, you can use the differentiated multi-brand business model in the mainstream auto market.
(d) Design skills and brands, both of which are non-rival, are important in all segments of the auto industry.
(e) Since GM does not compete on costs, it does not need to have very large specialized assembly lines.
(f) In terms of willingness to pay versus costs, the GM business model was very successful in appealing to Ford's original customers.
(g) There are economies of scale in assembly line manufacturing, and the multi-brand format made for shorter runs and thus higher costs per vehicle. However, the added costs were smaller than the increase in customer valuations due to higher product variety.

Nike

(c) The design plus outsourcing model can work in any segment of the foot ware industry.

(d) Since many of the customers are the same, skills in design, the ability to manage outsourced production, and brand building can be used in all corners of the market for athletic foot ware. These are all non-rival resources.

(e) Nike did not need any of its own factories.

(f) Outsourcing is equally efficient for all types of shoes.

(g) Outsourcing carries very low fixed costs and is thus fairly efficient at low scale. In addition.

The four examples are obviously just that, examples; and even the very examples that helped us formulate the theory. They are, however, economically significant.

IV. WHY ARE THE INCUMBENTS SLOW TO REACT?

There is a lot of literature on organizational inertia and several mechanisms have been proposed. [14] The purpose of this Section is not to contribute to that literature. Rather, we want to argue that three aspects of the incumbents' situations, as depicted in our proposed mechanism, make it more likely that they are slow to change their business models. This is important since, by Result 3, the incumbents could have won by copying the entrants' business models if they became aware of the potential challenge sufficiently early. So the mechanism can only explain the failure of the incumbents if they react too slowly. On one hand this is a costly mistake (and therefore one that is important to avoid), but it is also a failure to make a "big", and perhaps therefore harder, change. Since these are large sophisticated firms run by groups of highly trained and talented managers, it is not a pleasant property, nor one used in typical economic models. However, in all our examples, the dethroned incumbents only reacted after significant delays and then often went through several failed defenses before settling on something that could have worked if done much sooner.

The three aspects making it more likely that incumbents will be slow to change their business models are these: First, that the entrant starts out in a segment of little or no interest to the incumbent. Second, that the entrant's business model is unfamiliar to the incumbent and the key resource has no value in his business model. Third, that the new business model does not use at least one of the resources underpinning the entry barriers that historically have protected him. We will discuss them in order.

<u>The entrant starts out in a segment of little or no interest to the incumbent.</u>

In some cases this allows the entrant to "fly under the radar" in the sense that the incumbent, at least for a while, simply does not notice what is going on. This might have bought

[14] See Rumelt (1993) for an extensive list and Gilbert (2005) for a more recent treatment.

Nike some time, but we suspect that it is rare. A more common pattern is probably one in which the incumbent does not see any threat to his main market and thus pays little attention. After all, since the incumbent is leaving the segment more or less alone, it suggests that he sees it as relatively unrelated to the main market (which is may well be if one uses the traditional business model.) As discussed in Section II, the decision to pay little attention to the segment is no doubt consistent with the (rational) tendency to pay more attention to things deemed more important (Ocasio, 1997). It goes without saying that you are not going to make a critical decision based on information you hardly paid attention to.

The entrant's business model is unfamiliar to the incumbent and depends on a resource that has no value in his business model.

While the first point affected attention, this affects evaluation. It is obviously harder to evaluate unfamiliar threats, but beyond the noise, the literature suggests that there is a bias towards underestimation. For example, Henderson and Clark (1990) and Appleyard, Hatch, and Mowery (2001), describe how companies in the semiconductor industry had a tendency to conclude that new processes were "wrong" when the actions required to execute them ran counter to deeply ingrained (and repeatedly reinforced) beliefs about what it takes to win in the industry[15].

It is not hard to find further anecdotal evidence of this: In personal communications, two mid -1990's Barnes and Noble managers both said that the almost universal belief in the company was that online sales in general, and Amazon in particular, would end up with a small market share and low margins. Another example is Blackberry and Nokia's failure to react to the 2007 launch of the Apple iPhone. Blackberry was far and away the dominant internet connected phone at the time, but according to McNish and Silcoff (2015), the executives at Research in Motion did not see the iPhone as a threat to their core business because it had "rapid battery drain and a lousy keyboard". Nokia, whose at that time dominant Symbian operating system was

[15] A similar but more general point is made by Gavetti (2012).

another casualty, was slow to react because its top management also felt that the iPhone's battery life would prevent consumer acceptance (Lane, 2016).

These incumbents had become, and stayed, dominant by outcompeting several other challengers. There is much to suggest that their business model is the best one. Their strategies and the stories that support them, the resources historically held up as the reasons for their success, and even the careers of the top decision makers, are all tied to it. Combined with the fact that most entrants fail, you can see why incumbent managers would have a strong bias toward thinking that challengers with unfamiliar business models will fail or remain relatively unimportant niche players.

The entrant's business model does not use at least one of the resources underpinning the entry barriers that historically have protected the incumbent.

Many forces work to make it less likely that the incumbent will adopt the new business model. First, if he were to change, he would no longer need a resource that, in the past, has constituted an entry barrier and thus protected him from competition. This will often activate a defensive response because of the "sunk cost" effect (Arkes and Blumer, 1985). Second, as mentioned in the previous subsection and documented by, among many others, Henderson and Clark (1990), Appleyard, Hatch, and Mowery (2001), and Tripsas and Gavetti (2000), cognitive biases also work against radical change. Third, evolutionary path dependence, which can be rationalized by "behavioral continuity" (Nelson and Winter, 2002) and related mechanisms (Barnett and Carroll, 1995: Aldrich, 1999: Gavetti and Levinthal, 2000), will work against a change of something as fundamental as a business model.[16]

In our examples, both Barnes and Noble and Blockbuster would have found themselves saddled with a largely superfluous network of brick and mortar stores, while Ford would be unable to leverage its ultra large and specialized assembly lines, and Converse would see less need for its core rubber manufacturing technology. Put another way, if these incumbents were to

[16] Gans (2016a, b) gives several examples of this, and Dosi, Nelson, and Winter (2001) contains more papers on the topic.

adopt the new business models, they would have to cannibalize their core business models and replace them with a less profitable and perhaps more competitive alternative. Even in cases where the advantage of the new business format (at least with hindsight) seems obvious, as was the case for Blockbuster, many firms have proven unwilling to scuttle their core business models.[17] In fact, Netflix's embrace of streaming at a time when its existing business was mailing CD's through the post office, is often the only example offered of a firm heeding the, often voiced but rarely followed, advice to "keep the cannibals in the family" (e. g. Kumar, 2004, p. 87).

The incumbents had a lot of employees, what if some of them did not fall prey to the biases?

Even taking into account the fact that opinions, biased or not, tend to be shared within organizations (e. g. Janis, 1972; Stanley, 1981; Kayes, 2004), it is reasonable to conjecture that at least some employees had what turned out to be more correct assessments of the threats posed by the entrants. Unfortunately, very few companies have climates that encourage dissenters to voice their opinions and be heard; especially when the issue is so close to the core of the business. The problem is not just that the important people have other beliefs, but also that they typically have political interests in the status quo. If the firm pursues a new business model, other managers might gain power, other resources will attract investments, and other parts of the business would get attention. So even if the new business model were to succeed, and maybe especially then, many top managers will tend to be against a change.

Reflections

For starters, it should be mentioned that several of our dethroned incumbents eventually do copy the entrant's business model, but typically only very late after other defensive measures have failed.

[17] Barnes and Noble had an online bookstore when Amazon were founded in 1994 and an e-reader many years before Amazon's Kindle. However, they closed the former and delayed introducing the latter. Along similar lines, Polaroid had digital camera technology very early, but did not introduce a digital camera (Tripsas and Gavetti, 2000)

Taking this further, we do not mean to suggest that large, sophisticated companies always react too slowly when faced with challengers following the strategies described here. In fact, they probably get it right most of the time. What we do mean to suggest is that the kind of inertia that is needed for the mechanism to work is more likely in such situations. We realize that even this weaker claim runs counter to our notions of rationality and equilibrium; ideas that have served us extremely well. We would, however, like to make two observations. First, we are by now somewhat comfortable with predicting mistakes in individual decision making. Second, we all "know" that organizations tend to exhibit resistance to change and typically explain that with reference to political processes – that is, lack of complete managerial control. Combining these two observations suggest that the firms are more prone to inertia when predictable biases by individual top-managers and organizational resistance to change pull in the same direction. Situations in which a radical change of business model is required probably falls in that category, but there are no doubt others as well. Identifying them is an important topic for future research.

V. CONCLUDING THOUGHTS

Normative Implications

The analysis describes a mechanism in which the three critical determinants of entrant success are (i) how fast she can accumulate resources, (ii) how much time she has before that incumbent responds, and (iii) the extent to which her business model is more efficient than that used by the incumbent. The normative implications below are based on the assumption that the entrant plans to eventually enter the incumbent's core business. There are probably many ultimately successful entrants who only later realize that they have that option. We will not try to make any general prescriptive statements about how to do things more efficiently - that no doubt depends critically on the context. However, we can say a few things about points (i) and (ii).

From point (i), the entrant's first goal should be to, as fast as possible, accumulate resources that can be transferred to the incumbent's main market. She should be accumulating resources (loyal customers, brand awareness, an installed base, technological skills,

manufacturing experience,..) as fast as possible. Like Amazon, Google, Facebook and many others, she should not be focusing on taking profits until her position is reasonably secure. Her ability to do this obviously depends on funding from VCs and retained earnings (or a cash flow from operations that is not too negative), but also on the size of her initial niche. Contrary to the simplifying assumptions of the model, she will benefit from more "free" resource growth through learning by doing if her operations are more extensive. Since larger firms and larger markets attract more attention, this often conflicts with point (ii) above. One possible way to minimize the conflict is to start by selling into markets or segments that are unserved or unimportant to the incumbent. These markets can be small segments of larger markets served by the incumbent, or foreign countries. Better yet, they can be entirely different markets that happen to use some of the same resources. Once you start operations in the main segments served by the incumbent, he will surely notice you and probably pay attention. However, being noticed is not the same as being the object of a counterattack. The incumbent might decide that you do not pose a serious threat and that you will "go away" more or less by yourself or at least never gain any significant share. As discussed in Section IV, the odds of being under-estimated in this way are much better if you do things in a "new" and never-before-seen way.

Keeping the above in mind, the incumbents should be scanning resource related industries, not just those that serve the same customers, to catch any potential challengers as early as possible.

Summary

We have described a mechanism that can account for some cases in which an initially resource poor entrant manages to eventually unseat a dominant well-endowed incumbent. The paper makes four theoretical contributions. First, it articulates a general framework within which we can understand and explain the phenomenon. Second, it endows the phenomenon with boundaries: what is a set of necessary properties of the industrial environments in which this is possible? Third, it connects the theory of disruption to the RBV. Fourth, it yields several new comparative static predictions.

Unfortunately, attempts to test the theory are complicated by the fact that it is hard to find firms that tried to exploit the mechanism but failed. There is no doubt many, unobserved, such firms and we could learn from studying them.

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