RESEARCH NOTES AND COMMENTARIES

COMPETITIVE ADVANTAGES EXIST: A CRITIQUE OF POWELL

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This response is a plea for considering cautiously the use of formal logic and philosophy in strategic management. In a recent article, logical and philosophical considerations on the relationship between competitive advantage and superior returns led to a pragmatic view of competitive advantage. First, we propose a different logical analysis of the links between competitive advantage and superior performance. Using the same premises, this analysis leads to different conclusions. Second, our commentaries suggest that philosophy should be employed for opening discussions and perspectives rather than as an instrument for conviction. Copyright © 2002 John Wiley & Sons, Ltd.

INTRODUCTION

In a recent article, T. Powell (2001) provides several interesting logical and philosophical considerations on competitive advantage. As a performance hypothesis, competitive advantage has received little formal justification, and Powell investigates whether competitive advantage is a legitimate scientific concept. Powell's results are that (1) competitive advantage is not a necessary and sufficient condition for superior returns; (2) there is no falsifiable theory of competitive advantage without resort to ideology, dogmatism or faith; (3) at best, competitive advantage is a metaphor which is useful to the strategic management community. In

this response, we show that (1) logically, the conjunction of competitive advantage and a capable organization is sufficient and necessary to lead to superior returns; (2) alternative interpretations of the philosophers cited by Powell exist; (3) there is no necessity to adopt Powell's pragmatic view of competitive advantage, and there is room for more positivist research on the relationships between competitive advantage, organization, and superior returns. In this critique, we follow the method and the concepts used by Powell as well as the three-part structure of his article.

COMMENTS ON LOGIC

Logical implications and INUS condition

Powell studies the relative validity of three logical expressions combining two propositions:

Proposition p: Firm i achieved sustained superior performance.

Proposition q: Firm i had one or more sustainable competitive advantages.

The first comment deals with the relationships between Propositions p and q and the manner Powell uses the notion of implication in his paper. Powell derives from p and q three logical expressions and evaluates their truth content. Yet, Bunge (1979) and Wunsch (1988), for instance, have shown that there exist more than three types of logical and causal relationships based on implications. We review Powell's three logical expressions, using the terminology used by Bunge and Wunsch, and propose another logical implication ignored by Powell.

First, $p \equiv q$ is 'simple causation,' in which sustainable competitive advantage is a necessary and sufficient condition for superior performance. Second, $q \supset p$ is an example of 'disjunctive multiple causation.' In this case, the condition is sufficient but non-necessary. Several causes may contribute to the effect, and each of them is sufficient to obtain the result. Whether the causing factors are simultaneous or not characterizes different cases of multiple determination (simultaneous, cumulative, additive, and so forth). Observation of superior performance may be due to various disjunctive multiple causes, but competitive advantage entails superior performance. Third, $p \supset q$, q is a necessary but non-sufficient condition and corresponds to a 'conjunctive multiple causation.' Other conditions (different from q) may have produced the effect p. Some conjunctive conditions may also be necessary for the condition to apply and the event to occur.

Powell's concerns refer to the impossibility of inferring $q \supset p$ from $p \supset q$ without falling into the 'logical fallacy of affirming the consequent.' The major premise 'if firm i achieved sustained superior performance, then firm i had one or more sustainable competitive advantages' is arguably false (Powell, 2001: 881). Powell concludes that $p \equiv q$ is not a reasonable hypothesis. However, Powell fails to acknowledge other types of causation like the 'INUS condition.'

The INUS condition results from the interaction of disjunctive and conjunctive causations. INUS is an acronym coined by Mackie (1965) for 'an Insufficient but Necessary part of a condition which is itself Unnecessary but Sufficient for the result.' An INUS condition is an insufficient but necessary part (conjunction) of the factor that produces the effect; that factor being non-necessary but sufficient (disjunction) to produce the effect. An example helps understand this INUS condition. A house is burning. A short circuit is an unnecessary but sufficient condition that may have caused the fire: unnecessary because a fire may have other causes, and sufficient because in the presence of inflammable objects, the fire may catch. Inflammable objects are in turn necessary conditions for the fire to burn but insufficient alone to ignite. If the police officer can determine the occurrence of a short circuit and eliminate all other possible sources of fire, she can conclude that the short circuit was the cause of the fire. Finally, in this case, the short circuit is a non-sufficient and unnecessary cause of the effect (the fire). According to Marc-Wogau (1962: 226), an INUS condition is 'a necessary condition *post-factum.*'

Strategists posit competitive advantage as a source (cause) of superior performance. They track the clues of competitive advantage in a firm's resources and relate those to observed performance. Competitive advantage is, for strategists, an INUS condition for performance. Competitive advantage does not produce superior performance by itself. Powell labels $p \equiv q$ 'implausible' (Powell, 2001: 877). We assert that competitive advantage is a sufficient but not-necessary condition requiring a conjunctive factor, which is presumably organization. Organization is the necessary but insufficient factor that in conjunction with competitive advantage implies superior performance. Therefore $p \supset q$ might be false as Powell asserts. However, this neither invalidates $q \supset p$ nor impedes strategists from finding that superior performance entails competitive advantage.

Comments on competitive disadvantage

The second step of Powell's demonstration relies upon the combination of Propositions p and q with Proposition r, which concerns the existence of competitive disadvantage.

Proposition r: Firm i had competitive disadvantages.

Interacting Propositions q and r (absence vs. presence of competitive advantage and absence vs. presence of competitive disadvantage) gives a

2×2 matrix. At first Powell's logical analysis of empirical cases does not allow $p \supset q$. Furthermore, the absence of competitive disadvantages forms a sufficient condition for firms to earn superior returns, thus invalidating $p \supset q$. In addition, a brief probabilistic argument leads Powell to find that the probability that some firms with competitive advantages achieve superior performance is non-zero. He concludes:

> In other words, the only way ex post performance data can justify the inference that competitive advantage (and only competitive advantage) produces superior performance, is by assuming what it seeks to prove, namely that competitive advantage produces superior performance, and the absence of competitive advantage precludes superior performance. Because these assumptions could only be justified in a world without competitive disadvantage, the conclusion again emerges that superior performance cannot be understood apart from competitive disadvantage. (Powell, 2001: 879)

The introduction of competitive disadvantage raises two important concerns. First, Powell's definition of competitive disadvantage is far from clear, which confuses his further demonstration.[1] Second, we cannot infer from $p \supset q$ and $p \equiv q$ being both false the conclusion that there is no scientifically testable theory of competitive advantage. We turn to an INUS argument to show a different analysis, using Proposition s.

Proposition s: Firm i had a capable organization.

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[1] Despite Powell's efforts it seems difficult to logically differentiate competitive disadvantage from the negation of competitive advantage. Competitive advantage and competitive disadvantage 'are quite independent—if competitive advantage stems from inimitable, idiosyncratic resources, competitive disadvantage is not merely the non-existence of such resources (which would create economic parity), but rather the failure even to satisfy the minimum success requirements or "strategic industry factors" required for any firm' (Powell, 2001: 877). This is a very literary definition that mixes logical definition of competitive advantage ($q \supset p$) with theoretical arguments (imported from the resource-based view that Powell will later condemn) and exogenous elements (the minimum success requirements). Powell contradicts his logic by introducing arguments alien to the logic he used for defining competitive advantage. Notably, he uses empirical results and infers logical considerations from these results without commenting on the coherence of the variegated theories that underlie them. There is a blend between the logical level of analysis and the interpretation of exogenous results. In addition, Powell does not consider that competitive advantage has a sound theory underlying it. It seems difficult to develop an even more robust theory of competitive disadvantage from this basis. And the short but complex before-mentioned citation does not fulfill this role.

We derive a new expression from Propositions p and s: $p \supset s$; i.e., a capable organization is a necessary but not sufficient condition for superior performance. $p \supset s$ is an expression that is theoretically true from many different perspectives. Capable organization may mean cost efficient (economic perspective), transaction efficient (transaction cost perspective), able to learn (evolutionary perspective), able to manage agency relationships (agency theory), able to play with selective pressures, etc. It is beyond the scope of this critique to discuss what is the best definition of a capable organization. We do not focus on the content of the definition but on its logical relationship with superior performance. The minimal proposition of a capable organization relative to competitive advantage is that by definition

$$\text{(Expression A)} \quad (q \ldots s) \vee \vee r$$

i.e., that there is non-equivalence (or exclusive disjunction) between the association of competitive advantage and capable organization with competitive disadvantage. Basically, expression (A) asserts that the association of a competitive advantage and a capable organization cannot logically be a competitive disadvantage.

From $q \supset p$ and $p \supset s$, we generate two logical expressions, using the INUS condition.

$$\text{(Expression B)} \quad (q \ldots s) \supset p$$

$$\text{(Expression C)} \quad p \supset (q \ldots s)$$

First, expression (B) means that the conjunction of q and s implies superior returns. As we accepted $q \supset p$, under the condition that s does not annihilate q (which we assume as part of the definition of a capable organization in expression A), then $(q \ldots s) \supset p$. Second, from $p \supset s$ and under the condition (A), we can infer $p \supset (s \ldots q)$ because s is a necessary condition for superior returns. Third, under the (A) condition and from a logical standpoint, we can derive:

$$\text{(Expression D)} \quad p \equiv (q \ldots s)$$

In expression (D), if we observe sustained superior performance, then it must be the case both that sustainable competitive advantage is present and that capable organization is present. Powell could not infer from $p \supset (q \ldots \sim r)$ that $(q \ldots \sim r) \supset p$,

because neither q nor r were necessary conditions. However, in our model, s is a necessary condition for superior performance. Therefore, we can infer from p ⊃ s that p ⊃ (q . . . s).

In less technical terms, why do we obtain a different result from Powell's logical considerations? This different result proceeds from three reasons. First, Powell used in his logical deductions double negations (absence of competitive disadvantage) while we use assertions. In logic, the combination of negations can lead to inaccurate conclusions.[2] However, true propositions do not imply false conclusions, and this is why we used a positive proposition (s) instead of a negative one (r). Second, Powell was not complete in his exposition of the logical combinations leading causes to an effect. Notably, he disregarded the possibility of INUS conditions as valid conditions for the occurrence of an effect (superior returns). Third, (D) is true under the condition (A). This is a different 'hidden assumption' from the ones Powell put forth nicely in his probabilistic demonstration.

We readily acknowledge that from an empirical standpoint everything hinges around the observability of both competitive advantage and capable organization. As mentioned earlier, INUS conditions are necessary conditions *post factum*. This means that (a) researching *ex post* proxies for competitive advantage to relate them to superior performance is a reasonable method; (b) inferring that building competitive advantage will entail superior performance is not accurate but not completely mistaken, under the necessary but insufficient condition of the presence of a capable organization. In this short response, we leave open the question of the observability of these factors as well as of their empirical contents.

COMMENTS ON PHILOSOPHY

In the third step of his demonstration, Powell bases his reasoning on Kant's distinction between analytic and synthetic propositions. 'All analytic propositions are, by definition, true,' says Powell. By contrast, synthetic propositions can be true or false, i.e., tested in reality. Powell's main argument is to consider firm heterogeneity as an analytic proposition and resource-based propositions as tautological: 'If resource-based propositions were synthetic (i.e., had empirical content), there would be a possible world in which resource-based propositions were false.' For Powell, the only possibility is to consider competitive advantage a pragmatic abductive hypothesis, which is an imperfect, goal-driven, empirical principle of truth, useful for strategy scholars and practitioners.

First, Powell's interpretations of Kant's works seem to be questionable. From our reading, Kant does not distinguish between analytic and synthetic propositions, but *judgments*. This is an important difference. A proposition can be true independently of its content. A judgment involves both the form and the content of the proposition (see footnote 2). The difference between propositions and judgments goes beyond the truth of the propositions to refer to the truth content of the judgments.

Second, it seems inaccurate to pretend that firm heterogeneity is a Kantian analytic judgment. An analytic judgment on firm i does not add anything to its subject. For example, an analytic judgment on firm i is for instance 'Judgment (z): firm i is profit-oriented.' However, stipulating two firms i and j involves the recognition of another principle, the principle of difference or plurality (what Kant calls a category). Assume Judgment (z′): 'firm j is different from firm i,' representing the idea that firms i and firm j are heterogeneous. To pose the truth content of (z′), one requires a synthesis among the plurality of potential or existing firms. Hence, we may agree that (z′) is an *a priori* judgment, but disagree with the fact that it is an analytic judgment as (z). Proposition (z′) is exactly what Kant calls an *a priori* synthetic judgment.[3] In this line, firm heterogeneity is not different from

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[2] A Latin maxim formulated this property a long time ago: 'Verum sequitur ad quodlibet, Ex falso sequitur quodlibet' (Everything implies truth, false implies anything).

[3] Kant (1965), in his *Critique of Pure Reason*, distinguishes *a priori* and *a posteriori* judgments, which means *ex ante* and *ex post* empirical experience. What Kant says is that most *a priori* judgments are analytic, which means that the attribute is included in the subject. He gives the example of 'all bodies have spatial dimensions'. Synthetic judgments use our experience to associate attributes that are not contained in the subject; this happens necessarily *a posteriori*, after empirical experiences. For instance, 'all bodies have a weight'. Next, Kant asks whether *a priori* synthetic judgments are possible or not, which means the possibility that synthetic judgments exist in our faculty of reason before any experience. For instance, how can we conclude that $7 + 5 = 12$? This conclusion is neither contained *a priori* in 7 or 5 nor is it derived *a posteriori* even if empirical tests validate the truth of this judgment. Kant develops a theory of truth in his *Critique of Pure Reason*, and argues that any science contains *a priori* synthetic judgments that serve as basic principles for their development.

perfect competition, which is 'neither empirical nor rational, but axiomatic' (Powell, 2001: 881).

Third, Powell's main argument relies on the unfalsifiable heterogeneity hypothesis. He asserts that 'whereas perfectly competitive conditions cannot be true either rationally or empirically, the heterogeneity assumption cannot be false' (Powell, 2001: 882). This crucial argument seems not to be valid, however, from either a logical or a methodological perspective. First, logically, this assertion is contradictory with Powell's other assertions. Notably, recognizing 'perfect competition' as falsifiable implies that 'firm heterogeneity' is falsifiable—both assumptions hinge on the identity function (see Appendix for a demonstration). Second, from a methodological standpoint, it is erroneous to combine in the same sentence an assessment of perfect competition at the empirical level ('cannot be true') and firm heterogeneity at the axiomatic level ('cannot be false'). If perfect competition is considered an axiom, then firm heterogeneity must be considered the same. Empirical tests can validate or invalidate the hypotheses derived from the axioms in *both* cases, and not only in the case of market competition.

From this point, we disagree with the rest of the article. Particularly, accepting competitive advantage and other strategic concepts as 'mere language we play with' is simply not valid either logically or philosophically from a Kantian perspective. From the premises proposed by Powell's article, it seems difficult to concur with his defence of a fashionable but controversial pragmatic stance (Sokal and Bricmont, 1998).

CONCLUSION

We should be cautious in applying logic to strategic research. Formal logic deals with propositions, not with judgments. We should be careful in using logic as a main method to defend isolated ideas. Only theories, i.e. sets of propositions, can provide an acceptable basis to test hypotheses, assess the truth of judgments, and proceed forward in research. Philosophy also brings many potential contributions into strategic management, but it should be used more to open discussions than to convince (Calori, 1998).

Moreover, pragmatism contains the risk of relativism that may disconnect our theories from managerial and strategic realities. In turn, relativism may hamper the development of theories and demote the search for truth to a mere *play on words*. In Powell's terms, the 'empirical states of affairs are indifferent to our propositions about them, [they] are neither true nor false, but simply are' (Powell, 2001: 884). Yet, a theory does not determine the results of empirical research, and empirical research does not generate its own interpretations (Sokal and Bricmont, 1998). We paraphrase Powell: empirical states of affairs are *not* indifferent to our propositions about them—they are *either* true or false. In line with critical realism (Kwan and Tsang, 2001), we defend the ideas that (1) not all propositions in strategy research are equally true, and (2) some facts and realities do not fit any proposition in strategy research.

Finally, space limitations forced us to concentrate on our critiques of Powell's article, but we also acknowledge Powell's contributions in terms of: (1) shedding the light of logic on one of the taken-for-granted assumptions of strategic management, (2) proposing a philosophical interpretation of competitive advantage, and (3) opening the debate on the worthiness of a pragmatic approach to strategy research.

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APPENDIX: LOGICAL COMMENTS ON THE FALSIFIABILITY OF THE 'HETEROGENEITY ASSUMPTION'

The gist of the argument opposing microeconomics and the resource-based view relies upon the falsifiability on their underlying assumptions A and B.

Market competition assumption:

(A) All firms are identical

Firm heterogeneity assumption:

(B) All firms are non-identical

Powell's main argument relies on the unfalsifiability of the heterogeneity assumption. He asserts that 'whereas perfectly competitive conditions cannot be true either rationally or empirically, the heterogeneity assumption cannot be false' (Powell, 2001: 882). Overall, Powell's argumentation hinges on two propositions V and T:

[Proposition V]: A can be either true or false (i.e. A is synthetic).

[Proposition T]: B cannot be false (while A cannot be true).

We show below that V and T are contradictory. Specifically, a short reasoning shows that Powell's rejection of B as unfalsifiable (proposition T) is incorrect if (V) is accepted.

Let's put the function f, that for any x means 'is identical'.

A can be expressed with modal logic by: $xf(x)$ and B by $x \sim f(x)$ with x being a firm

1. If A can be true or false (proposition V), $f(x)$ can be true or false; then $\sim f(x)$ can be true or false, and B can be true or false. But proposition T says that B cannot be false.
2. B cannot be false means $\sim f(x)$ is always true. If $\sim f(x)$ is always true, then $f(x)$ is always false, and A is always false. But proposition V says that A can be false *or* true.

V and T are contradictory. If one wants to acknowledge the falsifiability of A, one must logically extend it to B. In pure logic, the truth content of A and B depends only upon the definition of f, i.e., the identity function that expressions A and B have in common. If one accepts that 'all firms are identical' can be true or false, then one must recognize that 'all firms are heterogeneous' can be true or false.