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# DESIGNING AND EXECUTING A "FAIR" *REVLON* AUCTION

## I. Introduction

The takeover of RJR Nabisco, Inc. (RJR), was the largest leveraged buyout<sup>1</sup> in history.<sup>2</sup> RJR's shareholders reaped a tremendous investment profit when the company's stock surged more than thirty-five points by the time the sale of RJR was completed.<sup>3</sup> The sale of RJR was achieved through an auction<sup>4</sup> of the company by the outside directors<sup>5</sup> in reaction to the surprise offer by RJR's management to take the firm private for \$75 per share in a management leveraged buyout.<sup>6</sup> The auction consisted of three bidders: RJR's management, a group from First Boston Corporation, and the leveraged buyout firm of Kohlberg, Kravis and Roberts (KKR). KKR eventually won the auction with a bid of \$109 per share to be paid in cash and securities.<sup>7</sup>

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1. In a leveraged buyout, a group of buyers purchase a controlling interest in a corporation through the use of borrowed capital. The purchasing group puts up a small amount of money and uses the company's assets as collateral for loans to finance the purchase of the target firm's stock. If the target firm is purchased, its cash flow will then be used to pay off the debt. A. PESSIN & J. ROSS, *MORE WORDS OF WALL STREET* 155 (1986) [hereinafter PESSIN & ROSS].

2. See Wall St. J., Dec. 2, 1988, at A10, col. 3. On Wednesday, November 30, 1988 the RJR Board of Directors approved the record 25.07 billion dollar bid for the company by Kohlberg, Kravis and Roberts (KKR). *Id.*

3. See Wall St. J., Dec. 2, 1988, at C1, col. 4. RJR common stock climbed from a pre-auction price of approximately \$55 per share during mid-October 1988 to \$94.5 per share on Thursday, December 1, 1988, the day after the takeover was approved by RJR's board. *Id.* Thus, in less than six weeks, RJR's common stock increased more than 70%. *Id.*

4. "An auction is a market institution with an explicit set of rules determining resource allocation and prices on the basis of bids from the market participants." See McAfee & McMillan, *Auctions and Bidding*, 25 J. ECON. LIT. 699, 701 (1987) [hereinafter McAfee & McMillan].

5. An outside director is defined as a "[n]on-employee director with no or minimal direct interest in [the] corporation." An inside director is a "[d]irector who is an employee, officer or major stockholder of [the] corporation. BLACK'S LAW DICTIONARY 414 (5th ed. 1979).

6. Wall St. J., Dec. 2, 1988 at A1, col. 6. The auction was initiated after former RJR President F. Ross Johnson initiated a bid for the company on Oct. 20, 1988 for \$75 a share. See *In re RJR Nabisco, Inc. Shareholders Litig.*, [1988-89 Transfer Binder] Fed. Sec. L. Rep. (CCH) ¶ 94,194, at 91,703 (Del. Ch. Jan. 31, 1989).

7. See, Wall St. J., Dec. 2, 1988, at A10, col. 3. KKR offered shareholders \$81 per share in cash, \$18 per share in exchangeable preferred stock, and \$10 per share in debentures convertible into approximately 25% of the acquiring company's equity, for a total of \$109 per share. *Id.* The market value, however, for RJR's common stock after the takeover was in the low to mid-\$90 range, leaving about a \$16 to \$19 gap between the offering value and the market value. See Wall St. J., Dec. 2, 1988 at C1, col. 4. The gap

While the RJR shareholders reaped a substantial premium for their shares, the auction may not have produced the maximum price for the shareholders.<sup>8</sup> Henry Kravis of KKR believed that the RJR board of directors would not stay committed to their single-round, first-price sealed-bid auction process. Therefore, Kravis did not initially submit his best bid because he correctly anticipated that there would be additional rounds of bidding where he would have the opportunity to increase KKR's bid.<sup>9</sup> Based on Kravis' strategy, it is uncertain whether the winning bid was the highest bid that KKR would have offered, or whether KKR might have bid higher if the auction either had contained a third round of bidding or had been otherwise structured differently.

In the past, courts have considered the proper role of a corporation's board of directors in response to a takeover threat.<sup>10</sup> Numerous courts have considered protests against auction procedures. In doing so, the courts have had to balance unfair auction attempts against the sanctity of the business judgment rule.<sup>11</sup> The Delaware Supreme

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occurred because KKR planned to pay only \$81 a share in cash, and \$28 a share in preferred stock and convertible debentures. *Id.* The value of the preferred stock and convertible debentures are often substantially discounted by the market. *Id.*

8. See generally Wall St. J., Dec. 2, 1988, at A11, col. 2.

9. *Id.* Mr. Kravis' strategy was based upon his belief that KKR would be able to increase its bid or that additional rounds of bidding would be held.

10. See *Unocal Corp. v. Mesa Petroleum Co.*, 493 A.2d 946, 958-59 (Del. 1985); *Revlon v. MacAndrews & Forbes Holdings, Inc.*, 506 A.2d 173 (Del. 1986).

11. See Wall St. J., Dec. 2, 1988, at A10, col. 3. See generally *In re Fort Howard Corp. Shareholders Litig.*, No. 9991 (Del. Ch., Aug. 8, 1988) (WESTLAW, DE-CS Database) (refusal of the board of directors to furnish one bidder with information about the company's value on the same terms as the management team bidder protected by the business judgment rule); *Cottle v. Storer Communications Inc.*, 849 F.2d 570 (11th Cir. 1988) (board of directors' decision to favor one bidder by granting asset lock-up agreement, accepting favored bidder's bid without resuming negotiations with competing bidder and granting \$18,000,000 termination fee protected by the business judgment rule); *CRTF Corp. v. Federated Dep't Stores*, 683 F. Supp. 422, 424 (S.D.N.Y. 1988) (board of directors' determination that the auction was still in progress without the bidding party seeking the preliminary injunction stating that it has made its final and highest bid protected by business judgment rule); *In re J.P. Stevens & Co. Shareholders Litig.*, 542 A.2d 770 (Del. Ch. 1988) (business judgment rule protected the directors' favoring one bidder by granting him a topping and a termination fee which caused competing bidder to withdraw from auction); *Yanow v. Scientific Leasing, Inc.*, [1987-88 Transfer Binder] Fed. Sec. L. Rep. (CCH) ¶ 93,660, at 98,030 (Del. Ch. Feb. 5, revised Feb. 8 1988) (question of what specific methods target company board of directors may use to elicit bids from potential acquires will normally be a matter of the director's judgment that must necessarily vary in each case.); *Edelman v. Fruehauf Corp.*, 798 F.2d 882, 885 (6th Cir. 1986) (board of directors, which used corporate funds to assist management in effectuating leveraged buyout by rejecting higher competing bid on the same terms, did not act in good faith to obtain best price for shareholders).

Court in *Mills Acquisition Co. v. Macmillan*<sup>12</sup> held that directors can design and conduct any type of auction as long as they observe the requirement of fairness for the purpose of obtaining the highest price for the shareholders. A general understanding of auction theory will aid courts in scrutinizing the actions of directors in executing auctions of companies. In addition, auction theory will aid directors in understanding how to design and execute corporate auctions and how best to respond to differing bids in order to maximize shareholder profit.

Part II of this Note presents a historical background of relevant Delaware case law regarding the obligations of directors in takeovers and control transactions. Part III explores the fundamentals of auction theory and the different types of auctions. Part IV examines the concept of the optimal auction and proposes various techniques that a board of directors can use to design an optimal auction for corporate control. Part V concludes that, by using auction theory to design and conduct an auction, and by committing to an auction process, directors will satisfy their duty to conduct a fair auction for the benefit of the shareholders.

## **II. Historical Development Of Directors' Obligations In Takeovers And Control Transactions Under Delaware Case Law**

Over the past decade, Delaware case law has outlined the fiduciary duties owed by a corporations' board of directors during takeovers and control transactions. The historical development of these fiduciary duties has influenced the application of the business judgment rule's protection of the directors' decisions pertaining to the design and execution of an auction for the sale of a company.

### **A. The Business Judgment Rule And The Enhanced Fiduciary Duties Of Directors In Takeover And Control Transactions Required Under *Unocal v. Mesa Petroleum Corp.***

#### *1. The Business Judgment Rule*

The business judgment rule is a judicial standard which is used to analyze and review corporate decision making.<sup>13</sup> Stated generally, the business judgment rule protects directors from liability for decisions

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12. [Current Transfer Binder] Fed. Sec. L. Rep. (CCH) ¶ 94,401, at 92,583 (Del. May 3, 1989).

13. Note, *Corporate Auctions and Directors' Fiduciary Duties: A Third-Generation of the Business Judgment Rule*, 87 MICH. L. REV. 276, 280 (1988) [hereinafter Note, *Corporate Auctions*].

“made in good faith and in the exercise of due care.”<sup>14</sup> The business judgment rule presumes “that in making a business decision the directors of a corporation acted on an informed basis, in good faith and in the honest belief that the action taken was in the best interest of the company.”<sup>15</sup> Under the business judgment rule, a court will not substitute its judgment for that of the board of directors if the board’s judgment can be “attributed to any rational purpose.”<sup>16</sup>

In *Pogostin v. Rice*<sup>17</sup> the Delaware Supreme Court held that the business judgment rule is applicable in takeover and control transactions.<sup>18</sup> Under Delaware law, actions taken by the board in response to takeover threats are protected by the business judgment rule only when the directors are disinterested and independent.<sup>19</sup>

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14. *In re J.P. Stevens & Co. Shareholders Litig.*, 542 A.2d 770, 780 (Del. Ch. 1988).

15. See *Aronson v. Lewis*, 473 A.2d 805, 812 (Del. 1984) (citing *Kaplan v. Centex Corp.*, 284 A.2d 119, 124 (Del. Ch. 1971) and *Robinson v. Pittsburgh Oil Refinery Corp.*, 126 A. 46, 48 (Del. Ch. 1924)). Directors are presumed to make their business decisions with due care (on an informed basis and after a reasonable investigation) and in good faith (in the honest belief that they were acting in the best interest of the corporation). See *Aronson*, 473 A.2d at 812; *Unocal*, 493 A.2d at 954. These presumptions are substantiated when the majority of the board favoring the proposal consists of outside directors. *Unocal*, 493 A.2d at 955; *Moran v. Household Int'l, Inc.*, 500 A.2d 1346, 1356 (Del. 1985); *Grobow v. Perot*, 539 A.2d 180, 191 (Del. 1988).

16. *Unocal*, 493 A.2d at 954 (quoting *Sinclair Oil Corp. v. Levien*, 280 A.2d 717, 720 (Del. 1971)). The reasoning behind the business judgment rule is based on a judicial policy of practical deference:

[b]ecause business men and women are correctly perceived as possessing skills, information and judgement not possessed by reviewing courts and because there is great social utility in encouraging the allocation of assets and the evaluation and assumption of economic risk by those with such skill and information, courts have long been reluctant to second-guess such decisions when they appear to have been made in good faith.

*J.P. Stevens & Co. Shareholders Litig.*, 542 A.2d at 781 (citing *Solash v. Telex Corp.*, [1987-88 Transfer Binder] Fed. Sec. L. Rep. (CCH) ¶ 93,608, at 97,727 (Del. Ch. Jan. 19, 1988)). See also Note, *Corporate Auctions*, *supra* note 13, at 281.

17. 480 A.2d 619 (Del. 1984).

18. *Unocal Corp. v. Mesa Petroleum Co.*, 493 A.2d 946, 954 (Del. 1985) (citing *Pogostin*, 480 A.2d at 627).

19. See *Aronson*, 473 A.2d at 812. Only disinterested directors whose conduct meets the test of business judgment can claim protection under the business judgment rule. *Id.* From a conflict of interest standpoint, directors “can neither appear on both sides of the transaction nor expect to derive any personal financial benefit from a sense of self-dealing, as opposed to a benefit which devolves upon the corporation or all stockholders generally. *Id.* (citing *Sinclair Oil Corp. v. Levien* 280 A.2d 717, 720 (1971); *Cheff v. Dunhill Int'l Inc.*, 199 A.2d 548, 554 (Del. 1964); *David J. Green & Co. v. Dunhill Int'l, Inc.*, 249 A.2d 427, 430 (Del. Ch. 1968)).

2. *The Enhanced Fiduciary Duties Of Directors In Takeover and Control Transactions Required Under Unocal v. Mesa Petroleum Corporation*

The leading case governing the fiduciary duties of directors arising from the business judgment rule applied to takeover and control transactions is *Unocal v. Mesa Petroleum Corp.*<sup>20</sup> In *Unocal* the target's board of directors determined that a two-tier "front loaded" cash tender offer by Mesa Petroleum Co. (Mesa) for approximately 37% of the company's outstanding stock at \$54 per share was both coercive and inadequate.<sup>21</sup> In order to defeat the inadequate tender offer, the board commenced a self-tender offer by the corporation for its own shares which excluded only Mesa from participation.<sup>22</sup> In *Unocal* the Delaware Supreme Court upheld the board's actions, finding that they were taken in good faith, with due care and on an informed basis.<sup>23</sup> The *Unocal* court held that the board of directors' power to act on behalf of the corporation is derived from its fundamental duty to protect the corporate entity, which includes the shareholders, from a threat that the board reasonably perceives may be harmful.<sup>24</sup>

The Delaware Supreme Court in *Unocal* recognized that in contests for corporate control, the directors are faced with an inherent conflict of interest: they desire both to earn profit for the shareholders and to retain their control of the corporation.<sup>25</sup> The *Unocal* court, therefore,

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20. 493 A.2d 946 (Del. 1985). *Unocal* is the leading case both in and outside of Delaware since many states look to Delaware for guidance on issues of corporate fiduciary duty. Note, *Corporate Auctions*, *supra* note 13, at 282 n.31 (citing *Dynamics Corp. of Am. v. CTS Corp.*, 794 F.2d 250, 253 (7th Cir. 1986), *rev'd on other grounds*, 481 U.S. 69 (1987)).

21. See *Unocal*, 493 A.2d at 949. The "back-end" of the tender offer would exchange the remaining publicly held shares by an exchange of securities which the offeror claimed to be worth \$54 per share. *Id.* However, in reality these securities are "junk bonds" because they would be highly subordinated and *Unocal's* capitalization would become highly leveraged after the takeover. *Id.* at 949-50.

22. *Id.* at 950-51.

23. *Id.* at 958-59.

24. *Id.* at 954.

25. *Id.* The *Unocal* court noted that when issues of corporate control are at stake there exists "the omnipresent specter that a board [of directors] may be acting primarily in its own interests rather than those of the corporation and its shareholders." *Id.* The target's board of directors may attempt to entrench themselves in order to retain their employment, prestige and power in the corporation. Outside directors may lose their salaried positions. See *Southdown, Inc. v. Moore McCormack Resources, Inc.*, 686 F. Supp. 595, 601 (S.D. Tex. 1988). Inside directors may lose their employment, prestige and power. *Id.* See also Coffee, *Shareholders Versus Managers: The Strain in the Corporate Web*, in *KNIGHTS, RAIDERS & TARGETS* 82 (1988). Shareholders and managers have several potential areas of conflict such as compensation, dividends, and self-dealing transactions. *Id.* In a takeover situation, the conflicts are heightened because shareholders are

imposed on directors "an enhanced duty which calls for judicial examination at the threshold before the protections of the business judgment rule may be conferred."<sup>26</sup>

In *Unocal* the Delaware Supreme Court developed a two-pronged test to evaluate directors' decisions in takeover contests.<sup>27</sup> In the first prong of the *Unocal* test, the board of directors has the burden of showing that they had reason to believe "a danger to corporate policy and effectiveness existed because of another person's stock ownership."<sup>28</sup> In the second prong of the *Unocal* test, the directors have the burden of demonstrating that the defensive measure is "reasonable in relation to the threat posed."<sup>29</sup> Under *Unocal* a court will defer to the business judgment of the board "unless it is shown by a preponderance of the evidence that the directors' decisions were primarily based on perpetuating themselves in office, or on some other breach of fiduciary duty such as fraud, overreaching, lack of good faith, or being uninformed."<sup>30</sup>

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interested in maximizing their wealth while management has an interest in maintaining its position within the company. *Id.* at 85. This conflict of interest can be explained by examining the central problem of risk in the context of the portfolio theory. *Id.* at 82-85.

The modern portfolio theory states that an investor can lower his overall risk and still achieve the same desired return by making several investments each with various degrees of risk, and different expected rates of return. *Id.* An investor using this approach should be largely immune to firm-specific risk. *Id.* Less risk averse shareholders invest their money in a company with the goal of maximizing the return on their investment. *Id.* at 84. In any investment (except those that have pure arbitrage opportunities), the investor accepts a certain level of risk in losing both his capital and an opportunity to invest his capital elsewhere in exchange for a desired financial return. *Id.* Similarly, portfolio theory can be used to analyze other types of investments such as an investment in human capital. A manager's job is his most important asset. *Id.* at 82. Managers invest their own human capital into a company in exchange for a monetary return that is paid off incrementally in the form of compensation. *Id.* Management, however, is overinvested in the firm for several reasons. *Id.* Unlike shareholders who can own many stocks, a manager is unable to diversify the risk of his human capital investment since he can only have one full-time career. *Id.* The manager is also overinvested in the firm because he is often compensated in nontransferable stock options and other firm-specific fringe benefits. *Id.* In addition, the reinvestment risk for human capital is much greater than the reinvestment risk for monetary capital since the market for senior executive employment is much smaller than the market for capital, and because managers may further produce and develop firm-specific human capital. *Id.* Thus, a manager has an extremely strong incentive to act in his own self interest and maintain his own position within a company because he cannot spread his risk and is economically wedded to the firm. *Id.* at 82-3.

26. *Unocal v. Mesa Petroleum Corp.*, 493 A.2d 946, 954 (Del. 1985).

27. *Id.* at 955; *Capital City Assoc. Ltd. Partnership v. Interco, Inc.*, 551 A.2d 787, 796 (Del. Ch. 1988).

28. *Unocal*, 493 A.2d at 955. This burden can be satisfied if the directors show that they exercised due care and acted in good faith under the circumstances. *Id.*

29. *Id.*

30. *Id.* at 958. Many courts have used *Unocal's* two-step analysis where they have been asked to enjoin the adoption or administration of a poison pill defense during a

## B. The Sale Of The Corporation And The Auction Requirement Under *Revlon*

In *Revlon, Inc. v. MacAndrews & Forbes Holdings, Inc.*,<sup>31</sup> MacAn-

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hostile takeover. *See, e.g.*, CRTF Corp. v. Federated Dep't Stores, Inc., 683 F. Supp. 422, 440 (S.D.N.Y. 1988) (use of the rights plan to fend off coercive offers and to promote additional bidding held reasonable because the auction for Federated was still in progress); Desert Partners, L.P. v. USG Corp., 686 F. Supp. 1289, 1298-300 (N.D. Ill. 1988) (court refused to enter preliminary injunction requiring the board of USG Corp. to redeem its rights plan, because the board correctly perceived Desert Partner's two-tier tender offer as being coercive, and the inadequate price of the offer threatened the company); Southdown Inc. v. Moore McCormack Resources, Inc., 686 F. Supp. 595 (S.D. Tex. 1988) (tender offeror granted preliminary injunction against target corporation's employment of a shareholder option plan and recapitalization: coercive all-cash tender offer posed no threat to the Moore McCormack stockholders). The *Southdown* court additionally noted that the defendant had been unable to solicit any competing bids and was not using the rights plan to increase the value of the bid. *Id.* at 598. Thus, the court concluded that "[i]t is time to allow the owners more freedom and less protection." *Id.* at 604. *Facet Ent., Inc. v. The Prospect Group, Inc.* No. 9746 (Del. Ch., Apr. 15, 1988) (WESTLAW, DE-CS Database) (court held that even though The Prospect Group offered an all cash offer for 100% of Facet's shares, retention of the rights plan was reasonable since it may be used to prevent coercive offers and encourage higher bidding until the target's board has completed an auction for the company); *Doskocil Co., Inc. v. Griggy*, No. 10,095 (Del. Ch., Oct. 7, 1988) (WESTLAW, DE-CS Database) (court permitted target board to keep the rights plan in place despite the fact that 86% of the company's shares had already been tendered to a hostile offeror; court held that use of rights plan was reasonable because it was still able to act as a mechanism to secure a higher offer from a potential bidder who requested an additional week to review financial information); *Capital City Assoc. v. Interco Inc.*, 551 A.2d 787, 790-91 (Del. Ch. 1988) (ordering Interco's board to redeem the rights plan because its only purpose was to protect a board-sponsored restructuring and to prevent the shareholders from considering an alternative non-coercive tender offer). The *Interco* court found that the tender offer was very close in value to the proposed restructuring and thus the threat of an inadequate bid was too mild to keep the pill in place. *Id.* at 798. The court also noted that the target's directors had enough time to arrange an alternative transaction and did not intend to institute an auction or negotiate for an increase in the pending offer. *Id.* *See also* *Grand Metro. PLC v. The Pillsbury Co.*, 558 A.2d 1049 (Del. Ch. 1988) (ordering Pillsbury's Board to redeem its poison pill, because the decision by the Pillsbury Board to retain the pill was not reasonable to the threat posed since the rights plan served no purpose in this case other than to preclude shareholders from having the opportunity of accepting Grand Metropolitan's offer); *MAI Basic Four, Inc. v. Prime Computer Inc.*, [1988-89 Transfer Binder] Fed. Sec. L. Rep. (CCH) ¶ 94,179, at 91,632 (Del. Ch. Dec. 20, 1988) (court refused to grant a preliminary injunction that would set aside Prime Computer's flip-in/flip-out shareholders' rights plan in light of the plaintiff's non-coercive tender offer). The *Prime Computer* court held that the plaintiff had not borne the burden of demonstrating that the directors of Prime Computer acted unreasonably. The court in *Prime Computer* noted that the tender offer was pending for only a short time and that the poison pill had not outlived its usefulness as Prime Computer was willing to consider further offers and was studying available alternatives. *Id.* *See also* *In re Holly Farm Corp. Shareholders Litig.*, [1988-89 Transfer Binder] Fed. Sec. L. Rep. (CCH) ¶ 94,181, at 91,641 (Del. Ch., Dec. 30, 1988) (refusing to order the Board of Holly Farm to redeem its poison pill, stating that the poison pill still has a useful role in maximizing value, but cautioning that there may come a time when the pill will no longer serve a valid purpose).

31. 506 A.2d 173 (Del. 1986). The *Revlon* court held that a lock-up agreement that

draws & Forbes Holding, Inc. which controlled the hostile bidder Pantry Pride, sued the target Revlon Inc. in order to enjoin certain defensive actions taken by the target's board of directors.<sup>32</sup> Revlon's board of directors attempted to thwart an all-cash tender offer by Pantry Pride by commencing its own self-tender offer to purchase 25% of its outstanding common stock in exchange for debt securities.<sup>33</sup> The new notes contained covenants which would limit Revlon's ability to sell assets, pay dividends, or incur additional debt unless approval was given by the "independent"<sup>34</sup> directors on the board.<sup>35</sup> Revlon's board later negotiated a merger with the leveraged buyout firm of Fosterman Little & Co. (Fosterman) which would require the board to waive the protective covenants in the notes.<sup>36</sup> When the merger, including the waiver of the covenants in the notes, was announced to the public, the market value of the notes fell substantially and irate shareholders threatened to sue Revlon's board of directors.<sup>37</sup> To escape litigation, the directors rearranged the merger agreement with Fosterman agreeing to support the par value of the notes.<sup>38</sup> Although a bidding war commenced, Revlon's board accepted Fosterman's last offer even though Pantry Pride announced that it would bid higher than any other bid offered.<sup>39</sup>

In *Revlon* the Delaware Supreme Court held that when the dissolution of a company appears inevitable, the board of directors must auction the company to the highest bidder in order to maximize the shareholders' profit.<sup>40</sup> The *Revlon* court emphasized that "[m]arket

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the board of directors entered into with one of the bidders constituted a breach of the board's fiduciary duty where the agreement to negotiate with only one bidder ended the auction. *Id.* at 184.

32. *Id.*

33. *Id.* at 177. The initial Pantry Pride offer was a cash tender offer for all Revlon shares. *Id.* Pantry Pride would pay \$47.50 per common share and \$26.67 per preferred share. *Id.* Pantry Pride's offer was subject to 1) obtaining financing for the purchase, and 2) redemption of the rights plan. *Id.*

34. Independent directors are defined as non-management directors. *Id.* at 177.

35. *Id.*

36. *Id.* at 178. The terms of the merger with Fosterman consisted of each stockholder receiving \$56 cash per share, management purchasing stock in the new company by exercising their "golden parachutes," Fosterman assuming the \$475 million debt incurred by Revlon because of the issuance of the notes and Revlon's board redeeming the rights and waiving the protective covenants of the notes for Fosterman. *Id.*

37. *Id.*

38. *Id.* at 178-79.

39. *Id.* at 178.

40. *Revlon*, 506 A.2d at 182. The issue of when the break-up of a company appears inevitable, and when a *Revlon* auction begins is beyond the scope of this Note. See generally, *Paramount Communications Inc., v. Time Inc.*, [Current Transfer Binder] Fed. Sec. L. Rep. (CCH) ¶ 94,514, at 93,264 (Del. Ch. July 14, 1989) (affirming the lower court's ruling which upheld the decision of Time Inc.'s Board of Directors to reject the hostile

forces must be allowed to operate freely to bring the target's shareholders the best price available for their equity."<sup>41</sup>

The Delaware Supreme Court in *Revlon* held that once an auction has begun, the duty of the board of directors changes from preserving the corporate entity to maximizing the price that the stockholders will receive from the sale of the company.<sup>42</sup> The *Revlon* court stated that in this situation, the responsibility of the board of directors under the *Unocal* standard is significantly altered because the directors are "no longer faced [with] threats to corporate policy and effectiveness, or to the stockholders' interests, from a grossly inadequate bid. [Thus,] [t]he whole question of corporate defensive measures [becomes] moot."<sup>43</sup> In a takeover situation, therefore, once a *Revlon* auction has begun, the action of directors must be a reasonable response which will maximize shareholder profits.<sup>44</sup>

### C. The Discretion of Directors In Designing And Conducting An Auction For The Purpose Of Maximizing Shareholder Wealth Under *Mills Acquisition Co. v. Macmillan*

In *Mills Acquisition Co. v. Macmillan*,<sup>45</sup> a bidding war erupted between KKR and Mills Acquisition Co. for the purchase of Macmillan Inc. Originally, Macmillan's board of directors solicited bids from several potential acquirors,<sup>46</sup> but only KKR and Mills submitted bids by the deadline. After KKR was announced as the winning bidder, the controller of Mills, Robert Maxwell, increased his bid and filed suit to render the auction void claiming that the auction process was

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noncoercive tender offer by Paramount Communications Inc. in favor of pursuing a long term value maximizing strategy by merging with Warner Communications Inc.).

41. *Revlon*, 506 A.2d at 184. The *Revlon* court noted that the role of directors remains an active one and changes only in so far as that they have an additional duty of selling the company at the highest price offered for the benefit of the shareholders. *Id.* at 184 n.16.

42. *Id.* at 182. The *Revlon* court noted that "[t]he directors' role changed from defenders of the corporate bastion to auctioneers charged with getting the best price for the stockholders at a sale of the company." *Id.*

43. *Id.*

44. *Id.* at 185. The *Revlon* court held that by granting an asset option lock-up to a white knight, the directors followed a course which ended the auction by allowing considerations other than the maximization of shareholder profit to affect their judgement. *Id.*

45. *Mills Acquisition Co. v. Macmillan, Inc.*, [Current Transfer Binder] Fed. Sec. L. Rep. (CCH) ¶ 94,401, at 92,583 (Del. May 3, 1989).

46. See *Mills Acquisition Co. v. Macmillan, Inc.* [Current Transfer Binder] Fed. Sec. L. Rep. (CCH) ¶ 94,071, at 94,014 (Del. Ch. Oct. 17, 1988), *rev'd on other grounds*, [Current Transfer Binder] Fed. Sec. L. Rep. (CCH) ¶ 94,401, at 92,583 (Del. May 3, 1989). Initially, Macmillan, through its financial advisor, contacted or met with over 30 companies that had expressed an interest. Over the next several months, however, the field of serious potential acquirors narrowed to six. *Id.*

disguised to favor KKR.<sup>47</sup> Maxwell claimed that by placing the entire auction in the hands of Macmillan's chief executive officer who had a personal interest in ensuring the success of KKR's bid, Macmillan's board prevented the establishment of a truly fair and independent auction.<sup>48</sup>

In *Macmillan*, the Delaware Supreme Court attempted to clarify how directors should conduct a *Revlon* auction. Specifically, *MacMillan* held that under Delaware law directors are not required to conduct an auction according to a standard formula,<sup>49</sup> but rather are required only to "observe the significant requirement of fairness for the purpose enhancing general shareholder interests."<sup>50</sup> The *Macmillan* court stated that there is no intention of limiting the broad negotiating powers of directors to secure the highest price available for the stockholders.<sup>51</sup> Instead, the *Macmillan* court stressed that directors may use a variety of devices<sup>52</sup> and offer or receive concessions that favor one bidder over another in order to obtain the maximum price for the stockholders, as long as is the board's paramount objective is the interest of the stockholders.<sup>53</sup>

The *Macmillan* court upheld the business judgment rule in order to protect the directors' discretion in designing and executing an auction.<sup>54</sup> The court held, however, that before the presumptions of the business judgment rule will apply, the director's discretion must with-

47. See *Mills Acquisition Co.*, [Current Transfer Binder] Fed. Sec. L. Rep. (CCH) ¶ 94,071, at 94,014. Maxwell (head of the Mills bidding group) stated in a letter submitted to Macmillan with MCC's bid, "[i]f you have a financed binding alternative proposal which will generate a greater present value for you shareholders, I will withdraw my bid." *Id.* When the Macmillan Board approved KKR's higher bid, MCC did not withdraw its bid but instead responded by increasing its bid and initiating litigation. *Id.*

48. *Id.*

49. *Id.* at 92,601. The *Macmillan* court noted that when conducting an auction, the directors are not precluded from offering bidders differing treatment when necessary, in order to advance shareholder interest. *Id.*

50. *Id.*

51. *Id.* The *Macmillan* court refused to limit the authority of directors to design and execute their own auction in order to achieve the best price for the stockholders. *Id.*

52. *Id.* (citing *In re J.P. Stevens & Co. Inc. Shareholders Litig.*, 542 A.2d 770, 781-84 (Del. Ch.), *appeal denied*, 540 A.2d 1088 (Del. 1988)); see *infra* notes 136-79 and accompanying text.

53. *Macmillan*, [Current Transfer Binder] Fed. Sec. L. Rep. (CCH) ¶ 94,401, at 92,601. The *MacMillan* court noted that differing treatment of bidders may be necessary in situations where the board is confronted with coercive "two-tiered" tender offers. *Id.* at 92,601 n.38. However, when using tactics that favor one bidder, "the board's primary objective and essential purpose, must remain the enhancement of the bidding process for the benefit of the stockholders." *Id.*

54. *Macmillan*, [Current Transfer Binder] Fed. Sec. L. Rep. (CCH) ¶ 94,9401 at 92,602.

stand the enhanced *Unocal* standard of judicial scrutiny.<sup>55</sup> The *Macmillan* court reaffirmed the holding in *Revlon* by holding that once an auction has begun, the two part *Unocal* test is altered because the duty of the board of directors changes from preserving the corporate entity to auctioning the company for the benefit of the shareholders.<sup>56</sup> The *Macmillan* court held that the plaintiff must first demonstrate that the target's directors treated one or more of the bidders unequally before the *Unocal* two-part threshold requirement is invoked.<sup>57</sup>

In the first prong of the original *Unocal* test, the directors had the burden of showing that they had reason to believe "a danger to corporate policy and effectiveness existed because of another person's stock ownership."<sup>58</sup> Under the first prong of the altered test, the trial court must examine whether the directors correctly perceived that through their actions, the interests of shareholders were enhanced.<sup>59</sup> Alternatively, directors must perceive that their objective of obtaining the maximum price for shareholders would be threatened if they did not pursue their proposed course of action. In the second prong of the original *Unocal* test, the directors have the burden of demonstrating that the defensive measure is "reasonable in relation to the threat posed" to the corporate entity.<sup>60</sup> Under the second prong of the altered test, the directors' actions must be "reasonable in relation to the advantage sought to be achieved or conversely, to the threat which a particular bid allegedly poses to stockholder interests."<sup>61</sup> Once both prongs of the altered test are satisfied, the actions of directors in response to bids will be protected by the business judgment rule.<sup>62</sup>

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55. *Id.* at 92,602.

56. *Mills Acquisition Co. v. Macmillan*, [Current Transfer Binder] Fed. Sec. L. Rep. (CCH) ¶ 94,071, at 92,602 (citing *Revlon v. MacAndrews & Forbes Holdings*, 506 A.2d 173, 182 (Del. 1986)).

57. *Id.* In *Revlon* the Delaware Supreme Court held "[f]avoritism for a white knight to the total exclusion of a hostile bidder might be justifiable when the latter's offer adversely affects shareholder interests but . . . the directors cannot fulfill their enhanced *Unocal* duties by playing favorites with the contending factions." *Id.* (quoting *Revlon*, 506 A.2d at 182).

58. *Unocal v. Mesa Petroleum Corp.*, 493 A.2d 946, 955 (Del. 1985). This burden can be satisfied if the directors show that they exercised due care and acted in good faith under the circumstances. *Id.*

59. *Mills Acquisition Co. v. Macmillan, Inc.*, [Current Transfer Binder] Fed. Sec. L. Rep. (CCH) ¶ 94,401, at 92,602 (Del. May 3, 1989).

60. *Id.*

61. *Id.* (citing *Unocal*, 493 A.2d at 955). Under *Macmillan*, the degree of benefit or detriment to the shareholders' interests, reflected by the amount or terms of the bids, will determine the varying degree of latitude that directors may have in responding to differing bids. *Id.*

62. *Id.*

In order to exercise their business judgment, directors should understand how to adequately respond to differing bids in order to maximize shareholder profit. Such an understanding can be derived from auction theory which explains the design and execution of various types of auctions as well as the panology of devices that can be used to influence bidder behavior. A general understanding of auction theory will not only help directors design and execute an optimal *Revlon* auction, but will also aid courts in scrutinizing the actions of directors under the altered *Revlon* version of the two-pronged *Unocal* test.

### III. Auction Theory

Auction theory provides a model for pricing that occurs between buyers and sellers in the marketplace.<sup>63</sup> An auction is a market institution with a set of explicit rules for allocating resources.<sup>64</sup> Auction prices are based upon a bidding process among buyers and sellers.<sup>65</sup> Typically, auctions are used in the place of other selling devices, such as fixed prices, when the seller is uncertain as to the market's true valuation of the item.<sup>66</sup> Auctions account for an enormous amount of economic activity in the United States and are currently used to sell a wide variety of items such as livestock, artwork, books, securities, timber rights, oil tracts, commodities, corporate assets, and contracting services.<sup>67</sup>

#### A. The Importance Of A Seller's Commitment To The Auction Process

A typical auction consists of a monopolist<sup>68</sup> seller and an oligop-

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63. See McAfee & McMillan, *supra* note 4, at 670.

64. *Id.* at 701.

65. *Id.* at 701; see also Harris & Raviv, *Allocation Mechanisms and the Design of Auctions*, 49 *ECONOMETRICA* 1477 (1981). Many new securities are sold through some type of auction process. For example, since 1964, France has used a sealed-bid auction to sell all initial common stock issues. In the United States, auctions are used to sell United States Treasury long and short term bonds as well as corporate bonds and commercial paper. *Id.*

66. See McAfee & McMillan, *supra* note 4, at 704.

67. See Milgram & Weber, *A Theory of Auctions and Competitive Bidding*, 50 *ECONOMETRICA* 1089 (1982) [hereinafter Milgram & Weber]; see also McAfee & McMillan, *supra* note 4, at 702. Auctions have been used to sell more novel items such as import quotas, airline time and terminal slots, and have even been used as a mechanism to select the location of hazardous waste disposal plants and prisons. See McAfee & McMillan, *supra* note 4, at 702.

68. A monopolist is an individual who sells a unique item. See McAfee & McMillan, *supra* note 4, at 703.

sony<sup>69</sup> of bidders.<sup>70</sup> Auction theory presumes that the monopolist has the advantage of designing and executing<sup>71</sup> the auction and committing himself to a set of rules.<sup>72</sup> Commitment of the auction organizer to a binding set of auction procedures is crucial to the seller obtaining the best price.<sup>73</sup> A committed seller can adopt procedures to induce the bidders to put forward their highest offers.<sup>74</sup> If the seller fails to commit himself to an auction process, the bidders may not offer their highest bid because they will not bid as hypothesized for a particular type of auction.<sup>75</sup> This unpredictability will ultimately decrease the seller's and shareholders' potential return.<sup>76</sup>

In the first-price sealed-bid auction, for example, a bidder is expected to submit one sealed bid that is below his own valuation of the object but is slightly above what the bidder perceives will be the second highest bid. If the bidders bid as hypothesized, it will be in the seller's interest to use the bids to estimate the highest bidder's valuation of the item, and then renege on his commitment to award the object for the amount of the highest bid. The seller could later maximize the price he receives by offering the item at a price greater than the highest bid but slightly less than the estimated highest valuation, for it would still be in the interest of the highest bidder to accept the seller's offer.<sup>77</sup> If, however, the bidders believe that the seller will renege on his commitment to the first-price sealed-bid auction process, they would submit lower bids that do not reflect their true valuation

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69. An oligopsony refers to the small group of bidders who participate in the auction. *Id.*

70. Although it is possible that many bidders who will participate in an auction and "perfect" competition will prevail, usually when the item being auctioned is unique and very expensive there will only be a few bidders. *See id.*

71. This is because the bidders know that the seller cannot change his auction process after observing the bids, even if it would be in the seller's best interest to withdraw the offer to sell. *See McAfee & McMillan, supra* note 4, at 703.

72. *See infra* notes 77-91 and accompanying text.

73. *See infra* note 74 and accompanying text.

74. *See McAfee & McMillan, supra* note 4, at 703. "If the buyer can accept an irrevocable commitment, in a way that is unambiguously visible to the seller, he can squeeze the range of indeterminacy down to the point most favorable to him." *Id.* at 703-04 (quoting T. SCHELLING, *THE STRATEGY OF CONFLICT* 24 (1960)). This principle follows from the paradox that the ability to control an adversary may depend on the power to constrain oneself. *Id.* at 704.

75. There are several different types of auctions, each of which functions differently. Each auction type will cause a bidder to use a different bidding strategy in order to win the auction at the lowest price possible. *See infra* notes 80-99 and accompanying text.

76. *See McAfee & McMillan, supra* note 4, at 703. In addition, the cost of renegeing on a current commitment may consist of the loss of future bargaining power or the loss of credibility as to any commitments in the future. *Id.* at 704.

77. McAfee & McMillan, *supra* note 4, at 703.

of the object.<sup>78</sup> If the bidders submit bids for an object which do not reflect their true valuation, the seller's attempt to gain a bargaining advantage by designing and executing an auction will fail because he is unable to obtain the highest price for the item.<sup>79</sup>

## B. Types of Auctions

Analytically, there are four basic types of auctions: (1) the English auction; (2) the Dutch auction; (3) the first-price sealed-bid auction; and (4) the second-price sealed-bid auction.<sup>80</sup> In the English auction,<sup>81</sup> the bidding price is continuously increased until only one bidder is left.<sup>82</sup> While there are several types of English auctions,<sup>83</sup> the essential feature of this type of auction is that every bidder is aware at all times of the current highest bid and the number of active bidders.<sup>84</sup>

In contrast, the auctioneer in the Dutch auction<sup>85</sup> initially calls a high price. The price is then continuously lowered until one bidder claims the item for that price and stops the auction.<sup>86</sup>

In the first-price sealed-bid auction bidders submit sealed bids to the seller.<sup>87</sup> The bidder who submits the highest bid wins the object and must pay the price equal to the amount of his bid.<sup>88</sup> The bidder is unable to observe his rival's bids, and may submit only one un-revisable bid.<sup>89</sup>

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78. *Id.*

79. *Id.* The original RJR auction was a first-price sealed-bid auction. However, because the bidders suspected that the seller would renege on his commitment to the auction process, they initially submitted low bids which did not reflect their true valuation of RJR. *See supra* note 8 and accompanying text.

80. *See* Milgram & Weber, *supra* note 67, at 1089-90.

81. The English auction is also called the open, oral ascending bid auction. *See* McAfee & McMillan, *supra* note 4, at 702.

82. *Id.*

83. *Id.*; *see also* Milgram & Weber, *supra* note 67, at 1104. There are several ways to conduct an English auction. In some, an auctioneer calls the bids, while in others, bidders call out their own bids. In the Japanese variant, the current price is posted electronically; as the price rises continuously, bidders who wish to participate at a current price press a button while bidders who wish to withdraw release the button. *Id.*

84. *See* Milgram & Weber, *supra* note 67, at 1090 n.6.

85. The Dutch auction is also called the descending bid auction. *See* McAfee & McMillan, *supra* note 4, at 702.

86. *Id.*; *see also* Milgram & Weber, *supra* note 67, at 1089. The Dutch auction has been used to sell items ranging from flowers in the Netherlands to fish in Israel. *See* McAfee & McMillan, *supra* note 4, at 702.

87. *See* McAfee & McMillan, *supra* note 4, at 702.

88. *Id.*; *see also* Milgram & Weber, *supra* note 67, at 1090 n.6.

89. *See* McAfee & McMillan, *supra* note 4, at 702. First-price sealed-bid auctions are used by the Federal Deposit Insurance Corporation (FDIC) to sell the assets of failed banks. *See* James & Weir, *An Analysis of FDIC Failed Bank Auctions*, 20 J. OF MONETARY ECON. 141, 142 (1987). The United States Government uses these auctions to sell

In the second-price sealed-bid auction, bidders submit one sealed bid with the advanced knowledge that the highest bidder wins the object but pays a price that is equal to the second highest bid.<sup>90</sup> In theory, bidders will place a bid that is very close to or even slightly above their true valuation of the item, since they fully realize that they will have to pay only an amount equal to the second highest bid.<sup>91</sup>

Commentators have made several observations based on theoretical comparisons of these four types of auctions.<sup>92</sup> First, regardless of value correlations and the propensity of bidders to take risks, the first-price sealed-bid auction is strategically equivalent to and yields the same outcome as the Dutch auction.<sup>93</sup> These two types of auctions are functional equivalents because in each one, the bidder is faced with the same situation—the bidder knows nothing about the decisions of the other bidders, and thus must independently decide how high he will bid. Furthermore, in both the first-price sealed-bid and the Dutch auctions, the winning bidder pays the price equal to his bid.<sup>94</sup> Consequently, it is unnecessary to analyze the Dutch auction separately in the ensuing discussion.

In contrast, commentators have observed that the second-price sealed-bid and English auctions are sometimes strategically equivalent,<sup>95</sup> but do not always yield the same result.<sup>96</sup> In both auc-

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mineral rights on government-owned land. McAfee & McMillan, *supra* note 4, at 702. The United States Forest Service uses them to sell timber. See Hansen, *Sealed-Bid Versus Open Auctions: The Evidence*, 24 *ECON. INQUIRY* 123 (1986). The United States Department of Interior sells leases of tracts on the outer continental shelf for the exploration and development of oil and gas through first-price sealed-bid auctions. See Wilson, *Auctions of Shares*, 93 *Q. J. ECON.* 675 (1979). First-price sealed-bid auctions are also used to procure government and private procurement contracts, as well as to sell art work and real estate. See McAfee & McMillan, *supra* note 4, at 702.

90. See McAfee & McMillan, *supra* note 4, at 702. The second-price sealed-bid auction is also called a Vickrey auction. *Id.*

91. *Id.* See also Milgram & Weber, *supra* note 67, at 1090 n.7. The seller does not necessarily incur a loss of revenue by requiring the winning bidder to pay the second highest price, because buyers in this type of auction will often place higher bids than they would in a first-price auction. *Id.* While the second-price sealed-bid auction is theoretically interesting for comparative purposes, it is seldom used in the real world. See Von Under-Sternberg, *Cartel Stability In Sealed-Bid Second-Price Auctions* 36 *J. INDUST. ECON.* 351 (1988) [hereinafter Von Under-Sternberg]. When sealed-bid auctions are used in practice, the first-price auction is always chosen above a second-price auction. One potential reason for this is that not understanding how the second-price auction operates, sellers believe that they receive a better deal if they take the highest bid instead of the second highest bid. *Id.* at 352.

92. See Von Under-Sternberg, *supra* note 91, at 351.

93. *Id.*; see also McAfee & McMillan, *supra* note 4, at 707.

94. See McAfee & McMillan, *supra* note 4, at 707.

95. The English and second-price sealed-bid auction are strategically equivalent

tions a bidder will place a bid up to his own valuation of the object.<sup>97</sup> In a second-price sealed-bid auction, however, a bidder cannot change his bid,<sup>98</sup> whereas during an English auction a bidder's valuation of the item might change as he learns how other bidders value the item.<sup>99</sup> These two auctions, therefore, may yield different results.

### C. Auction Behavior

#### 1. Factors That Affect The Behavior of Bidders

When selecting an auction procedure, the seller must weigh four different factors which affect the behavior of bidders: (1) the risk aversion of the bidders; (2) the value correlation among the different bidders; (3) whether the bidders are symmetric or asymmetric; and (4) whether the payment is solely a function of the bid.<sup>100</sup>

##### a. Risk Aversity

In general, bidders are risk averse to losing an auction. Auctions present bidders with the financial risk of losing the auction and not obtaining the potential gain from winning the auctioned item.<sup>101</sup> Exposure to substantial financial risks may transform a risk neutral bidder, who is indifferent to the outcome of an auction, into a risk averse bidder who is concerned with the potential financial ramifications of the auction's result.<sup>102</sup> If the bidder loses the auction, he not only pays his bid preparation costs, but also loses the chance to obtain the item, and any profits it may yield.<sup>103</sup> If, however, the bidder wins the auc-

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under the independent private value model. See Von Under-Sternberg, *supra* note 91, at 351. The bidders in both the English and second-price seal-bid auction have dominant bidding strategies. In the English auction the bidder will not drop out of the bidding until the current bid is equal to his own valuation of the object. *Id.* "In the second-price auction each bidder places a bid equal to his own valuation." *Id.* In the case of correlated values, however, a bidder's valuation of an item might change during an English auction as he obtains additional information about how other bidders value the item.

96. See, e.g., McAfee & McMillan, *supra* note 4, at 722 (when bidders have affiliated valuations, English auction yields higher expected revenue than second-price sealed-bid auction).

97. See Von Under-Sternberg, *supra* note 91, at 351.

98. McAfee & McMillan, *supra* note 4, at 722.

99. *Id.* Bidders valuations are considered to be affiliated if one bidder's perception of an item's value affects the other bidder's perception of the item's value. *Id.* Therefore, if the bidder's valuations are affiliated, the process of bidding in an English auction conveys information to the other bidders which affect their valuations of the object and lessens the effects of the winner's curse. *Id.* For a discussion of the "winner's curse," see *infra* notes 117-19 and accompanying text.

100. See McAfee & McMillan, *supra* note 4, at 706.

101. *Id.* at 718.

102. *Id.* at 706.

103. *Id.* at 719. In the losing scenario, the bidder may suffer a financial opportunity

tion, he must pay the winning amount in order to obtain the positive benefits from the acquired object.<sup>104</sup> The seller can make the bidder's aversion to the risk of losing the auction dependant on the behavior of other bidders by designing the auction in such a manner that the lower losing bidders must pay a fee which is used to subsidize the higher losing bidders.<sup>105</sup> The buyer can decrease the risk of losing the auction by increasing his bid and accepting a lower profit if he wins.<sup>106</sup>

*b. Correlated Values: The Independent-Private-Values Model Versus The Common-Value Model*

In the independent-private-values model each bidder knows exactly what the true value of the item is worth to him.<sup>107</sup> The bidder is unaware and unconcerned about the valuation which competing bidders place on the item.<sup>108</sup> The valuation of each competing bidder is drawn from some probability distribution.<sup>109</sup> This is similar to the situation where one has a hat full of tickets printed with randomly selected numbers ranging from one to one hundred. The probability of someone picking a ticket with a particular number depends on how many tickets there are in the hat and the number of tickets printed with that particular number. Both factors have been determined by chance, and consequently, one person's guess as to what number will be picked next is statistically independent from another person's guess.<sup>110</sup> In a bidding situation the object might have a range of values. If the number of auction participants whose valuation of the item

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cost of obtaining a positive benefit. In addition, depending upon the particular rules of the auction, a bidder who loses may be forced to pay a fee to either the seller or to other losing bidders who placed higher bids. *Id.*

104. *Id.* In the winning scenario, the bidder takes the financial risk that the fees paid will exceed the actual positive benefits acquired from the object.

105. *Id.* See *infra* notes 151-52 and accompanying text.

106. *Id.* "By marginally increasing his bid, [the bidder] lowers his profit if he wins but increases the probability of this event." *Id.*

107. *Id.* at 705.

108. *Id.* Under the independent-private-values model, learning about another's valuation of the object will not cause the bidder to change his own evaluation. *Id.*

109. *Id.* "The probability distribution of a discrete random variable [X] provides the probability of each possible value of the random variable. If P(x) is the probability that x is the value of the random variable, the sum of P(x) for all values of X must be one." E. MANSFIELD, *STATISTICS FOR BUSINESS AND ECONOMICS* 146 (2d ed. 1983). This is because these values of X are mutually exclusive and one of them must occur. *Id.* at 114. A discrete random variable is based on a set of finite numerical values and is determined by chance. *Id.* at 146.

110. Each bidder assumes that the valuation of any other bidder is drawn from some probability distribution which provides the probability of each possible value of the random variable. See E. Mansfield, *supra* note 109, at 146.

falls within that range is determined by chance, then every bidder's valuation is statistically independent.<sup>111</sup>

An example of this model would be an art auction in which the bidders are consumers purchasing for their own collection rather than as an investment. Under this scenario, a person's appraisal of a piece of art depends on personal preference. Each bidder knows exactly how much he enjoys and values a particular piece of art. The bidder is unsure of and unconcerned with the value which competing bidders place on the artwork. Since each bidder's personal tastes and thus their valuation of the art is made independently of any other bidder, information about another individual's valuation will not change the bidder's personal valuation.<sup>112</sup>

In the common-value model, the item being auctioned is objectively valued by its worth in the market place.<sup>113</sup> However, neither the bidders nor the seller knows the item's true market value.<sup>114</sup> By obtaining information about the object, bidders are able to guess at the item's objective worth.<sup>115</sup> Thus, in an art auction where the bidders are dealers who plan to resell the art, if bidder A learns of bidder B's valuation of the item, A is provided with some useful information regarding the item's true market value. Bidder A may alter his estimation of the item when he learns this additional information. Thus, A's valuation of the object will be correlated to B's valuation of the item.<sup>116</sup>

Winning bidders in a common-value model auction may suffer from a phenomenon known as the "winner's curse."<sup>117</sup> The winner's curse can occur in the first-price sealed-bid and Dutch auctions when there are two or more bidders and the price of the object is equal to the

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111. See McAfee & McMillan, *supra* note 4, at 705.

112. See *supra* notes 108-11 and accompanying text.

113. See McAfee & McMillan, *supra* note 4, at 705. For example, if the item being auctioned is a set of oil rights to a particular tract of land, the amount of oil actually lying beneath the ground is the item's single objective value. *Id.*

114. *Id.* Bidders having access to different information may make different guesses about the item's objective worth. *Id.*

115. *Id.* Under the common-value model, learning of another bidder's valuation of the object provides additional useful information about the item's likely true value.

116. The positive correlation of the bidders' valuations of an item is known as affiliation. *Id.* at 706.

117. *Id.* at 720; see also Meyer, *Competition and Bidding Behavior: Some Evidence From The Rice Market*, 26 *ECON. INQUIRY* 123 (1988) [hereinafter Meyer]. The "winner's curse" is the situation in which the winner pays more than the market value for the item. *Id.* The risk of suffering the winner's curse could be transferred to the seller if the seller would guarantee that the market value will not differ from the winning bidder's estimated value by a given amount. Moreover, such a guarantee would provide bidders with an incentive to bid more aggressively. *Id.* at 124.

highest bid.<sup>118</sup> In these types of auctions the winner often pays more than the true market value of the item. This is especially true when the winner realizes that his bid was much greater than the unbiased estimate of all the other bidders. Thus, the highest bidder falls prey to the "winner's curse."<sup>119</sup>

The independent-private-values and the common-value models both represent extreme situations. In practice, auctions contain aspects of both models.<sup>120</sup> In the art auction example, a collector's valuation of a piece of art may be based upon a combination of his personal taste for the artwork and its investment and market value.<sup>121</sup> As a result, bidders' valuations for an item will differ depending upon how closely their bidding is aligned with one of the models.<sup>122</sup>

### c. Bidder Recognition

Bidder recognition concerns the question of whether the bidders are in some way recognizably different from each other.<sup>123</sup> If the bidders draw their valuation from the same set of discrete random variables and hence the same probability distribution, they are considered to be symmetric bidders. Asymmetric bidders derive their bids from a different set of discrete random variables and different probability distributions.<sup>124</sup> For example, an asymmetric bidding situation may arise when both foreign and domestic firms submit bids for a government procurement contract. Because of comparative advantages, there are systematic cost differences between the foreign and domestic firms.<sup>125</sup> Consequently, each type of firm will draw from a different discrete set of random variables and will submit bids that reflect their cost constraints; therefore, the firms are asymmetric bidders.

### d. Payment Certainty

The seller may also be subject to uncertainty if the amount of pay-

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118. See McAfee & McMillan, *supra* note 4, at 720.

119. *Id.*; see also Meyer, *supra* note 117, at 123. In first-price auctions, bidders face a great risk of overestimating the value of an object whose market value is uncertain. Such overestimation often occurs when the bidder places a bid based on the expected value of the object that is derived solely from his private information. *Id.*

120. See McAfee & McMillan, *supra* note 4, at 705.

121. *Id.*

122. *Id.*

123. *Id.* at 706.

124. *Id.*

125. *Id.* For example, if a foreign firm has lower labor costs or different tax structures, it may be able to produce the item at a lower cost to the consumer, and yet earn the same amount of profit as a domestic firm.

ment is contingent only upon bids.<sup>126</sup> In some circumstances the item's true value may be correlated with other variables which are unknown to both the bidder and the seller at the time of the auction. However, these variables may be mutually observable after the auction. In such circumstances, it is to the seller's advantage to make the winning bidder's payment dependent upon a combination of the other variables and the bid. For example, in an auction for the right to publish a book, royalties render the winning bidder's payment dependent on the number of books that are sold as well as the winning bid.<sup>127</sup>

## 2. *The Benchmark Auction Model*

The classic benchmark model is used to compare the different types of auctions<sup>128</sup> under various circumstances that affect bidder behavior.<sup>129</sup> The classic benchmark auction is defined by the following four assumptions: (1) the bidders are risk neutral; (2) the independent-private-value model applies; (3) the bidders are symmetric; and (4) payment is solely a function of the bid.<sup>130</sup> Each assumption is applied separately to demonstrate its individual effect on each of the four auction types. A mathematical comparison of the results of a benchmark auction demonstrates that, on average, each of the four auction forms yields the same price for the seller. Thus, in a benchmark auction the type of auction used is irrelevant.<sup>131</sup> However, as the assumptions in the benchmark model underlying risk aversion and correlated value factors are relaxed, the advantages of the different auction types emerge.<sup>132</sup>

## IV. A Proposal For Designing An Optimal Auction For Corporate Control

After a target's board of directors has decided to conduct an auction for the company, the directors should determine how to design and execute a fair auction to meet their fiduciary obligations under *Revlon*<sup>133</sup> and *Macmillan* and to maximize shareholder's profits.<sup>134</sup>

126. McAfee & McMillan, *supra* note 4, at 706.

127. *Id.*

128. *See supra* notes 80-91 and accompanying text.

129. *See McAfee & McMillan, supra* note 4, at 710.

130. *Id.* at 706.

131. *Id.* at 707.

132. *Id.* at 714.

133. *Revlon v. MacAndrews & Forbes Holdings*, 506 A.2d 173 (Del. 1986). *See supra* notes 31-44 and accompanying text.

134. *Mills Acquisition Co. v. Macmillan*, [Current Transfer Binder] Fed. Sec. L. Rep. (CCH) ¶ 94,401, at 92,583 (Del. May 3, 1989). *See supra* notes 45-62 and accompanying text.

An optimal auction from a seller's perspective is one which extracts all surplus from the bidders.<sup>135</sup> In order to find the optimal method of conducting an auction for corporate control, the target's board of directors must determine the proper assumptions for each of the four factors identified above, given the particular attributes of the corporation. The board must focus on the two most prevalent factors—risk aversion and correlative values—since these factors vary from bidder to bidder and play an important role in each bidder's valuation of the company. In an auction for corporate control, the benchmark assumptions that bidder recognition is symmetric,<sup>136</sup> and that payment is contingent only on the bids,<sup>137</sup> are usually correct. These assumptions are true because generally, the cost of raising capital does not significantly differ among bidders. In addition, unlike a royalty, the price obtained for a company is not based on a percentage of the target's earnings after the sale.

Although sellers cannot be sure of obtaining the highest possible price for an item in an auction,<sup>138</sup> the seller can use certain instruments to encourage bidders to submit honest valuations, thereby increasing the possibility of the seller maximizing his revenue and achieving the optimal auction price. For example, increasing the number of bidders in an auction increases the probability of a particular bidder having the highest valuation, thereby usually raising the seller's revenue.<sup>139</sup> Thus, if a seller can convince more bidders to join the auction process by disseminating information about the item to all potential bidders, the seller may be able to increase his revenue.<sup>140</sup>

### A. The Optimal Auction For Risk Averse Bidders

When the value of the item being sold is so great that the bids are relatively large compared to the bidders' assets, the bidders are likely

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135. See Maskin & Riley, *Auction Theory With Private Values*, 75 AM. ECON. REV. 150 (1985) [hereinafter Maskin & Riley I] (providing a mathematical proof for an optimal auction).

136. See *supra* notes 124-25 and accompanying text.

137. See *supra* notes 126-27 and accompanying text.

138. An auction is supposed to have a Pareto efficient outcome where the item being auctioned is awarded to the bidder with the highest value. See McAfee & McMillan, *supra* note 4, at 711.

139. *Id.*; see also Meyer, *supra* note 117, at 123 (as the market becomes more competitive, the bidder will raise his bid).

140. See French & McCormick, *Sealed Bids, Sunk Costs, and the Process of Competition*, 57 J. OF BUS. 417 (1984) [hereinafter French & McCormick]. From a bidder's perspective, as the number of bidders increases, each bidder's expected profit decreases because the winning bidder's expected profit falls, along with the probability that any particular bidder will win and obtain his expected profit. *Id.* at 423.

to be extremely averse to losing the auction.<sup>141</sup> If the bidder loses the auction he obtains nothing and loses the opportunity to obtain potential profits.<sup>142</sup>

When dealing with a risk-averse bidder, the first-price sealed-bid auction generally produces greater revenue than the English or second-price sealed-bid auctions.<sup>143</sup> In a first-price sealed-bid auction each bidder knows that he has one opportunity to submit a bid to win the auction and that he must do so without knowing the other bidders' valuations.<sup>144</sup> As the bidder's risk aversion increases, his fear of losing the auction heightens.<sup>145</sup> By increasing his bid, the bidder decreases his potential profit, but increases his probability of winning. Thus, the bidder closes the gap between his bid and his honest valuation.<sup>146</sup>

In an English auction the bidder is aware of the other bidders' bids for the item. Therefore, the highest bidder will not bid close to his honest valuation of the item, but only just above the bid of the second highest bidder.<sup>147</sup> In the second-price sealed-bid auction the highest bidder will bid up to or slightly above his honest valuation of the item; the seller, however, receives only a payment equivalent to the second highest bid.<sup>148</sup>

Although on average, the first-price sealed-bid auction will produce greater revenue than other auction types,<sup>149</sup> the seller can use several instruments in combination with the first-price sealed-bid auction to maximize his expected income from risk averse bidders.<sup>150</sup> The seller could increase his expected revenue by extracting a fee from low bidders which would be divided and paid back only to the high bidders

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141. See McAfee & McMillan, *supra* note 4, at 718.

142. See *id.* at 719.

143. See McAfee & McMillan, *supra* note 4, at 719. See also, Maskin & Riley I, *supra* note 135, at 152; see also Maskin and Riley, *Optimal Auctions with Risk Averse Buyers*, 52 *ECONOMETRICA* 1473, 1475 (1984) [hereinafter Maskin & Riley II] (containing a mathematical theorem which demonstrates that the first-price sealed-bid auction generates a greater expected revenue for the seller than the English auction).

144. See McAfee & McMillan, *supra* note 4, at 719.

145. See Maskin & Riley I, *supra* note 135, at 152.

146. See McAfee & McMillan, *supra* note 4, at 719.

147. See *supra* notes 95-99; see also Maskin & Riley I, *supra* note 135, at 151. The behavior of a risk-averse bidder is not altered in an English auction. In an English auction the optimal strategy for the bidder is to drop out when he reaches his exact reservation price. *Id.*

148. See *supra* notes 95-98 and accompanying text.

149. See McAfee & McMillan, *supra* note 4, at 719; see also Maskin & Riley II, *supra* note 143, at 1473. (providing a comprehensive mathematical analysis of optimal auctions which are designed to maximize the seller's expected revenue when he faces risk averse bidders with unknown preferences).

150. See McAfee & McMillan, *supra* note 4, at 719-20.

who lose. Thus, the highest bidder wins the object, the other high bidders lose the object but win the fee collected from the low bidders, and the low bidders pay a fee for submitting lower bids. The seller therefore increases his expected revenue because he greatly increases the risk of submitting low bids.<sup>151</sup> Under this scenario, all bidders will be encouraged to bid higher in order to avoid the potential penalty incurred by the lowest bidders.<sup>152</sup>

Another instrument at the seller's disposal is the bidder's knowledge of how many competitors are in the auction.<sup>153</sup> In a "first-price sealed-bid auction the expected selling price is strictly higher when the bidders do not know how many other bidders there are than when they know this [information]."<sup>154</sup> Generally, a bidder has a misconception about the number of auction participants. A bidder believes that more bidders participate in the auction than actually enter. As a result, the bidder will bid closer to his true valuation of the object for fear of being out bid by numerous other bidders. The ultimate result is that the auction is more competitive and profitable for the seller if he does not reveal the number of bidders who will participate.<sup>155</sup>

## B. The Optimal Auction For Bidders With Correlated Values

An auction for a company simultaneously contains aspects of the independent-private-value model and the common-value model.<sup>156</sup> The weight that each model is given in an auction for corporate control depends upon the bidders' plans for the company's assets. The following three examples illustrate the interaction between the bidders' planned use of the company and the weight given to a model.

In the first example, the company that is being auctioned is a bottling company and most of the bidders are other bottling companies that plan to use the auctioned company for its synergic value (e.g., an increase in economies of scale).<sup>157</sup> Most bidders will know exactly

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151. See McAfee & McMillan, *supra* note 4, at 719; see also Maskin & Riley II, *supra* note 143, at 1474.

152. See McAfee & McMillan, *supra* note 4, at 719-20; see also Maskin & Riley I, *supra* note 135, at 151. This is because a risk averse bidder's fear of losing increases with the introduction of a penalty, causing an increase in the expected revenue from the high valuation bidder. *Id.* If the risk aversion is not very strong, the optimal auction can be mimicked by having the seller charge a bidding fee that is a decreasing function of the bid. McAfee & McMillan, *supra* note 4, at 720.

153. See McAfee & McMillan, *supra* note 4, at 720.

154. *Id.*

155. *Id.*

156. See *supra* notes 108-22 and accompanying text.

157. Synergy is defined as "potential reductions in production and distribution costs through various devices available to the combined firm but not to the two firms operated

how they value the company. Under this scenario, the independent-private-value model is more heavily weighted.<sup>158</sup>

In the second example, the company being offered for sale is a tobacco company that has two food producing subsidiaries. Most of the bidders are tobacco companies that plan to use the tobacco division of the auctioned company for its synergic value while selling off the food producing subsidiaries. In this situation the models are more equally weighted. Although the bidders can accurately value the tobacco division, they are uncertain as to the true market resale value of the food subsidiaries.<sup>159</sup>

In the third example, the company being auctioned is a conglomerate with most of the bidders consisting of leveraged buyout firms which plan to dispose of the company's assets. The leveraged buyout firms will attempt to estimate the true market value of the corporation's assets.<sup>160</sup> This will cause the common market value to be more heavily weighted.<sup>161</sup>

The bidders' reactions to the four common types of auctions<sup>162</sup> will depend upon which correlation model they follow. In the sale of a corporation, where the majority of the bidders do not intend to resell the entire corporation (e.g., it is not a true common-value scenario),<sup>163</sup> the bidder will base his bid on a combination of his own intrinsic value of the corporation, and an estimate of the corporation's true market value.<sup>164</sup>

In general, risk neutral bidders using the independent-private-value model will have equal average returns regardless of the type of auction, because each bidder's valuation of the object is unaffected by that of the other bidders.<sup>165</sup> On the average, therefore, risk averse bidders using this model will obtain a greater return using the first-price sealed-bid auction.<sup>166</sup>

separately." R. Roll, *Empirical Evidence on Takeover Activity and Shareholder Wealth*, in *KNIGHTS, RAIDERS & TARGETS* 241, 245 (1988).

158. See *supra* notes 107-12 and accompanying text.

159. See *supra* notes 113-16 and accompanying text.

160. See *supra* notes 113-15 and accompanying text.

161. See *supra* notes 113-16 and accompanying text.

162. The four types of auctions are the Dutch, English, first-price sealed-bid, and second-price sealed-bid. See *supra* notes 80-91 and accompanying text.

163. The intent to resell all of the assets of the target corporation is a true common value scenario. See generally, McAfee & McMillan, *supra* note 4, at 705 (auction of an antique to bidders who are dealers which intend to resell the item is a common value scenario).

164. See *supra* notes 120-22 and accompanying text.

165. See McAfee & McMillan, *supra* note 4, at 722. See also Maskin & Riley I, *supra* note 135, at 153-54 for an illustration of the mathematical proof.

166. See *supra* notes 107-12 and accompanying text.

In a common-value auction with risk neutral bidders having affiliated values,<sup>167</sup> the English auction yields the highest expected revenue followed by the second-price sealed-bid auction and the first-price sealed-bid Dutch auction.<sup>168</sup> The English auction process conveys information to the bidders<sup>169</sup> by allowing them to observe the price at which other bidders drop out of the auction.<sup>170</sup> This has the effect of making each bidder's private information about the item's true value partially public, thus reducing the effect of the winner's curse when bidders' valuations are affiliated.<sup>171</sup>

In the case of a corporation, the bidders will be risk averse and their behavior will fall somewhere in between the two polarized correlation models. Under this scenario, the risk aversion of the bidders must be weighed against the strength of the bidders' correlated values in order to determine whether the English or first-price sealed-bid auction type is preferable. The limited number of empirical studies of auctions involving risk averse buyers with partially affiliated valuations seems to indicate that the first-price sealed-bid auction may on average yield a slightly higher return.<sup>172</sup> This evidence, however, is not conclusive.<sup>173</sup>

As with risk averse bidders, a seller can use several instruments to maximize his expected revenue.<sup>174</sup> In a common-value auction, the bidders' valuation of the item's actual market value is correlated to any independent information about the item's true value.<sup>175</sup> "Thus, the seller can increase his expected revenue by having a policy of publicizing any information that he has about the item's true value."<sup>176</sup>

Another advantage of the seller publicizing information is that the cost of preparing a bid is lowered. Lower bid preparation costs may

167. See *supra* notes 113-19 and accompanying text.

168. See McAfee & McMillan, *supra* note 4, at 722. See Maskin & Riley I, *supra* note 135, at 153-54 for an illustration of the mathematical proof.

169. See McAfee & McMillan, *supra* note 4, at 722.

170. *Id.* The bidders are not concerned with lost opportunity cost because each assumption of the benchmark auction model is applied separately. See *supra* notes 128-32 and accompanying text.

171. *Id.* For a discussion of the winner's curse, see *supra* notes 117-19 and accompanying text.

172. The United States Forest Service has used both the first-price sealed-bid auction and the English auction to sell contracts for harvesting timber. These types of contracts attract risk averse bidders who intend to resell the timber and therefore have correlated values. This evidence has demonstrated that sealed-bid auctions yield about 10% more revenue than English auctions. See Hansen, *supra* note 89, at 136.

173. Although the magnitude of these results has been questioned, at a minimum, the sealed bid auction yields a slightly higher price than the English auction. *Id.*

174. See McAfee & McMillan, *supra* note 4, at 722.

175. *Id.*

176. See Meyer, *supra* note 117, at 124. A seller can also increase his revenue by providing the bidders with more accurate information. *Id.*

entice additional bidders to enter the auction, thereby creating a more competitive auction and increasing the seller's expected return.<sup>177</sup> Setting a public reserve price—the minimum that the seller is willing to accept for the object—is one method that can be used to give the bidders information about the object's true value and increase the seller's revenue from an English auction.<sup>178</sup> By setting a reserve price the seller is able to eliminate the risk of being faced with the dilemma of accepting a bid below expected revenue, or breaking the commitment to the bidders and withdrawing the offer to sell.<sup>179</sup>

Auction theory can be used by directors to design and execute a fair auction in order to maximize shareholder profits, thereby fulfilling their fiduciary obligations under *Revlon*<sup>180</sup> and *Macmillan*.<sup>181</sup> Furthermore, auction theory will aid courts in scrutinizing the "fairness" of the auction's design and execution as required by *Macmillan*.<sup>182</sup>

## V. Conclusion

The *Macmillan* court held that a board of directors can design and conduct any type of auction as long as they observe the requirement of fairness for the purpose of obtaining the highest price for the shareholders. A general understanding of auction theory will aid courts in scrutinizing the actions of directors under the altered *Revlon* version of the two prong *Unocal* test. In addition, auction theory will aid directors in understanding how to design and execute *Revlon* auctions and how to best respond to differing bids in order to maximize shareholder profit.

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177. See French & McCormick, *supra* note 140, at 434. For example, a store owner (seller) can induce a buyer (bidder) to enter his store through advertising, thus lowering the buyer's search cost for the product. *Id.*

178. See McAfee & McMillan, *supra* note 4, at 729.

179. *Id.*

180. *Revlon v. MacAndrews & Forbes Holdings*, 506 A.2d 173 (Del. 1986). See *supra* notes 31-44 and accompanying text.

181. *Mills Acquisition Co. v. Macmillan*, [Current Transfer Binder] Fed. Sec. L. Rep. (CCH) ¶ 94,401, at 92,583 (Del. May 3, 1989). See *supra* notes 45-62 and accompanying text.

182. *Id.*