

VALUATION GAPS: THE IMPLICATIONS OF RECENT FINDINGS FOR LEGAL THEORY

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ABSTRACT

Results from a series of economics experiments suggest that the maximum amount one is willing to pay to obtain a good (“WTP”) is less than the minimum amount one is willing to accept to give up the same good (“WTA”). This observed phenomenon is often referred to as the “endowment effect.” Endowment effect theory, an application of prospect theory, is one of the leading theories invoked to explain observed gaps. In recent years, legal scholars have applied endowment effect theory in both descriptive and normative analyses of law. More recent findings, however, suggest that endowment effect theory does not explain observed gaps. The new evidence supports alternative theories that operate through specific procedures experimentalists use to elicit valuations and preferences. The purpose of this Article is to describe these recent findings and to consider their implications for legal theory. The recent results suggest that the focus of legal analyses based on the empirical literature should shift away from assumptions about the characteristics of individual utility functions. Furthermore, the alternative theories the data support are either irrelevant to applications or have long been known and therefore add nothing new to legal theory.

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INTRODUCTION

The field of behavioral economics, which focuses on integrating insights from psychology with neoclassical economic theory, has contributed many advances in recent years to improve models of decision-making.¹ Theoretical advances in behavioral economics are often instigated by behavior observed in laboratory experiments that is anomalous to predictions of rational choice theory. One of the longest lines of behavioral economics experimental research challenges a basic tenet of consumer theory: the assumption that individual valuations of goods are independent of entitlement. Results from a series of economics experiments suggest that the minimum amount one is willing to accept to give up a good (“WTA”) is greater than the maximum amount one is willing to pay to obtain the same good (“WTP”).² This observed phenomenon is often referred to as the “endowment effect.”³ Endowment effect theory, an application of prospect theory,⁴ is one of the leading explanations.⁵ The theory posits that entitlements set reference points and individuals perceive the giving up of entitled goods as losses to be averted.⁶

Legal scholars have applied endowment effect theory in both descriptive and normative analyses of behavior in legal environments. For example, Ian Ayres and Frederick Vars use endowment effect theory to explain courts’ mixed responses to affirmative action plans.⁷ Specifically they posit that judges disfavor layoffs because employees perceive jobs as entitlements and layoffs trigger losses. On the other hand, courts are more supportive of restructured hiring goals because these programs avoid losses.

In a more normative vein, Kelman, in perhaps the first law review article to import endowment effect theory into legal scholarship, argues that, because endowment effect theory implies that individuals value rights to which they are entitled more than rights they might purchase, the predictions

¹ For a recent summary see Colin Camerer, *Advance in Behavioral Economics*.

² See *infra* Part I for a summary of economics experiments reporting a gap between WTP and WTA.

³ See Richard H. Thaler, *Toward a Positive Theory of Consumer Choice*, 1 *Journal of Economic Behavior and Organization* 39, [pin] (1980).

⁴ Kahneman and Tversky developed prospect theory [add cite]. See *infra* Part I.A.3 for an explanation of the theory.

⁵ cites to Thaler, Jolls, etc.

⁶ See *infra* Part I.A.3.

⁷ 1998, *Columbia Law Review*

of the Coase Theorem might not hold even if transactions costs are zero.⁸ Specifically, if WTA exceeds WTP, the allocation of rights might depend on legal entitlements. Some claim that the WTA-WTP gap is the single most important finding from behavioral economics for legal scholarship to date.⁹

Application of endowment effect theory to law runs far and wide. For example, Peter Huang has argued that valuation disparities impact settlement behavior of litigants.¹⁰ Chris Sanchirico argues that WTA-WTP gaps might preclude parties to a nuisance suit from bargaining to an efficient outcome, although he questions the meaning of an efficient outcome when preferences depend on entitlements.¹¹ Richard C. Reuben suggests the right to trial by jury might push disputants to favor litigation over arbitration because litigants wish to avoid the disutility that accompanies giving up one's right to trial.¹² Abraham Bell and Gideon Parchomovsky claim that endowment effect theory strengthens an adverse possessor's claim to disputed land.¹³ Law reviews house hundreds of similar applications of endowment effect theory to law.¹⁴

Although scholars have applied endowment effect theory to myriad legal fields, their descriptive and normative claims typically rely on the assumption that gaps observed in the laboratory are caused by our reluctance to give up goods to which we are entitled. Recent experimental evidence, however, calls into question the interpretation of observed valuation gaps as evidence of endowment effect theory.¹⁵ The new findings suggest that observed gaps instead are explained by alternative theories that operate through specific experiment procedures used to endow subjects with goods and elicit valuations and choices. For example, in experiments in which WTA and WTP are elicited using a mechanism specifically designed to encourage individuals to report their actual valuations for goods, unfamiliarity with the elicitation mechanism might cause subjects to

⁸ Kelman (So. Calif LR 1979) at 678-81. See also Rachlinski and Jourden (Vanderbilt Law Review 1998) at [add pin cite].

⁹ See e.g., Russell Korobkin, *The Endowment Effect and Legal Analysis*, 97 Nw. U. L. Rev. 1227, 1229 (2003); Samuel Issacharoff, *Can There Be a Behavioral Law and Economics?*, 51 Vand. L. Rev. 1729, 1735 (1998).

¹⁰ Peter H. Huang, *Lawsuit Abandonment Options in Possibly Frivolous Litigation Games*, 23 Rev. Litig. 47 (2004).

¹¹ Chris William Sanchirico, 57 Stan. L. Rev. 291

¹² Richard C. Reuben, 67 Law & Contemp. Probs. 279.

¹³ Abraham Bell & Gideon Parchomovsky, 101 Mich. L. Rev. 1.

¹⁴ Add note here with results from Westlaw lit search

¹⁵ Charles R. Plott and Kathryn Zeiler, *The Willingness to Pay-Willingness to Accept Gap, the "Endowment Effect," Subject Misconceptions, and Experimental Procedures for Eliciting Valuations*, 95 Am. Econ. Rev. 530 (2005); Charles R. Plott and Kathryn Zeiler, *Asymmetries in Exchange Behavior Incorrectly Interpreted as Evidence of Endowment Effect Theory and Prospect Theory?*, 97 Am. Econ. Rev. 1449 (2007).

misconceive how their reported valuations map into payouts, causing them to revert to their basic market instincts: sell high and buy low.¹⁶ Similarly, in experiments in which subjects are endowed with one good and asked whether they want to trade the endowed good for a good of equal market value, experimenter choice over which good to endow and the public nature of choices might compel subjects to keep the endowed good.¹⁷ Specifically, signaling theories suggest that experimenter involvement might influence choices if subjects interpret the experimenter's choice as a signal of relative quality. Alternatively, theories of other-regarding preferences suggest that subjects might feel obliged to avoid rejecting a good perceived as a gift from the experimenter. Moreover, information aggregation and cascade theories suggest that the public nature of choice revelation—in the conventional experiments subjects are asked to raise their hands if they want to trade—allows for dependence among subject choices.

The purpose of this paper is two-fold: to describe the recent results and the insights they add to the experimental literature and to consider the implications of these new findings for legal theory. The recent results suggest that the focus of legal analyses based on the empirical literature should shift away from assumptions about the characteristics of individual utility functions. Furthermore, the alternative theories the data support are either irrelevant to applications or have long been known and therefore add nothing new to legal theory.

The Article is organized as follows. Part I summarizes the empirical findings that seem to reveal a robust WTP-WTA gap in the laboratory and provides a review of common interpretations of the results. It then describes the most recent findings that suggest observed gaps in the laboratory are explained not by endowment effect theory but rather by alternative theories that find influence through experiment procedures. Finally, it addresses three common misinterpretations of the recent evidence. Part II begins by untangling various misapplications of endowment effect theory in legal scholarship. It then revisits plausible legal applications of endowment effect theory to examine how recent empirical results might impact them. In short, the new evidence calls for a shift away from endowment effect theory and toward alternatives grounded in standard theories, such as risk aversion, information asymmetries and incentives. Part III provides a broader view of the experimental literature, detailing other alternative theories experimentalists are currently testing and how their results might impact legal analyses that apply endowment effect theory. The broader experimental literature leads to a more nuanced understanding of the drivers of observed gaps and asymmetries in the laboratory. The on-going testing of various

¹⁶ Plott and Zeiler. 2005.

¹⁷ Plott and Zeiler, 2007.

theories of the drivers of gaps and asymmetries will continue to impact legal applications of these theories.

I. EMPIRICAL FINDINGS AND INTERPRETATIONS

Experimentalists have been investigating valuation asymmetries in the laboratory since the early 1980s.¹⁸ This Part provides a brief summary of the economics literature. It begins with a snapshot of the conventional results in two separate but related lines of research: WTA-WTP gaps and exchange asymmetries. A common interpretation of the conventional results is then summarized. Finally, recent experimental results are described. The recent results support the conjecture that valuation asymmetries likely should be attributed to procedures used by experimenters rather than to basic features of individual preferences as posited by endowment effect theory.

A. Conventional Evidence and Interpretations

1. Evidence: WTP-WTA Gaps

Environmental economists were the first to report observed WTA-WTP gaps. During the 1970s they began to study contingent valuations to help determine appropriate allocations of non-market goods.¹⁹ The findings were striking: many studies reported a much higher WTA relative to WTP.²⁰ In other words, when consumers were told they were entitled to the good, they

¹⁸ Observed gaps were documented well before, however. See e.g., Coombs, Bezebinder and Goode. Testing Expectation Theory of Decision Making without measuring utility or subjective probability. 4 J of Mathematical Psych 72 (1967); Hammack and Brown in Waterfowl and Wetlands. 1974.

¹⁹ Contingent valuation studies are designed to measure individual valuation for non-market goods (e.g., wet lands suitable for ducks). See e.g., J. Hammack and G.M. Brown, Water Fowl and Wet Lands: Toward Bio Economic Analysis. Baltimore: Johns Hopkins University Press for Resources for the Future (1974). In these studies consumers are asked to value a particular good assuming a market for the good exists or that a tax system could be devised to fund the good's production.

²⁰ J. Hammack and G.M. Brown, Water Fowl and Wet Lands: Toward Bio Economic Analysis. Baltimore: Johns Hopkins University Press for Resources for the Future (1974) (finding that duck hunters would pay \$247 on average to maintain wetlands, but required \$1,044 on average to sell the right to a maintained wetland); Richard C. Bishop, Thomas A. Heberlein and Mary Jo Kealy, Contingent Valuation of Environmental Assets: Comparisons with a Simulated Market, 23 Nat. Resources J. 619 (1983) (reporting WTA averages between \$21 and \$101 and WTP averages between \$11 and 32 for permits to hunt Canadian geese).

placed a (usually) much higher value on it than when they were told they were not entitled to it but could purchase it.

Knetsch and Sinden were among the first to test whether WTA-WTP gaps observed in the field would hold up in a controlled laboratory environment.²¹ They ran a set of experiments in which half the subjects were endowed with lottery tickets. The remaining subjects were endowed with \$2 in cash. Subjects were told that the lottery winner would choose between two prizes (e.g., a \$70 bookstore gift certificate and \$50 in cash). Ticket owners were then given a choice between keeping the ticket and selling it for \$2. The others were given an opportunity to buy a ticket for \$2. The experimenters hypothesized that once decisions were binding (i.e., subjects actually had to trade rather than merely report hypothetical valuations), the gap would disappear. The data did not support this hypothesis. They found that more ticket owners ended up with tickets than did potential buyers.

Subsequently several experimentalists set out to investigate the nature and robustness of the WTA-WTP gap. Coursey et al. studied whether subject familiarity with the good matters.²² They also explored whether the nature of the endowed good matters.²³ Ortona and Scacciati investigated how duration of entitlement influences one's willingness to trade an endowed good for money²⁴ and whether results would differ for necessary goods (e.g., required school books) and unnecessary goods (e.g., expensive book on the

²¹ Knetsch and Sinden. *Quarterly J. of Econ.* (1984)

²² Experimenters conjectured that subjects might have preconceived notions of the value of familiar goods and these notions might confound gap measurements. See e.g., Coursey, Hovis and Schulze, *The Disparity Between Willingness to Accept and Willingness to Pay Measures of Value*, 102 *Quarterly Journal of Economics* 679 (1987) (subjects reported valuations for the right to avoid holding a bitter-tasting liquid in their mouths). See also Dubourg, Jones-Lee and Loomes, *Imprecise Preferences and the WTP-WTA Disparity*, 9 *J. of Risk and Uncertainty* 115 (1994) (finding that imprecision of preferences over unfamiliar goods (e.g., increase in automobile road safety) explains only a portion of the WTP-WTA disparity).

²³ Coursey, Hovis and Schulze, *The Disparity Between Willingness to Accept and Willingness to Pay Measures of Value*, 102 *Quarterly Journal of Economics* 679 (1987) (discussing possibility that valuation measurements for lotteries would be confounded by the effects of preference reversals).

²⁴ Ortona and Scacciati, *New Experiments on the Endowment Effect*, 13 *Journal of Economic Psychology* 277 (1992) (concluding that endowment possession time does not influence one's valuation of an endowed good). See also Michal A. Strahilevitz and George Loewenstein, *The Effect of Ownership History on the Valuation of Objects*, 25 *Journal of Consumer Research* 276 (1998) (finding that valuation increases with duration of ownership for goods currently in one's possession and that previous ownership of objects not currently in one's possession increases valuation).

military).²⁵ Loewenstein and Issacharoff studied whether individuals place higher values on objects they obtain as a reward for exemplary performance of some task.²⁶ Shogren et al. investigated whether easily available substitutes for the good affect the magnitude of the gap.²⁷

[I plan to add a broader description of the conventional experimental literature here, organized by inquiry type.]

Meta-analyses of the WTA-WTP gap literature attempt to draw conclusions from the vast number of individual studies, some of which result in observed gaps and some of which do not.²⁸ For example, Professors Sayman and Öncüler demonstrate that iterative bidding and within-subjects designs decrease observed gaps, whereas requiring buyers to purchase goods using their own money increases observed gaps.²⁹ Professors Horowitz and McConnell find that gap size is positively correlated with non-ordinary market goods (e.g., health and safety, the right not to have to experience a bitter-tasting liquid) and the use of incentive compatible elicitation devices.³⁰

2. Evidence: Exchange Asymmetries

Exchange experiments differ from WTA-WTP gaps experiments in that they do not require subjects to state valuations as sellers and buyers. Rather

²⁵ Ortona and Scacciati, New Experiments on the Endowment Effect, 13 *Journal of Economic Psychology* 277 (1992) (finding no gap for necessary and unnecessary goods).

²⁶ Loewenstein and Issacharoff, *J of Behavioral Decision Making* (1994) (finding that winners of objects value them more highly than those given object after losing).

²⁷ Shogren, Shin, Hayes and Kliebenstein, *American Economic Review* (1994) (finding mixed results when comparing the effects of goods with easily available substitutes and those without on the gap's magnitude).

²⁸ J.K. Horowitz and K.E. McConnell, A Review of WTA/WTP Studies, 44 *Journal of Environmental Economics and Management* 426 (2002); Serdar Sayman and Ayşe Öncüler. Effects of study design characteristics on the WTA–WTP disparity: A meta analytical framework, 26 *Journal of Economic Psychology* 289 (2005).

²⁹ Sayman and Öncüler at [pin cite]. Within-subject designs allow subjects to participate in multiple treatments (e.g., report valuations as buyers and sellers). Between-subject designs restrict subjects to participating in just one treatment.

³⁰ Horowitz and McConnell (2002). Review of WTA-WTP Studies. Incentive compatible devices are designed to provide incentives to encourage subjects to report their true valuations (i.e., the amounts of money that make them indifferent between the money and the good). This result, however, might be driven by the fact that they coded experiments using incentive compatible mechanisms but posing hypothetical choices as incentive compatible. Other experimental studies, however, suggest that asking subjects to engage in real exchanges focuses their attention and is likely to produce responses more likely to correspond to non-strategic, unbiased valuations. [add cites]

subjects are endowed with a good and then asked whether they would like to trade the good for another of roughly equal market value.

Professor Jack Knetsch was among the first to report results from exchange experiments.³¹ The experiments involved two groups of subjects. Each subject in the first group was given a mug, told (sometimes repeatedly) that they owned the mug, and then asked to complete a questionnaire. Following the questionnaire, the subjects were shown candy bars and told that they could each have one in exchange for the mug. The subjects were instructed to hold up a piece of paper with the word “trade” written on it if they preferred the candy bar to the endowed mug. To reduce transaction costs, the experimenter immediately executed all desired trades by delivering candy bars to the subjects wishing to exchange. Using a second group of subjects, the same experiment was performed except that each subject in the group was given a candy bar, told that they owned the candy bar and given an option to trade it for a mug. The results were in line with other experiments reporting an exchange asymmetry. Of the 76 subjects endowed with mugs, 89 percent chose to keep the mug. The possibility that subjects simply preferred the mugs to the candy bars was ruled out by the fact that, of the 87 different subjects endowed with candy bars, 90 percent chose to keep the endowed candy bar rather than exchange it for a mug.

Other researchers have obtained similar results using procedures in line with Knetsch’s design. Professor William T. Harbaugh and his co-authors conducted simple exchange experiments using children as subjects to test whether market experience affects reluctance to trade and found that observed exchange asymmetries were independent of market experience levels.³² In addition, Professor John A. List reported results from exchange experiments also designed to study whether market experience affects exchange asymmetries.³³ He found that subjects with market experience tend not to display exchange asymmetries. For those without market experience, however, he observed a significant asymmetry in choices. Finally, Eric van Dijk and Daan van Knippenberg conducted exchange experiments to test the effects of comparability of consumer goods on the reluctance to trade.³⁴ Subjects were “rewarded” with a bottle of wine (half one kind and half another) in exchange for participating in the study. Subjects were then allowed to trade with one another. The results suggest that subjects were reluctant to trade in general and were more reluctant to trade when they perceived substantial differences between the endowed good and the alternate good.

³¹ This literature review is based on the summary that appears in Plott and Zeiler (2005).

³² Harbaugh et al. (2001).

³³ John A. List (2003 and 2004).

³⁴ van Dijk and van Knippenberg (1998).

3. Common Interpretations of Conventional Evidence

Professor Richard Thaler was among the first to posit an explanation for observed WTP-WTA gaps.³⁵ Thaler argues that observed gaps can be explained by prospect theory—a general theory positing that utility is determined relative to a reference point (“reference-point dependence”) and that individuals are hurt more by losses than they are helped by gains of the same size, causing them to act in ways to avoid losses (“loss aversion”).³⁶ In applying prospect theory to explain observed valuation gaps, Thaler suggests that endowment of a particular good establishes an individual’s reference point, and one perceives the sale (or, more generally, the giving up) of the endowed good as a loss.³⁷ To avoid experiencing a loss from selling, individuals state high amounts when asked to reveal the lowest amount of money they would be willing to accept to give up the endowed good. This explanation has been referred to as “endowment effect theory” in the experimental literature.³⁸ With this theory in mind Thaler coined the term “endowment effect” to refer to the observed phenomenon.³⁹ Endowment effect theory is thought to be a leading explanation for observed gaps between WTP and WTA.⁴⁰

³⁵ Richard Thaler, *Towards a Positive Theory of Consumer Choice*, 1 *Journal of Economic Behavior & Organization* 39 (1980)

³⁶ Prospect theory is an alternative to expected utility theory (sometimes called von Neumann-Morgenstern utility), which posits that the utility of an agent facing uncertainty is calculated using a weighed average of utility in each possible state of the world. Von-Neumann and Morgenstern (1944) *Theory of Games and Economic Behavior*. Specifically, prospect theory posits that individual utility functions are characterized by reference point dependence and loss aversion. Unlike expected utility theory, prospect theory suggests that utility depends on one’s reference point or starting point. The theory also assumes individuals experience more disutility from losses than they do utility from gains of the same size. This difference in perception of gains and losses leads to loss aversion, which prompts individuals to take action to avoid losses. See Daniel Kahneman and Amos Tversky, *Prospect Theory: An Analysis of Decisions under Risk*, 47 *Econometrica* 263 (1979).

³⁷ [add pin cite to either JEBO or JPE]

³⁸ See Plott and Zeiler (2005) and (2007).

³⁹ The label “endowment effect” commonly has been used to refer to observed asymmetries. See Thaler (1980). Using this label to refer to the observed phenomenon is problematic because, in addition to acting as a label for the observation, it suggests a particular theory to explain the phenomenon. In particular, use of the label implies that a particular form of preferences causes the asymmetry. Using “endowment effect theory” to refer to the theoretical explanation distinguishes it from the observed phenomenon, which is better referred to as a “WTA-WTP gap” or “exchange asymmetry.”

⁴⁰ Raban, Daphne R. and Sheizaf Rafaeli “Subjective Value of Information: The Endowment Effect.” *E-Society Proceedings of the 2003 IADIS conference IADIS e-Society 2003*, pp. 392-401; List, John A. 2006 “Using Hicksian Surplus Measures to

Endowment effect theory has also been used to explain observed exchange asymmetries. Knetsch concluded from his experimental results that subjects' choices depended on their endowments.⁴¹ In particular, he suggested that the observed asymmetry resulted from subjects "[weighing] the loss of giving up their initial reference entitlement far more heavily than the foregone gains of not obtaining the alternative entitlement."⁴² In other words, he interpreted the observed behavior as resulting from loss aversion.

Several other theories have been posited to explain observed gaps and exchange asymmetries.⁴³ First, some have suggested that endowing sellers with a good and leaving buyers' entitlements unchanged might create wealth effects and that rational choice theory predicts wealth disparities will cause WTA-WTP gaps.⁴⁴ Experimenters, however, have tested this theory and found it does not seem to organize the data well.⁴⁵ Second, some have suggested that gaps can be explained by regret avoidance.⁴⁶ This theory rests on two assumptions: (1) lost utility from regretting a "bad" decision to trade is greater than the lost utility of regretting a "bad" decision not to trade, and (2) lost utility from regretting a "bad" decision is greater than utility gained from reveling in a "good" decision.⁴⁷ Third, others have argued that subjects might value endowed goods differently because they experience psychological attachment to endowed goods.⁴⁸ This explanation differs from endowment effect theory because it does not adopt loss aversion as the driver behind observed gaps; rather, it posits that entitlement to a good transforms the nature of the good so that the good becomes more valuable as the holder

Examine Consistency of Individual Preferences: Evidence from a Field Experiment." *Scandinavian Journal of Economics*, 108(1):115-34; Christine M. Jolls, *Behavioral Law and Economics*, in Peter Diamond, ed. *Economic Institutions and Behavioral Economics*. Princeton: Princeton University Press (2005).

⁴¹ Knetsch (1989, AER).

⁴² Knetsch (1989, AER) [pin cite]

⁴³ See Korobkin (NW Law Rev 2003) (summarizing posited explanations and emphasizing the importance of discovering which theory best organizes the data before applying the theories in legal analyses).

⁴⁴ cite

⁴⁵ cite to experimental lit demonstrating that wealth effects do not account for disparity.

⁴⁶ See Russell Korobkin, *Inertia and Preference in Contract Negotiation: The Psychological Power of Default Rules and Form Terms*, 51 *Vand. L. Rev.* 1583, 1610-26 (1998).

⁴⁷ Korobkin, NW 2003 at 1254.

⁴⁸ Ortona and Scacciati, *New Experiments on the Endowment Effect*, 13 *Journal of Economic Psychology* 277, [pin] (1992); Cass R. Sunstein, *Legal Interference with Private Preferences*, 53 *Chicago Law Review* 1129, 1151 (1986); Thomas F. Cotter 1997, 62; Jeffrey J. Rachlinski and Cynthia R. Farina, *Cognitive Psychology and Optimal Government Design*. 87 *Cornell Law Review* 549, 605 (2002); Lee Anne Fennell, *Revealing Options*, 118 *Harvard Law Review* 1399, fn. 107 (2005).

enjoys entitlement. Although it is important to recognize that these and other alternative theories have been forwarded to explain gaps, legal commentators cite endowment effect theory as the leading theory. Thus, this Article focuses on endowment effect theory and its application to law.

Despite claims to the contrary,⁴⁹ there is no consensus in the economics literature about the nature, robustness and cause of observed WTA-WTP gaps and exchange asymmetries. Several experimental studies report significant gaps while others report no gap. This mix of results motivated two new studies that investigate the influence of experimental procedures on whether a gap is observed.

B. Recent Evidence and Interpretations

Two recent studies call into question common interpretations of WTA-WTP gaps and exchange asymmetries as support for endowment effect theory. The first study focuses on procedures used in studies that measure gaps by eliciting subjects' valuations as buyers and sellers. The second study looks more closely at the procedures employed in experiments in which subjects are endowed with one good and asked if they wish to trade the good for an alternate good. The results from both studies support the claim that gaps and exchange asymmetries are artifacts of the experiments' designs. The data do not support endowment effect theory.

1. Evidence: WTA-WTP Gaps and Subject Misconceptions

At the same time that experimenters were exploring the nature and robustness of WTA-WTP gaps, they also implicitly (and sometimes explicitly) devised methods to control for a variety of possible alternative explanations. We can separate these controls into five categories. First, some studied the influence of using market mechanisms⁵⁰ and incentive-compatible mechanisms to elicit valuations.⁵¹ An incentive-compatible

⁴⁹ [cite]

⁵⁰ David S. Brookshire and Don L. Coursey, *Measuring the Value of a Public Good: An Empirical Comparison of Elicitation Procedures*, 77 *American Economic Review* 554 (1987) (finding that the gap's magnitude is significantly reduced when market mechanisms are used to elicit valuations).

⁵¹ David S. Brookshire, Don L. Coursey and Karen M. Radosevich, *Market Methods and the Assessment of Benefits: Some Further Results*, in *Amenity Resource Valuation: Integrating Economics with Other Disciplines*, eds. George L. Peterson, B.L. Driver and Robin Gregory. Venture Publishing, Inc. State College, PA (1988) ("Without the addition of a market-like elicitation procedure that induces truthful revelation of value, the gap and associated asymmetry between WTP and WTA measures should not be expected to disappear.")

mechanism is designed to elicit valuations devoid of strategic considerations and other external influences. To achieve incentive compatibility, experimenters use mechanisms that provide subjects an incentive to reveal valuations devoid of external influences.⁵² They also require subjects to make binding (as opposed to hypothetical) decisions that influence what they will walk away with at the end of the experiment.⁵³

Gordon M. Becker, Morris H. DeGroot, and Jacob Marschak designed one such mechanism in the early 1960s.⁵⁴ When subjects are in the role of buyer, the mechanism works as follows.⁵⁵ Each potential buyers' bid is compared to a randomly generated number, announced after all bids are placed. If the bid is higher than (or equal to) the random number, the subject buys the good and pays an amount equal to the random number. If the bid is lower than the random number, the subject does not buy the good and keeps his money. The bidder maximizes his profits by bidding his true value for the good (i.e., the amount of money that makes him indifferent between the money and the good).⁵⁶ If he bids some number higher than his true value, and the random number falls between his true value and his bid, he must buy the good for an amount higher than his true value. Alternatively, if his bid is lower than his true value, and the random number falls between his true value and his bid, he passes up the chance to purchase the good for some amount lower than his true value. By utilizing this mechanism to elicit valuations, the experimenter encourages subjects to announce their true valuations, which are independent of strategic considerations triggered, for example, by competing with other subjects for the opportunity to transact.

Second, some experimenters expressed concern that subjects might be unfamiliar with the market context or incentive-compatible mechanism used

⁵² See e.g., Coursey, Hovis and Schulze, *The Disparity Between Willingness to Accept and Willingness to Pay Measures of Value*, 102 *Quarterly Journal of Economics* 679 (1987) (employing a Vickrey auction to provide incentive for subjects to announce valuations devoid of external influences); but see Jack L. Knetsch, Fang-Fang Tang and Richard H. Thaler, *The Endowment Effect and Repeated Market Trials: Is the Vickrey Auction Demand Revealing?*, 4 *Experimental Economics* 257 (2001) (finding that in some contexts Vickrey auctions are not incentive compatible).

⁵³ See e.g., Jack L. Knetsch and J.A. Sinden, *Willingness to Pay and Compensation Demanded: Experimental Evidence of An Unexpected Disparity in Measures of Value*, 99 *Quarterly Journal of Economics* 507 (1984) (observing significant gaps even after presenting subjects with binding decisions that resulted in possible cash compensation); Harless, *Journal of Economic Behavior & Organization* (1989) (using binding second-price auctions).

⁵⁴ Becker, DeGroot, and Marschak. *AER* 1963.

⁵⁵ The mechanism works in a similar fashion when subjects are in the role of seller.

⁵⁶ "True value" refers to an individual's valuation uninfluenced by strategic considerations introduced by a valuation elicitation mechanism or other mechanism that determines eventual allocation.

to elicit valuations.⁵⁷ To control for this, experimenters sometimes provide training on the mechanism's operation. Some simply announced that it was in the subjects' best interests to report "true valuations."⁵⁸ Some explained to subjects the optimal strategy of revealing true valuations.⁵⁹ Some went as far as providing subjects with a detailed explanation of the mechanism along with numerical examples of how reported valuations influence payouts.⁶⁰ Sometimes explanations were provided and then subjects were tested for understanding.⁶¹ In addition, some experimenters explained to subjects how to determine their true valuations.⁶² While the procedures differed in approach, they were all used with one goal in mind: to increase understanding of the elicitation device and therefore the likelihood that subjects report valuations independent of strategic considerations.

Third, some experimenters provide subjects an opportunity to practice using the elicitation mechanism and to ask questions. Practice was often provided in the form of unpaid rounds similar to the subsequent paid rounds used to measure valuation asymmetries.⁶³ The purpose of practice rounds is

⁵⁷ David S. Brookshire, Don L. Coursey and William D. Schulze, Experiments in the Solicitation of Private and Public Values: An Overview, in *Advances in Behavioral Economics*, Vol. 2, ed. Leonard Green and John H. Kagel, Norwood, NJ: Ablex Publishing, at 173-190 ("If respondents treat the contingent valuations as an auction of a good that is not clearly understood...and in a market context that is unfamiliar..., then a logical strategy is to adopt an initial bargaining position with extreme initial bids." quote at 176).

⁵⁸ Coombs, Bezeminder and Goode, *J of Mathematical Psychology* (1967); Kahneman, Knetsch and Thaler, [title], *Journal of Political Economy* (1990); Loewenstein and Issacharoff, [title] *JBDM* (1994); List and Shogren [title] *Amer J Agr Econ* (1999); Shogren, Cho, Koo, List, Park, Polo, Wilhelmi [title] *Resource and Energy Economics* (2001).

⁵⁹ Harless, *Journal of Economic Behavior & Organization* (1989) (studying the effects of explaining the optimal strategy of the incentive-compatible mechanism to subjects; **[report findings; add detail about training]**; Knetsch, *American Economic Review* (1989) (providing detailed explanation to subjects and dismissing groups if 25% or more failed a quiz to test for understanding); Ortona and Scacciati, *JEP* (1992).

⁶⁰ Brookshire and Coursey, *American Econ. Rev.* (1987)

⁶¹ Bateman, Munro, Rhodes, Starmer, Sugden, *Quarterly J of Econ.* (1997); Knetsch, Tang and Thaler, *Experimental Econ* (2002) (instructing "it is in your best interest to indicate your true WTA/WTP in each round"; providing specific instructions on the market mechanism and administering two questions to test for understanding).

⁶² Cites.

⁶³ Coursey, Hovis and Schulze, *The Disparity Between Willingness to Accept and Willingness to Pay Measures of Value*, 102 *Quarterly Journal of Economics* 679, 684 (discussing importance of providing practice rounds and providing four non-binding trial rounds); Knetsch, *American Economic Review* (1989) (providing one hypothetical round prior to actual measurements of valuations); Kahneman, Knetsch and Thaler, *Journal of Political Economy* (1990) (providing hypothetical rounds for

to allow subjects to familiarize themselves with the elicitation mechanism so that noise due to error is minimized when experimenters elicit actual valuations used to measure WTA-WTP gaps.

Fourth, experimenters often provide subjects with *paid* practice rounds to provide subjects with experience using the elicitation device before eliciting valuations used to measure the gap.⁶⁴ Paid practice rounds are more likely than unpaid practice rounds to positively reinforce the behavior of subjects who announce non-strategic valuations and punish those who mistakenly (or purposefully) respond non-optimally by announcing other than one's true valuation. The idea is that paid practice rounds more effectively promote learning so that, by the time subjects participate in the round that produces data used to measure WTA-WTP gaps, they understand that announcing non-strategic valuations will maximize their payouts.

Fifth, some have argued that subjects who believe that their responses will be revealed to other subjects or to the experimenter might use the opportunity to signal something about their personal characteristics to others. For example, Fremling and Posner suggest that subjects might increase the minimum amount of money they would be willing to accept to give up an endowment to signal to others that their time is valuable.⁶⁵ One might imagine other signals subjects might attempt to send to their fellow subjects, which might move revealed valuations either up or down. For example, if the subjects perceive the endowed good as a gift from the experimenter, they might ask for more than they would otherwise as a way to signal gratitude for or appreciation of the "gift." Controlling for signaling opportunities in the laboratory is quite simple; double-blind experiments ensure that neither the subjects nor the experimenter will learn the revealed valuations or individual subject payouts.⁶⁶

Table 1 summarizes the controls commonly used in WTA-WTP gap experiments to remove influences that might compel subjects to report something other than the maximum amount they would pay as buyers and

practice and to gauge understanding); Boyce, Brown, McClelland, Peterson and Schulze, *American Economic Review* (1992) (providing ten unpaid practice rounds before one binding round). Arlen, Tally and Spitzer, *Journal of Legal Studies* (2002) (providing two practice rounds with a test for understanding).

⁶⁴ Franciosi, Kujal, Michelitsch, Smith and Deng, *Journal of Economic Behavior & Organization* (1996) (providing paid induced-value token rounds to train subjects on the elicitation mechanism)

⁶⁵ Fremling and Posner, Working paper. The authors posited that, by stating a high WTA, a subject could signal that the effort she would have to expend to obtain a replacement good would be very costly because her time is highly valuable. [pin cite]

⁶⁶ Knetsch and Sinden (*QJE*, 1984); Brookshire and Coursey (*AER*, 1987); Shogren et al. (*AER*, 1994); Knetsch, Tang and Thaler (*Experimental Econ*, 2002); Arlen, Spitzer and Talley (*JLS*, 2002). [add parentheticals]

the minimum amount they would accept as sellers. Some experimenters use only one of the controls, while others use several to remove confounding factors. The lack of one or more of the controls in previous designs was the impetus for the new studies.

With these controls in mind, Plott and Zeiler designed an experiment to test an alternative theory against endowment effect theory as an explanation for observed gaps.⁶⁷ The motivation behind the design is simple. To test endowment effect theory, experimenters must measure the gap devoid of strategic considerations and misconceptions about how revealed valuations map into outcomes. This can be quite difficult. Mechanism designers have toiled to construct truth-revealing mechanisms for this very purpose.⁶⁸ While the mechanisms are clever and elegant to an economist's trained eye, the typical experiment subject might find them unwieldy and mysterious. Moreover, because they are not commonly used in actual markets, most subjects who participate in WTA-WTP gap experiments likely are unfamiliar with them. Given this, it seems reasonable to suspect that subjects' misconceptions about how their reported valuations affect how much money they will walk away with at the end of the experiment might lead them to revert to their basic market instincts: sell high and buy low. Therefore, the study set out to test the following conjecture: Are gaps the result of subject misconceptions about how their responses map into outcomes given a particular valuation elicitation mechanism (e.g., the Becker-DeGroot-Marschak mechanism)?

With this conjecture in mind, the study identifies a set of controls experimenters employ to eliminate subject misconceptions that might lead to confounded valuation measurements. The new experiment implements the union of the controls collected from previous studies.⁶⁹ First, valuations were elicited using an incentive-compatible mechanism (i.e., the Becker-DeGroot-Marschak mechanism) to encourage subjects to announce their non-strategic valuations. By making subjects' decisions binding—coffee mugs were actually exchanged for money and vice versa—subjects had an incentive to maximize potential earnings. Second, in an attempt to control for misconceptions subjects might have about how the mechanism works, they were trained on how to determine the most they would pay as buyers and the least amount they would accept as sellers. They also received training on exactly how the mechanism maps reported valuations into payoffs. Subjects were walked through examples illustrating why reporting non-strategic valuations was the optimal strategy. Third, subjects participated in two non-binding practice rounds using lotteries with cash outcomes during which they were encouraged to ask questions. Fourth, prior to measurement of the gap,

⁶⁷ Charles R. Plott and Kathryn Zeiler (2005)

⁶⁸ [cite to mechanism design literature; specifically truth-revealing auctions].

⁶⁹ Plott and Zeiler AER (2005) pp. 537-38.

the subjects participated in fourteen paid practice rounds using lotteries to develop a better understanding of the mechanism and to allow for learning from actual rewards and losses. Fifth, all decisions and payouts were made anonymously. This alleviated concerns that subjects might gravitate away from their true valuations in order to signal some personal characteristic to other subjects.⁷⁰

Table 1: Summary of experiment controls employed to eliminate confounders when measuring WTP-WTA gaps

Control	Purpose	Examples
Incentive-compatible mechanism	To provide incentives for subjects to report true valuations	Coursey, et al. (QJE, 1987) Knetsch and Sinden (QJE, 1984)
Training	To increase understanding of elicitation device and optimal strategy	Harless (JEBO, 1989) Kahneman et al. (JPE, 1990) Knetsch (AER, 1989)
Practice/coaching	To provide experience with the elicitation mechanism	Boyce et al. (AER, 1992) Arlen et al. (JLS, 2001?)
Paid practice	To provide subjects with paid practice, focus attention and increase understanding	Franciosi et al. (JEBO, 1996)
Anonymity	To eliminate incentives to deviate from true valuations in order to signal personal characteristics to others	Knetsch and Sinden (QJE, 1984) Brookshire and Coursey (AER, 1987) Shogren et al. (AER, 1994)

Note: QJE = Quarterly Journal of Economics; JEBO = Journal of Economic Behavior & Organization; JPE = Journal of Political Economy; AER = American Economic Review; JLS = Journal of Legal Studies

The procedures were designed to test for whether observed gaps support endowment effect theory or whether gaps are attributable to alternative explanations such as subject misconceptions and classical preference theories that find influence through experimental procedures. Endowment effect theory predicts that sellers, randomly assigned as sellers, will ask for more than randomly assigned buyers will bid. Therefore, the controls should have no effect on the results as long as they leave intact all necessary conditions for endowment effect theory to apply (e.g., entitlements are present). If, on the other hand, the alternative theory related to procedures drives observed

⁷⁰ Some have suggested that subjects might state high valuations as sellers to signal their prowess as bargainers. See e.g., Gertrud M. Fremling and Richard A. Posner. Signaling. 2004.

gaps, then controlling for the confounding effects of the procedures should eliminate the gap.

The results strongly support the conjecture that procedures and subject misconceptions drive observed WTP-WTA gaps.⁷¹ When an incentive-compatible mechanism is employed, training on the mechanism is provided, subjects engage in paid practice rounds, and decisions are anonymous, no gap is observed. To test for whether paid practice rounds are necessary to eliminate the gap, in one treatment subjects were trained and participated in two unpaid practice rounds, but not the 14 paid practice rounds. Eliminating these rounds did not change the result: no gap was observed.⁷²

2. Evidence: Exchange Asymmetries and Classical Preference Theories

In a second set of experiments, we investigated whether procedures might also explain observed asymmetries in simple exchange experiments.⁷³ As described above, in these experiments subjects are endowed with one good and asked to raise their hands if they wish to trade the endowed good for an alternate good. Given the simplicity of the procedures, subject misconceptions most likely are not behind observed asymmetries. Therefore, we designed a set of experiments to determine whether procedures do play a role despite the fact that they likely do not lead to misconceptions about how choices influence outcomes.

In this study, we examined four different features of the conventional exchange experiment design. First, we tested whether the placement of the endowed good at the time of choice influences choices. We conjectured that placement might signal something to the subjects about the relative value of the goods. In other words, we wondered whether subjects might read into the fact that the experimenter placed one good within reach while the other good was merely passed around from one subject to the next for inspection. To test for this possibility subjects made choices with both goods immediately in front of them.⁷⁴

Second, we tested whether the experimenter's involvement in the choice of which good to endow affects subject choices. Our conjecture was that the subjects might view the endowment as a gift from the experimenter. This perception might prompt subjects to favor the endowed good over the alternate good. In addition, subjects might infer something about the relative

⁷¹ Plott and Zeiler AER 2005 p. 540.

⁷² Plott and Zeiler AER 2005 p. 540.

⁷³ Plott and Zeiler. AER 2007.

⁷⁴ In a more extreme treatment, subjects made choices while the alternate good was immediately in front of them and the endowed good was placed at the front of the room.

value of the goods from the experimenter's choice of which good to endow. To test for this we randomly determined which good to endow.

Third, we tested whether collecting choices using raised hands affects subjects' choices. In early pilots, we noticed that subjects seem to be using other subjects' choices as information about whether to trade. In fact, subjects reported to us that they considered others' choices. By allowing subjects to view other subjects' choices, attention might be shifted away from one's own preferences to a determination of the "right" answer or how one will be perceived by the other subjects. To control for these confounders, we gathered choices using forms rather than raised hands.

Fourth, we tested whether the experimenter's purposeful and repeated emphasis on entitlement influences choices. Because these experiments focus on the influence of entitlement on valuation, the experimenter must be confident that subjects understand they are entitled to one of the goods. To do this, experimenters might communicate this fact by repeating the message in a variety of ways (e.g., "The mug is yours. I'm giving it to you. You own it."). While repetition can be an effective method for increasing the transfer of information, using this method in exchange experiments might inadvertently influence choices by signaling relative value. Subjects might infer too much from the experimenter's repeated message. To test for this, we simply eliminated repetition of the message while at the same time taking steps to ensure that subjects understood they were entitled to the endowed good.

By implementing these controls we were able to test for whether endowment effect theory explains observed exchange asymmetries or whether experimental procedures give rise to observed asymmetries. Despite several procedural manipulations, one feature of the design remained constant over all treatments: entitlement to one of the goods. Therefore, endowment effect theory predicts we would observe a significant asymmetry in each treatment. On the other hand if observed asymmetries are attributable to the procedures, when we implement the specified controls we should observe no exchange asymmetry.

Our results support the claim that observed exchange asymmetries are attributable to the experimental procedures. When we incorporated all controls described above, subject choices were not correlated with entitlement.⁷⁵ **[add more detail here]**

⁷⁵ In fact, we found a reverse asymmetry (statistically significant at the 5% level). That is, subjects were somewhat more likely to leave with the alternate good. This might have been caused by the fact that, when they chose, subjects possessed the alternate good but not the endowed good. In a separate treatment, subjects possessed both goods when choosing. In this treatment, choices did not depend on the initial entitlement.

3. New Results Challenge Conclusion that Observed Gaps and Asymmetries are Not Artifactual

Professor Russell Korobkin argues that observed WTA-WTP gaps are not artifacts of the experimental setting in most circumstances.⁷⁶ He first argues that “strategic heuristics” that compel individuals to overstate WTA and understate WTP do not account for observed gaps in the laboratory.⁷⁷ He points to the results from simple exchange experiments as evidence that valuation asymmetries are observed even when misconceptions are absent.⁷⁸ In addition, he claims that experiments that elicit valuations over multiple rounds, finding no reduction of the WTA-WTP gap, demonstrate that gaps remain even when procedures are altered to “give [subjects] an opportunity to learn that revealing their true WTP and WTA values is the dominant strategy.”⁷⁹

The results from the first Plott and Zeiler study call this conclusion into question.⁸⁰ The results suggest that gaps *are* artifacts of the experimental setting. Specifically, the data support the conjecture that misconceptions about how revealed valuations will impact payouts compel subjects to sell high and buy low. Once procedures are put into place to reduce misconceptions (e.g., incentive-compatible mechanism, training on the unfamiliar mechanism, anonymity, etc.), gaps disappear. Furthermore, while it’s true that misconceptions likely do not explain observed asymmetries in simple exchange experiments, the second Plott and Zeiler study supports the claim that procedures likely drive asymmetries in these simple exchange experiments. Finally, that experience gained through engaging in multiple rounds seems not to eliminate the gap does not imply that procedures play no role in the explanation behind observed gaps. Experience is but one procedure of many that possibly reduce misconceptions; it might be insufficient on its own. It could be that training subjects on why the unfamiliar auction mechanism rewards those who report non-strategic

⁷⁶ Russell Korobkin, NWLR article (2003) (“One possible explanation of the experimental results demonstrating the endowment effect is that they are artifacts of experimental techniques and conditions.... Although experimental conditions probably have some explanatory power in some cases, the weight of the evidence suggests that it is extremely unlikely that the effect is merely an artifact of the experimental methods that demonstrate it.” (at 1243)).

⁷⁷ Korobkin (NW 2003 at 1243)

⁷⁸ Korobkin (NW 2003 at 1243-44)

⁷⁹ Korobkin (NW 2003 at 1244). Korobkin also addresses experiments that incorporate experience and find no gap (at 1245-46). He attributes these findings to problems with the elicitation device used in these experiments (i.e., Vickrey auctions with multiple trials, after each of which subjects learn the clearing price produced by the auction). Plott and Zeiler do not use Vickrey auctions, however. Therefore, their results cannot be explained by problems with this type of auction.

⁸⁰ See TAN at 67-72.

valuations better controls misconceptions. In fact, Plott and Zeiler find that experience is unnecessary to eliminate the gap when training and other controls are implemented.⁸¹

Second, Professor Korobkin argues that signals sent by experimental procedures about the relative value of goods do not account for observed gaps in the laboratory.⁸² For example, subjects uncertain about the relative value of the goods in simple exchange experiments might infer that the experimenter endowed the good with the higher value.⁸³ While Professor Korobkin admits that this explanation might apply in some experiments, he argues that a large number of experiments that result in asymmetries do not suffer from potential signaling (e.g., goods were randomly distributed and subjects knew others received different good).⁸⁴ For this reason, information signaling likely is not a robust explanation for observed gaps and asymmetries.

The results from Plott and Zeiler's second study serve as evidence against this claim.⁸⁵ While Plott and Zeiler argue that signals of relative value likely drive observed asymmetries, at least in part, they also posit that other procedures play a role in compelling subjects to keep their endowed goods. For example, even the smallest transaction cost might compel subjects to keep their endowed goods. In addition, the language the experimenter uses to endow subjects might signal information about relative value even when the endowed good is randomly chosen. Plott and Zeiler demonstrate that when randomization is coupled with other controls, exchange asymmetries vanish. So, while randomization might be a necessary control, it might not always be sufficient to eliminate alternative explanations for asymmetries.

Professor Korobkin also argues that the weight of the evidence supports the claim that information signaling likely does not drive asymmetries. This argument is just one of many that point to the weight of evidence in support of endowment effect theory. The following Part discusses this misinterpretation, along with others.

⁸¹ Plott and Zeiler (AER 2003 at 541)

⁸² Korobkin (NW 2003 at 1247)

⁸³ Korobkin (NW 2003 at 1247) ("If the status quo investment were, say, a bond fund, subjects with little knowledge of investing might have chosen to keep that investment not because they had a preference for the status quo, but because they assumed that if the funds were already invested in bonds, then someone must have determined bonds were a good investment.")

⁸⁴ Korobkin (NW 2003 at 1247) ("Although perceived information signals provide plausible explanations for some experimental results, there are far too many experiments for which this explanation is implausible to believe that it explains the endowment effect.")

⁸⁵ See TAN at 73-75.

4. Misinterpretations of Recent Evidence

Before moving to legal applications of endowment effect theory, it's important to address two common misinterpretations of the recent results described in this Part.

- a. Misinterpretation #1: While some experiments produce no gap, the weight of the evidence supports endowment effect theory

Some have argued that despite the recent evidence demonstrating that gaps can be eliminated, the weight of the evidence supports endowment effect theory as an explanation for observed valuation gaps and exchange asymmetries.⁸⁶ Specifically, some have argued that many more studies report gaps, and the sheer number of studies finding a gap suggests that the recent studies might be missing something.

The theories posited by Plott and Zeiler (2005 and 2007), however, suggest that piling up studies on each side of the scale is not an appropriate way to evaluate the body of evidence. In both studies, the authors point to *numerous* features of the experiment designs that potentially trigger alternative explanations for gaps and asymmetries. The main lesson we learn from the recent studies is that, if the experiment design does not include proper controls, we cannot rule out alternative explanations for gaps and asymmetries.

Thus, focusing on procedures as possible drivers of gaps and asymmetries allows us to divide studies into two categories: those that implement adequate sets of controls to eliminate possible alternative explanations that find influence through experiment procedures, and those that do not. Considering the body of evidence from this perspective suggests claims that the weight of the evidence supports endowment effect theory are misguided. The fact that the number of studies that report gaps exceeds the number of studies that do not simply reflects the fact that a large majority of studies fail to implement proper controls. The recent evidence suggests that gaps and asymmetries observed in these studies are driven not by reference dependence and loss aversion, but rather by alternative explanations related to procedures. In short, given the nature of the theoretical explanation related to procedures, counting studies seems an unproductive method for evaluating the strength of the evidence in this case.

⁸⁶ Korobkin, others?

- b. Misinterpretation #2: The new results suggest that the WTA-WTP gap is context-dependent

Some have argued that the laboratory evidence taken as a whole demonstrates that the endowment effect is context-dependent.⁸⁷ Given the most recent evidence, the argument goes, we should direct our efforts toward determining which contextual features are associated with observed gaps and which are not. Associations between gaps and contextual features can then help us predict whether we will observe a gap given the context.

To understand why this argument misinterprets the data, it's important to recognize first that, in its simplest form, it attempts to draw conclusions from observed gaps and asymmetries without considering what explains the observed phenomena. The purpose behind experiments is to generate data in the laboratory *to test theories* designed to explain and predict behavior. Moving directly from data to application, without considering whether the data support a particular theory, is unhelpful.⁸⁸ Data generated in the laboratory are useful only to the extent they help to support or reject posited theories. Well-supported theories can then be employed in applications (e.g., if we are confident that endowment effect theory explains why the eventual distribution of rights depends on legal entitlements, we can apply the theory to devise desirable methods for allocating rights).

For this reason, it is essential to unpack the meaning of “context-dependent” as it relates to endowment effect theory. To do this, we might introduce context-dependence into endowment effect theory, somehow updating the theory to allow it to predict gaps and asymmetries conditional on particular contexts. To ensure the theory is falsifiable, we must establish sets of conditions sufficient to produce gaps or asymmetries. This also requires positing plausible connections between the sufficient conditions and features of the theory thought to drive disparities (i.e., reference points and loss aversion). Essentially, the theory would posit that when we value goods in certain contexts, our preferences are characterized by reference dependence and loss aversion (as assumed by prospect theory), whereas in other contexts, our preferences satisfy the assumptions of expected utility theory or some other theory devoid of reference-dependence and loss aversion.

Engaging in the steps necessary to develop some context-dependent version of endowment effect theory makes evident the pitfalls of this approach. Consider two examples. First, assume that experimenter involvement in choosing the endowment is shown to influence whether we observe an exchange asymmetry. That is, assume we observe an asymmetry

⁸⁷ Korobkin (NW 2003 at 1230); check Jolls recent piece.

⁸⁸ Zeiler, *Journal of Institutional and Theoretical Economics* (forthcoming)

if the experimenter chooses which good to endow, and that we do not observe an asymmetry if the experimenter randomly determines the endowment. To explain this observation using context-dependent endowment effect theory, we would need to argue that experimenter involvement either influences the reference point or increases subjects' sensitivity to loss aversion. Both claims seem difficult to support. Entitlement to the good is present in both contexts, and endowment effect theory assumes entitlement sets the reference point. To argue that subjects feel somehow differently entitled to the good when the experimenter chooses which good to endow seems a stretch. Similarly, drawing a connection between the method of endowment and the presence of loss aversion seems difficult. We have no reason to believe that entitlement by random distribution mitigates the influence of loss aversion once subjects are endowed.

A more plausible account suggests that differences in choices given different entitlement methods are merely clues about what causes gaps. In this case, it seems more plausible that experimenter involvement changes the nature of the endowment so that subjects are left to compare a good given to them by an authority figure, with whom they might have future dealings, to an alternate good, the choosing of which might offend the giver of the endowment. This conjecture posits that subjects' choices are driven by potential consequences of rejecting a gift given by an authority figure, which seems a more plausible explanation for observed asymmetries than the conjecture that experimenter involvement somehow influences subjects' reference points or their behavior under loss aversion.

A second example is derived from the observation that the new results suggest that public revelation of choices influence whether we observe an exchange asymmetry. We're more likely to observe asymmetries when choices are made publicly, and not when they are made privately. The first option—updating endowment effect theory to account for the effects of contextual features—forces us to posit some relationship between the public or private nature of choices, perceived reference points and loss aversion. This entails explaining why, for example, loss aversion is triggered or is more acute when subjects make public choices. Again, the connection seems unclear. More plausible is the conjecture that cascades triggered by the signals subjects' raised hands send about the "right choice" or relative value of the goods cause exchange asymmetries when choices are public.

Finally, even if we agree that observed gaps and asymmetries are artifacts of experimental procedures used to elicit valuations and choices, we might wonder how the discovered connections between gaps and contextual features of the procedures inform applications of the alternative theories supported by the data. While this is a perfectly natural step to take given the role of experiments in testing theories eventually applied in descriptive and normative analyses, in this case the step should be taken with caution if taken

at all. Caution is necessary because the alternative theories suggest that experimental procedures designed to elicit valuations and preferences drive observed gaps and asymmetries, and these procedures might be present only in the laboratory. For example, we need not worry that those participating in markets will misconceive how their actions translate into payoffs. We are not faced with unfamiliar mechanisms when we walk into stores and decide whether we want to pay money to obtain goods. We simply compare the price of goods to the amounts we're willing to pay and purchase if the price is lower. Certainly a variety of features influence how much we might be willing to pay, but we are not faced with an unfamiliar mechanism that converts our valuations into gains or losses. Likewise, whether we learn anything new from simple exchange experiments—other than the lesson that endowment effect theory does not account for observed asymmetries—is debatable. We've known all along that methods of entitlement and reputation effects influence our choices (we're reluctant to toss inherited goods in the trash when family members are watching), that we look to others' choices if we're uncertain about the correct course of action (we often consult consumer reports before buying and obtain information about recent sales in the neighborhood before putting our homes on the market), and that cues from others can help us determine the value of goods (electronic store cashiers working only for salaries often send hushed signals that extended warranties are not worth the price). For these reasons, more complicated applications of the alternative theories supported by the recent evidence likely will be unhelpful.

The next question is: what are the implications of the recent findings on legal applications of endowment effect theory? The purpose of the next Part is to revisit legal analyses that apply endowment effect theory to make (among others) descriptive or normative claims about the structure of legal entitlements.

II. APPLICATION TO LEGAL THEORY

In 1995, legal commentators started importing theoretical explanations for WTA-WTP gaps and exchange asymmetries into positive and normative legal analyses.⁸⁹ To date, over 680 law review articles refer to the endowment effect.⁹⁰ Endowment effect theory has been applied both to

⁸⁹ Stake, Jeffrey E. 1995. "Loss Aversion and Involuntary Transfers of Title," in Robin Paul Malloy and Christopher K. Braun, eds., *Law and Economics: New and Critical Perspectives*. Critic of Institutions, Vol. 4. Peter Lang Publishing.

⁹⁰ A Westlaw search in the "journals and law reviews" database conducted on December 20, 2007 using the search term "endowment effect" produced over 680 hits.

explain observed phenomenon and to make normative claims about how the law should account for the impact of reference points and loss aversion on behavior. The purpose of this Part is to revisit these applications to examine how they might be impacted by the recent empirical results suggesting observed gaps and asymmetries are not explained by endowment effect theory but rather by alternative theories that find influence through experiment procedures used to endow subjects with goods and to elicit valuations and choices. Before revisiting some of these applications, however, this Part begins by clearing up some misapplications of endowment effect theory in legal scholarship.

A. Misapplications of Endowment Effect Theory

1. Endowment effect theory does *not* support legal protection of the status quo

One of the most popular normative applications of endowment effect theory in legal scholarship suggests that policymakers should give special weight to the status quo.⁹¹ These applications posit that when the status quo is upset (e.g., the law requires the giving up of some entitlement), loss aversion leads to disutility separate from that suffered by the loss of the value of the entitlement. So, in addition to the loss of the entitlement's value, policymakers should consider the extra disutility entitlement losers experience as a result of loss aversion. This consideration leads to the conclusion that law should give substantial weight to the status quo.

In a recent concurring opinion published by the 10th circuit Court of Appeals,⁹² the court made such an argument. The case involved members of a religious organization who brought an action against the U.S. seeking a preliminary injunction to enjoin the government from enforcement of the Controlled Substances Act as it pertained to importation, possession, and distribution of hoasca for religious ceremonies. Hoasca is a liquid tea-like mixture made from certain plants indigenous to Brazil. One of the plants contains a substance listed on Schedule I of the Act.

A federal district court granted the preliminary injunction, and the government appealed. The Tenth Circuit affirmed the granting of the injunction, but a majority of the court also held that a party seeking a preliminary injunction that alters the status quo must satisfy a heightened burden. In a concurring opinion, Judge McConnell agreed with the heightened burden, arguing in part that the court should protect the status quo because we now know from social science research that individuals value

⁹¹ Cites.

⁹² *Uniao Do Vegetal v. Ashcroft*. To date, I have discovered only one other opinion that mentions "endowment effect." This suggests the theory has not permeated judicial opinions as deeply as it has legal scholarship.

already-possessed goods more than prospective acquisitions. In the court's words:

“Notwithstanding the tendency of those trained in economics to view opportunity costs as equivalent to actual expenditures, modern social science research has confirmed the reality of 'loss aversion' (the tendency to attach greater value to losses than to foregone gains of equal amount) and the closely related 'endowment effect' (the tendency to value already possessed goods more than prospective acquisitions).”⁹³

This argument rests on a faulty assumption. To argue that endowment effect theory suggests the law should take steps to protect the status quo, one must assume that, absent loss aversion, the parties value the right the same. In other words, the claim that the law should protect the status quo assumes that the disutility experienced from losing an entitlement leads to a high valuation relative to the other party. This assumption, however, fails to recognize that endowment effect theory makes predictions about *intrapersonal* differences in valuation conditional on entitlement. The impact of loss aversion on the minimum amount one would be willing to accept to give up an entitlement does not suggest that valuations of the entitled always exceed valuations of those not entitled (just as the phenomenon of diminishing marginal utility of wealth does not necessarily suggest that wealth redistribution would increase total social utility⁹⁴). At most, the presence of loss aversion should compel us to account directly for any disutility stemming from the experience of losing.

The (incorrect) assumption that we can make interpersonal comparisons might stem from the fact that many of the experimental studies reporting gaps and asymmetries are between-subject designs as opposed to within-subject designs. Between-subject designs ask subjects to value a good only in one role (i.e., as buyer or as seller). Experimenters then identify gaps by measuring the difference between reported WTA responses from one subject group and reported WTP responses from another subject group. If subjects are randomly assigned to the groups, other potential explanations for

⁹³ [pincite to case] citing Daniel Kahneman, Jack L. Knetsch & Richard H. Thaler, The Endowment Effect, Loss Aversion, and Status Quo Bias, 5 J. Econ. Persp. 193 (1991); Amos Tversky & Daniel Kahneman, Loss Aversion in Riskless Choice: A Reference-Dependent Model, 106 Q.J. Econ. 1039 (1991); Daniel Kahneman et al., Experimental Tests of the Endowment Effect and the Coase Theorem, 98 J. Pol. Econ. 1352 (1990); Jack L. Knetsch & J.A. Sinden, Willingness to Pay and Compensation Demanded: Experimental Evidence of an Unexpected Disparity in Measures of Value, 99 Q.J. Econ. 507, 512-13 (1984).

⁹⁴ Cite.

differences in valuations are controlled.⁹⁵ Within-subject designs, on the other hand, ask subjects to value a good twice, once as a seller and once as a buyer. Gaps and asymmetries are then measured by averaging the differences between each subject's valuation as seller and buyer. This design eliminates the possibility that some other variable explains gaps (e.g., even when experimenters randomly distribute subjects into groups, distributions of relevant characteristics might not end up being similar across groups). Despite this disadvantage, between-subject designs often are used so that the role subjects play as buyers does not influence the role they play as sellers. Other research suggests that subjects strive to act consistently during experiments,⁹⁶ and this might swamp the impact of loss aversion on reported valuations. The use of between-subject designs, however, might give the impression that applications of endowment effect theory can employ interpersonal comparisons.

For obvious reasons, however, this is not the case. In the field, individuals are not randomly distributed into groups with and without entitlement. In fact, the entitled likely select themselves into entitlement status because, on average, they value the good more than others.⁹⁷ In cases in which entitlements are granted by law, interests develop around these entitlements. Investments made conditional on the structure of legal entitlements create value for entitlement-holders. For these reasons, absent the ability to randomly distribute individuals into groups, testing endowment effect theory in the field requires measuring an individual's value when entitled to the good, and then somehow eliminating entitlement and measuring the same individual's valuation of the same good at the same time as a potential buyer.⁹⁸ Obvious difficulties that make this test virtually impossible account for the fact that gaps and asymmetries have been observed only in the laboratory (or in the field, but under controlled lab-like conditions⁹⁹).

⁹⁵ For example, some subjects might value mugs more than pens. By randomly distributing subjects into groups, each group is likely to be comprised of similar distributions of mug-lovers and mug-haters, assuming the sample sizes are large enough.

⁹⁶ cites

⁹⁷ This, of course, assumes non-binding or equally distributed budget constraints.

⁹⁸ This is referred to in the field of statistics as the "fundamental problem of causal inference." Cites.

⁹⁹ See John List (baseball card experiment; this is a quasi-field experiment in that it employs controlled experimental techniques in the field to measure valuations of a particular subject group (i.e., experienced baseball card traders and inexperienced traders attending a trade show)). See also hunter permit experiments.

2. Offer-asking gaps observed in the field are not evidence of endowment effect theory

In a similar vein, some have argued that endowment effect theory explains “sticky” markets, including real estate markets in which few transactions occur.¹⁰⁰ More specifically, the claim is that home ownership sets the owner’s reference point, and the owner perceives selling his home as a loss relative to his reference point, which he tries to avoid by asking for more than his consumption value (and his portion of the joint surplus). This increase in asking prices, the argument goes, explains why a gap between offers and asks exists.

This application is flawed for reasons similar to those discussed in the previous section. As before, the argument fails to recognize that WTA-WTP gaps are defined as *intrapersonal* differences between valuations of one individual in the role of seller and buyer.¹⁰¹ That buyers seem to have lower valuations than sellers is not evidence of endowment effect theory because this difference is an *interpersonal* difference in valuation.

Of course, if individuals were randomly distributed into two groups—those who own homes and those considering purchasing the homes—then we might be able to claim that offer-asking gaps are attributable to endowment effect theory (assuming owners have not developed some sort of psychological attachment to the home¹⁰²). Random distribution of individuals

¹⁰⁰ cites

¹⁰¹ Some discuss real estate examples with the understanding that the theory requires intrapersonal comparisons. For example, see Kelman (Calif LR 1979, fn 35) (“A person owns a house that has appreciated considerably so as to be worth \$100,000; he thinks he would never spend more than \$50,000 on a house; his house, which is insured for only \$50,000, is destroyed; and, most importantly, he has received routine raises, during the period that he owned the house, equivalent to the income value of the \$50,000 asset loss (say, \$5,000 per year) [to rule out explanations related to wealth effects]. Although the individual is back in the same income position as he was prior to the destruction of the house, it seems doubtful that he would buy the \$100,000 house.) Kelman, however, does not offer empirical support for claims that individuals display endowment effects when their underinsured homes are destroyed (“Empirical tests of behavior of the underinsured might help to verify this hypothesis.”).

¹⁰² Attachment theory is another alternative explanation for observed gaps and asymmetries. Attachment theory is unrelated to reference points and loss aversion. Rather, it posits that entitlement changes the perceived nature of the good in the eyes of the entitled. For e.g., one might develop an attachment to a home in which one’s children were raised. The changed nature of the good is what accounts for valuation disparities. See e.g., Cass R. Sunstein, Legal Interference with Private Preferences, 53 University of Chicago Law Review 1129, 1151 (1986); Thomas F. Cotter, Pragmatism, Economics, and the Droit Moral, 76 North Carolina Law Review 1, 62 (1997); Jeffery J. Rachlinski and Cynthia R. Farina, Cognitive Psychology and

into houses would control for alternative explanations that might account for differences in valuation between owners and non-owners. That individuals are *not* randomly distributed into potential seller and potential buyer groups opens the door for a potential alternative explanation for sticky markets (e.g., higher interest rates, tighter credit markets, etc.).

Again, to determine whether endowment effects exist in real estate markets, we would somehow have to measure valuations of owners given they no longer owned the house but had the same wealth. Our inability to rule out alternative explanations given confounding selection effects precludes us from concluding that endowment effect theory explains sticky markets. In addition, endowment effect theory cannot explain why real estate markets are sometimes sticky and sometimes active.

3. Others?

[discuss other misapplications here]

Putting these misapplications to one side, we can consider next how the recent experimental results impact more robust legal applications of endowment effect theory. In general, the recent results suggest that the focus on legal analyses based on the empirical literature should shift away from assumptions about the characteristics of individual utility functions (e.g., reference dependence and loss aversion). In addition, the alternative theories supported by the data are either irrelevant to applications or have long been known and therefore add little to legal applications other than shifting the focus to explanations other than endowment effect theory.

B. Revisiting endowment effect theory applications

[In this section, I plan to categorize the myriad legal applications of endowment effect theory. I will then pick two or three representative applications to demonstrate how endowment effect theory has been applied in both normative and descriptive analyses. The following subsections contain sketchy notes on a few examples.]

Optimal Government Design, 87 Cornell Law Review 549, 605 (2002); and Fennell, Lee Anne, Revealing Options, 118 Harvard Law Review, 1399, fn.107 (2005).

1. Normative Claims: The impact of initial entitlements and legal remedies on the allocation of rights

Mark Kelman was among the first to apply endowment effect theory to normative inquiries regarding whether allocations of goods depend on legal entitlements.¹⁰³ In the early 1960s, Ronald Coase posited that allocations do *not* depend on the initial allocation of property rights because, if transactions costs are sufficiently low, bargaining will lead to efficient outcomes (i.e., goods will make it into the hands of those who value them the most).¹⁰⁴ While the usefulness of this insight has been most famously called into question by noting that transactions costs are rarely sufficiently low, Kelman challenged one of the theorem's implicit assumptions—that individuals treat opportunity cost income and realized income the same.¹⁰⁵ His challenge preceded the large body of evidence of gaps and asymmetries. Nevertheless, Kelman, pointing to very early survey evidence and anecdotes, argued that this evidence and general intuitions demonstrate that individuals do *not* treat opportunity cost income and realized income the same.¹⁰⁶ Therefore, even if transactions costs are sufficiently low, we cannot be confident that efficient allocations of rights will result given any initial entitlement to those rights.

Taking this argument another step forward, Jeffrey J. Rachlinski and Forest Jourden apply endowment effect theory to reconsider when courts should employ property rules (e.g., injunctive remedies) as opposed to liability rules (e.g., damages remedies).¹⁰⁷ Their analysis builds on the work of Calabresi and Melamed, which analyzes the relative benefits of property rules and liability rules in environments in which Coase's prediction fails (e.g., high transactions costs that preclude bargaining, budget constraints that prevent bargaining parties from expressing their preferences, etc.).¹⁰⁸ For example, Calabresi and Melamed argue that, to enhance economic efficiency, we should protect homeowners from pollution using property

¹⁰³ Mark Kelman. 1979. Consumption Theory, Production Theory, and Ideology in the Coase Theorem. *Southern Cal LR* 52:669. Kelman references prospect theory as a possible explanation for the disparate treatment of opportunity cost income and realized income. See Kelman at 689-91.

¹⁰⁴ Ronald H. Coase. 1960. The Problem of Social Cost. *Journal of Law and Economics* 3 (1): 1-44.

¹⁰⁵ Kelman (So Cal LR, 1979). "Opportunity cost income" is the income one would receive in exchange for giving up a right. "Realized income" is income that is already in one's pocket.

¹⁰⁶ Kelman (So Cal LR, 1979).

¹⁰⁷ *Vanderbilt LR* 1998.

¹⁰⁸ Guido Calabresi and A. Douglas Melamed. 1972. Property Rules, Liability Rules, and Inalienability: One View of the Cathedral. *Harvard Law Review* 85:1089-1128.

rules if polluters can avoid or reduce the costs of pollution more cheaply than homeowners.¹⁰⁹

Rachlinski and Jourden begin their analysis by describing a nuisance suit in which plaintiff-homeowners win monetary damages, but then appeal the remedy, arguing that they were entitled to injunctive relief, which would preclude the defendant-polluter from causing further damage to the plaintiffs' homes. The purpose of the article is to explore why the plaintiffs would expend resources to seek a different type of remedy.

They first attempt to rule out two rational choice theoretic explanations for the observed behavior of the plaintiffs. First, rational choice theory might predict that the plaintiffs preferred the court to apply a property rule so that they could bargain with the defendant-polluter to obtain a settlement in excess of the damages award. The authors dismiss this theory, arguing that the plaintiffs unlikely were trying to obtain the upper hand in negotiations because they did not appeal the size of the damages award. Second, rational choice theory predicts that the plaintiffs would appeal if the owners' values of the diminished homes exceed awarded damages derived from the fair market value. The authors also dismiss this explanation, suggesting that the court, at least, did not believe the plaintiffs were trying to extract a large settlement; rather, it seemed more concerned that the homeowners' pursuit of injunctive relief was an attempt to shut down an important employer in the community.

After dismissing these rational choice theory explanations, Rachlinski and Jourden argue that endowment effect theory better explains the plaintiffs' behavior. Specifically, they posit that individuals perceive that ownership comes with the ability to stop polluters from diminishing the value of their homes. By refusing to grant injunctive relief, the court threatened to take away the plaintiffs' ability to sell this right to the polluter, undermining their status as owners. Therefore, endowment effect theory predicts that the plaintiffs will pursue an appeal if the value of the entitlement plus the expected disutility avoided by the court's extraction of the entitlement exceeds the value of the damages remedy.¹¹⁰

More generally, they argue that courts should consider the fact that, unlike damages rules, injunctive remedies endow homeowners with the power to refuse to sell the right to a pollution-free existence.¹¹¹ This implies that the Coase Theorem is more likely to fail when courts protect rights using

¹⁰⁹ Calabresi and Melamed at 1118.

¹¹⁰ Note that Rachlinski and Jourden also report the results from an experiment they ran to test their hypotheses. [**describe experiment design here and summarize results....they observe a gap.**] The design, however, suffers from the same control issues investigated by Plott and Zeiler (2005). Therefore, it is difficult to know what we can infer from the results.

¹¹¹ R & J ("a right that is protected by a damages remedy might convey less of a sense of ownership than does a right that is protected by an injunctive remedy")

property rules. If an injunctive remedy sets the owner's reference point and giving up the right is perceived as a loss to be avoided, those holding rights endowed by property rules will be reluctant to sell those rights. Damages rules, on the other hand, do not result in entitlement to a right to refuse to sell. Thus, because property rules increase homeowners' WTA due to loss aversion, courts must determine the parties' levels of loss aversion to ensure the right ends up in the hands of the party that values it the most.

Now, how do we bring the new empirical developments into the picture? The recent evidence suggests that endowment effect theory does not explain observed gaps in the laboratory or controlled field, the only environments in which we observe gaps. This implies that courts need not be concerned with the impact of reference point dependence and loss aversion when choosing between property rules and damages rules. Rather we should focus on alternative explanations, such as those mentioned in passing by Rachlinski and Jourden. For example, it might be that the lowest amount homeowners would accept to give up their rights exceeds damages based on fair market value. This seems plausible given that owners select themselves into ownership and some owners derive value from memories created in the home or individual-specific investments in the property (e.g., the pink gazebo only the builder could love).

2. Descriptive Claims: What explains the court's behavior in affirmative action cases?

In addition to using endowment effect theory to support normative claims about how the law should be structured, commentators have applied it to explain observed behavior by actors in legal contexts. **[add examples here]**

Ian Ayres and Frederick Vars use endowment effect theory to explain courts' mixed responses to affirmative action plans.¹¹² They begin by citing cases to demonstrate that courts seem more likely to uphold restructured hiring goals as a method to implement affirmative action plans than they are to uphold layoffs as a way to create diversity in the workplace.¹¹³ Applying endowment effect theory, they posit that courts object to layoffs because employees perceive their jobs as entitlements; therefore, the loss of one's job creates disutility in addition to the actual loss of employment.¹¹⁴ Courts are more supportive of restructured hiring goals, the argument goes, because they do not involve loss of entitlements.¹¹⁵

The sole evidence Ayres and Vars invoke to support their claim is behavior observed in laboratory experiments.¹¹⁶ The recent experimental

¹¹² 1998 Columbia LR

¹¹³ cite

¹¹⁴ cite

¹¹⁵ cite

¹¹⁶ Ayres and Vars (citing ... as evidence of endowment effect theory).

results, however, call this evidence into question and suggest endowment effect theory is not driving judges' actions in these cases. If endowment effect theory does not work to explain the observed phenomenon, however, what might explain it?

At first blush, it could be argued that courts' preferences are driven by the same phenomenon that might drive sticky markets—namely, those currently holding jobs value them the most because they selected themselves into their particular positions. If we believe, however, that discrimination plays a role in the matching of employees to jobs, we can no longer assume the market has placed the highest-value “owners” into each position. Therefore, courts likely are not driven by the assumption that total social welfare will decrease when layoffs are used to implement affirmative action programs, moving those valuing jobs less into higher-value holders' positions.

Given the dissimilarities between laboratory environments and legal contexts in which courts rule on affirmative action programs, the recent experiments seem to have little to offer in terms of potential direct explanations for courts' preferences over affirmative action projects except to suggest that we should consider other theories to explain the observed phenomenon. A number of theories might explain the preference. First, perhaps restructured hiring goals are more attractive to judges than layoffs because they create relatively low transaction costs. Second, courts might prefer restructured hiring goals to layoffs because the former reduce the probability of increased racial tension. Members of the majority who are fired to allow the employer to increase minority representation are likely to discover the impetus for the loss of their jobs. On the other hand, majority members who apply for jobs but lose out to minority members are less likely to connect their lack of success to the employer's affirmative action program.¹¹⁷

III. WHERE DO WE GO FROM HERE?

[to come]

CONCLUSION

[under construction]

¹¹⁷ [cites?]

[include word of caution about drawing unsubstantiated conclusions from the new results; we need more replication/investigation before firm conclusions can be drawn]