Dangers of Monetary Commensurability: A Psychological Game Model of Contagion

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DANGERS OF MONETARY COMMENSURABILITY: A PSYCHOLOGICAL GAME MODEL OF CONTAGION

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I traded fame for love
Without a second thought
It all became a silly game
Some things cannot be bought[1]

INTRODUCTION

Matthew Spitzer recently wrote: "One who is to write a comment on a well-done piece has two choices. The commentator can nit pick over details or use the well-done article as a starting place for further work. I choose to do the latter."[2] His comment applies to the task of commenting on Matthew Adler's[3] and Richard Craswell's[4] contributions to this Symposium. Adler found that incommensurability does not prevent using (the monetized version of) cost-benefit analysis (CBA), except possibly for a psychological claim related to commodification.[5] Craswell concluded that incommensurability as presently formulated does not prevent applying welfare economics to evaluate government decisions.[6] Craswell noted that his definition of incommensurability differs from the related concern of commodification, which he views as being about the cognitive and social psychological

[1] MADONNA, *Drowned World/Substitute for Love*, on RAY OF LIGHT (Warner Bros. Records 1998).

[2] Matthew Spitzer, *Dean Krattenmaker's Road Not Taken: The Political Economy of Broadcasting in the Telecommunications Act of 1996*, 29 CONN. L. REV. 353, 353 (1996).

[3] Matthew Adler, *Incommensurability and Cost-Benefit Analysis*, 146 U. PA. L. REV. 1371 (1998).

[4] Richard Craswell, *Incommensurability, Welfare Economics, and the Law*, 146 U. PA. L. REV. 1419 (1998).

[5] *See* Adler, *supra* note 3, at 1375-78, 1413-17.

[6] *See* Craswell, *supra* note 4, at 1423, 1431-32, 1463-64.

spillover effects of government decisions.[7]   Craswell also pointed out that incommensurability theory does not provide guidance about how to justify public choices among incommensurable options because most of the philosophical literature on values and practical reason deals only with justifying an individual's choices among incommensurable options.[8]

Thus, both articles provide a natural departure point for the further work of evaluating the social psychological concerns raised by the issues of commodification and commensurability with money. While both articles view the possible psychologically undesirable consequences of government decisionmaking based on monetary commensurability as being empirical, the models below demonstrate that even in a sympathetic theoretical analytical framework, such psychological concerns are only a possibility and not a necessity.   In other words, universal monetary commensurability or commodification is but one of several equilibrium outcomes even when there is a possible "domino effect."   The cognitive psychological reasons to be skeptical of commodification are not considered below in order to provide the most favorable setting to evaluate commodification and because they already have been aptly discussed.[9]

The rest of this introductory section presents very brief summaries of the main contributions of both articles.   Part I, in abiding by Roberta Romano's view that "the most useful role of a commentator [is] that of an irritating troublemaker,"[10] presents the questions and comments raised by other Symposium participants and the responses by Adler and Craswell.   Part II discusses implications for CBA and welfare economics of formulations of incommensurability other than those considered by Adler, Craswell, and the other Parts of this Comment.   Part III considers whether the discourse of commensurability, and more generally of economics, can transform its speakers and listeners.   Parts IV and V explain how the recent advent of psychological game theory allows the formulation of models of monetary commensurability and commodification that capture analytically the concern about cultural effects and expressive dimensions of legal

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[7] *See id.* at 1422-23.

[8] *See id.* at 1463-64.

[9] *See* Scott Altman, *(Com)modifying Experience*, 65 S. CAL. L. REV. 293, 301-06, 308-09, 311-12, 325-29, 330, 332-33, 338 (1991) (noting circumstances in which commodification does not account for human reactions).

[10] Roberta Romano, *A Comment on Information Overload, Cognitive Illusions, and Their Implications for Public Policy*, 59 S. CAL. L. REV. 313, 313 (1986).

rules and institutions. These psychological game-theoretic models draw on behavioral economics and social psychology to provide a language for addressing criticisms of CBA and welfare economics based on concerns about the possible contagion across people of monetary commensurability of a particular value and the closely related concern of the possible domino effect of commodification across values. Both monetary commensurability and commodification involve only a single aspect of markets, which also encompass other activities, such as brokerage, worker training, and advertising.[11]

Adler introduced a useful trichotomy of possible sources of incommensurability: (1) conventional ordering failures; (2) esoteric ordering failures; and (3) second-order considerations.[12] After considering the implications of each of these for CBA, Adler argued that none of them precludes the otherwise justified use of CBA, except for possibly the second-order consideration of "constitutive incommensurability," which rests upon an unproven empirical psychological claim.[13] This hypothesized psychological fact is that humans are unable to be appropriately affected and motivated by parenthood, friendship, and environmental awe unless they believe in monetary incommensurability regarding children, friends, and mountains, even when there appears to be monetary commensurability.[14]

Craswell provided the very useful public service of clarifying and unpacking various criticisms based on incommensurability of values from related but distinct non-incommensurability-based objections to welfare economics. Craswell introduced the useful dichotomy between government decisions that affect only a single individual and those that affect at least two individuals with at least one person being better off according to her utility function and one person being worse off according to his utility function.

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[11] *See* MARGARET JANE RADIN, CONTESTED COMMODITIES 135-36 (1996) (discussing regulation of these activities relating to commodified goods).

[12] *See* Adler, *supra* note 3, at 1383-89.

[13] *See id.* at 1389-401 (discussing conventional ordering failures); *id.* at 1401-08 (discussing esoteric ordering failures); *id.* at 1409-17 (discussing second-order considerations).

[14] *Cf.* Jason Scott Johnston, *Million-Dollar Mountains: Prices, Sanctions, and the Legal Regulation of Collective Social and Environmental Goods,* 146 U. PA. L. REV. 1327, 1328 (1998) (arguing that the "money-price allocation of certain kinds of relationships is likely to result in the eventual destruction of the value inherent in those relationships").

I. SUMMARY OF PANEL DISCUSSION

I now turn to a summary of the colloquy that followed Adler's and Craswell's presentations at the Symposium. Eric Posner asked whether undesirable psychological consequences of the government using CBA means that we cannot be agnostic over using CBA. Craswell responded that if using CBA actually produces bad consequences of any kind, including psychological ones, that would be a reason not to use CBA or welfare economics, even if such theories are otherwise normatively justifiable.[15] Adler's response was that, although it may be constitutive of parenthood that no finite monetary amount makes up for the loss of a child, such a claim amounts to a conventional ordering failure that CBA would track accurately.

Richard Warner asked two clarifying questions about constitutive incommensurability, which he defined by two features: incomparability and what he called rigidity of rankings. First, Warner asked whether CBA is inconsistent with incommensurability because CBA ignores any such rigidities in rankings. Adler again responded that any such rigidities would constitute a conventional ordering failure that CBA would track accurately. Second, Warner asked whether purely ordinal rankings that abstract from such rigidities provide sufficient information to resolve interpersonal conflicts. Craswell replied that such a difficulty is the standard incommensurability difficulty, which welfare economists have claimed for many years, namely, the impossibility of making interpersonal comparison of utilities. Craswell added that, although he was not able to make a very strong defense for cardinal ranking procedures like the Kaldor-Hicks criterion, incomparability theorists have not yet proposed any viable alternative social decision procedures.

Gillian Hadfield asked whether economists' assumptions that individual utilities are well-behaved in the sense of being not only continuous, but also twice differentiable functions over wealth, are not just simplifying assumptions, but instead are fundamental assumptions without which both the theory and the application of welfare economics become problematic. Adler agreed that individual utility functions over money and other things might be discontinuous and

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[15] *Cf.* Frederick Schauer, *Instrumental Commensurability*, 146 U. PA. L. REV. 1215, 1223 (1998) (arguing that claims of commensurability or incommensurability can be ascriptive as well as descriptive, and that, to the degree that such claims are ascriptive, they should be chosen self-consciously to serve instrumentally certain normative or prescriptive ends).

thus cause problems for CBA. Craswell agreed that the mathematical convenience of such technical assumptions certainly drives their adoption and very often leads economists to believe that those assumptions are descriptively accurate. At the same time, Craswell noted that the critics of welfare economics often conflate criticisms of such methodologically convenient assumptions with criticisms of the underlying formal theory.

Such a distinction is analogous to one made by Polinsky in his famous introductory book on law and economics, namely, that between criticisms of economic *analysts* versus criticisms of economic *analysis.* Appropriately enough, Polinsky made this distinction in discussing the difficulties in placing monetary values on costs and benefits. He noted that critics' discussions of the bias of both ignoring hard to quantify costs and benefits, and of substituting personal estimates and subjective beliefs for such values, are criticisms of economic analysts, not criticisms of economic analysis, properly and carefully performed.[16] Of course, if CBA can be conducted properly only in theory, but not in practice—in the sense that people suffer from inevitable and uncorrectable cognitive biases when engaged in doing or interpreting CBA—this presents a problem for CBA. Such a claim is ultimately empirical and begs the question of why those biases persist and cannot be mitigated by learning. This claim is related to the criticism of risk regulation that, once the numbers are out there (in that case, dollar values for human lives), those numbers take on lives of their own and tend to be misapplied because of their apparent precision.[17]

Lewis Kornhauser[18] pointed out that for the purpose of welfare economics, economists are not solely interested in people's choices for their own sake, but also want to attribute some significance to those choices, in the sense of thinking those choices are somehow good choices. An individual's choices might be valued because they are good indicators of that individual's well-being or simply because they are the choices that individual made. An individual's observed choices are of interest to economists because they provide data that

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[16] *See* A. MITCHELL POLINSKY, AN INTRODUCTION TO LAW AND ECONOMICS 138 (2d ed. 1989).

[17] *See* Lisa Heinzerling, *Regulatory Costs of Mythic Proportions,* 107 YALE L.J. (forthcoming 1998) (manuscript at pt. III.B, on file with the *University of Pennsylvania Law Review*).

[18] Kornhauser also raised a conceptual and technical point about the formal model in Parts IV and V of this Comment.

may be helpful in predicting that individual's choices in some other situation. Craswell agreed, but pointed out that such an inference problem occurs even when the observed choice does not involve incomparables. Craswell added that observations of a person's choice in situation x do not necessarily provide any information about how that person would choose in another situation y, except for the idea of empirical regularity across most (or like) situations. Craswell concluded by pointing out that the separate autonomy-based rationale for deferring to an individual's choice is supported by such incomparability theorists' accounts of choice as coherence or will.

Ruth Chang questioned whether esoteric ordering failures due to incomparability do indeed augment the welfarist case against CBA. Adler replied that incomparability of two choices, by itself, does not create a reason not to use scaling procedures. Chang also raised the issue of CBA constraining the government's choice over time under uncertainty. Kornhauser re-posed the question in terms of an evidentiary problem as to what exactly can be inferred from the making of a particular choice between incomparables in one context as to what choice would or should be made between incomparables in another context. Hadfield crystallized this point by citing the questionable, if not inappropriate, use of a figure for the value of human life in the infamous Ford Pinto case.[19] Kornhauser pointed out that assuming transitivity provides a lot of informational leverage for making inferences from observed choices. Craswell pointed out that what really provides predictive power is not just transitivity but also context independence of much choicemaking.

Finally, Alan Strudler thought that not all incommensurabilists are primarily worried about the psychologically corrosive effects of commensurability, but instead simply argue that thinking about things in terms of commensurability gives the wrong answer. Strudler felt that the psychological analysis was being given far too much play in the session. Strudler also questioned Craswell's request that incommensurabilists come up with an alternative theory or decision procedure to welfare economics or CBA. Strudler suggested that many of the policy questions that welfare economics and CBA address might not be addressed appropriately by theory or decision procedures because policy (like mathematical axiom systems) might have

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[19] *See* Grimshaw v. Ford Motor Co., 174 Cal. Rptr. 348, 384-85 (Ct. App. 1981) (discussing whether Ford was liable for punitive damages because it failed to fix a known, potentially lethal problem with gas tank placement because the cost of correction was higher than the anticipated cost of compensating injured parties).

no one true or correct universal decision procedure. Craswell responded by pointing out that both of the session's papers bracketed psychological considerations, devoting only a small portion of time and space to such issues. Craswell added that the psychological inquiry does not so much involve discovering a universal truth about (in)commensurability, but, as pointed out by Schauer, determining which attitude towards (in)commensurability induces better decisions.[20] Adler concluded by reiterating that we are not interested in theoretical reasoning for its own sake, but rather that we care about models and theories because of their implications for improving, if not perfecting, legal institutions and decision procedures.

II. ALTERNATIVE NOTIONS OF INCOMMENSURABILITY

Incommensurability claims have been in vogue of late in the legal academy. But, as with many instances of legal scholarship drawing on other academic disciplines, something often gets lost in the translation or (mis)application of ideas from other fields of inquiry. In this case, the idea of incommensurability comes from the philosophical literature, in particular, discussions of practical reasoning. There is much intuitive appeal to incommensurability claims, as vividly illustrated by the reader's or audience's reactions to such choice situations as those forcibly contemplated in *Sophie's Choice*[21] or made in *Indecent Proposal.*[22] Yet, perhaps because of the strong emotional resonance or moral outrage these "desperate exchanges"[23] or "double binds"[24] evoke in us, they may be mere fanciful, atypical hypotheticals and not real-life decisions faced every day by individuals, legal decisionmakers, or policy analysts who are engaged in so-called "cool" rational deliberation.

Part of the confusion this Symposium has illuminated stems from the simple fact that different people mean so many different ideas by the one word incommensurability, and so people often end up talking past or at, instead of to, each other. Thankfully, most of the participants in this Symposium explicitly define exactly what they mean by the term incommensurability. Unfortunately, these definitions run the gamut from Ruth Chang's distinction between incommen-

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[20] *See* Schauer, *supra* note 15, at 1225-33.

[21] WILLIAM STYRON, SOPHIE'S CHOICE 483-84 (1979).

[22] INDECENT PROPOSAL (Paramount 1993).

[23] RADIN, *supra* note 11, at 48-49.

[24] *Id.* at 124.

surability, meaning the lack of precise cardinal comparability, and incomparability (even in the sense of an ordinal ranking),[25] to Eric Posner's incommensurability as a focal equilibrium point in a signaling or cheap-talk game,[26] to Leo Katz's view that incommensurability is often due to imperfect observability or insufficiently fine-grained detailed knowledge about objects.[27] A nice synopsis of various meanings of incommensurability exists in Radin's discussion about reductionism and commensurability.[28]

Craswell defined incommensurability as the lack of a scale or metric that both satisfies completeness (in the sense that, for any two conceivable options, one has to rank higher on that scale or they have the same ranking along that metric) and justifies choosing the higher ranked option.[29] Craswell's definition suggests a few related plausible definitions of incommensurability. These include a notion of incomplete ordinal preference rankings, that is only partial orderings and the resulting "pockets" of incomparability within the space of conceivable alternatives where there is a lack of trichotomy. But, CBA in its monetized version assumes universal commensurability with money. The ranking over alternative social programs generated by CBA coincides with that under the well-known Kaldor-Hicks (hypothetical compensation) criterion, which compares aggregate benefits and aggregate costs without regard as to how those aggregate benefits or aggregate costs are distributed over society.[30]

A related, but distinct, incommensurability is that due to the literal incompleteness of actual markets. Not all of the possible commodities that in principle could exist are traded on markets, let alone competitive ones, especially if goods are not only characterized by physical attributes, but also indexed by date, location, and states of the world.[31] In fact, one of the most fertile areas of recent research in

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[25] *See* Ruth Chang, *Comparison and the Justification of Choice*, 146 U. PA. L. REV. 1569 (1998).

[26] *See* Eric A. Posner, *The Strategic Basis of Principled Behavior: A Critique of the Incommensurability Thesis*, 146 U. PA. L. REV. 1185 (1998).

[27] *See* Leo Katz, *Incommensurable Choices and the Problem of Moral Ignorance*, 146 U. PA. L. REV. 1465 (1998).

[28] *See* RADIN, *supra* note 11, at 8-12.

[29] *See* Craswell, *supra* note 4, at 1421-22.

[30] *See* EDITH STOKEY & RICHARD ZECKHAUSER, A PRIMER FOR POLICY ANALYSIS 280 (1978).

[31] *See* KENNETH ARROW, THE LIMITS OF ORGANIZATION 34-35 (1974).

the general equilibrium theory of perfectly competitive markets deals with incomplete security markets.[32]

Another sense of incommensurability denies that individuals are always able to make trade-offs between competing values or alternatives. This concept of incommensurability is compatible with individuals having a complete ordering, just one which can not be represented by a continuous scalar-valued function. This lexicographic interpretation of incommensurability captures a hierarchical idea of needs or values and is consistent with a humanistic type of welfare economics.[33]

Yet another notion of incommensurability revolves around certain intransitivities of the sort Joseph Raz described as the test or mark of incommensurability.[34] Perhaps this connection is not surprising because there is a technical economic literature demonstrating that if consumers' preference relations are transitive and continuous, they are necessarily complete.[35]

Finally, there is the view that incommensurability reflects value pluralism in the sense of the impossibility of aggregating multiple choice criteria into a single social choice criterion under certain reasonable conditions.[36] But, as Kornhauser pointed out, it is unclear what reasonable conditions may be imposed on the aggregation procedure in this context.[37]

III. CAN COMMENSURABILITY DISCOURSE BE HARMFUL?

The idea that any particular language constrains both a communicator and her audience should not be surprising, especially to multilingual individuals. Thus, the notion that people who have been exposed to the discourse of monetary commensurability might think and behave differently from those who have not is certainly plausible

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[32] *See, e.g.,* MICHAEL MAGILL & MARTINE QUINZII, THEORY OF INCOMPLETE MARKETS (1996); Peter H. Huang & Ho-Mou Wu, *Competitive Equilibrium of Incomplete Markets for Securities with Smooth Payoffs,* 23 J. MATHEMATICAL ECON. 219 (1994).

[33] *See* MARK A. LUTZ & KENNETH LUX, HUMANISTIC ECONOMICS 9-12, 30-31, 138-50 (1988).

[34] *See* JOSEPH RAZ, THE MORALITY OF FREEDOM 325-26, 328 (1986).

[35] *See* David Schmeidler, *A Condition for the Completeness of Partial Preference Relations,* 39 ECONOMETRICA 403, 404 (1971).

[36] *See* CHRISTOPHER D. STONE, EARTH AND OTHER ETHICS: THE CASE FOR MORAL PLURALISM 172-82 (1987); Matthew L. Spitzer, *Multicriteria Choice Processes: An Application of Public Choice Theory to* Bakke, *the F.C.C., and the Courts,* 88 YALE L.J. 717 (1979).

[37] *See* Lewis A. Kornhauser, *No Best Answer?,* 146 U. PA. L. REV. 1599 (1998).

and a real possibility. Furthermore, there is evidence that students of economics act differently in experimental situations than students not exposed to economics. For example, a well-known study revealed that first-year economics graduate students are more apt to free-ride in experiments requiring private contributions to public goods.[38] First-year economics graduate students also had difficulty with the meaning of "fairness" and basing their decisions on considerations of "fairness." This study has been criticized, however, for not controlling for age and gender differences between the "noneconomic" control groups (undergraduates and high school students with equal numbers of males and females) and the economics graduate students (predominantly older males).[39]

Another study, not subject to this particular criticism, investigated the effect of enrolling in an introductory microeconomics course at Cornell University on the answers to questions about a pair of hypothetical ethical dilemmas.[40] The control group was an introductory astronomy class. There were two subject groups, one taught by an economist who specialized in the field of industrial organization and taught some rudimentary game theory, and one taught by a development economist who did not include any instruction on game theory. Students completed a survey during the first and last weeks of class. This survey consisted of four questions: two questions about losing or finding an envelope containing $100 and an individual's name and phone number, and two questions about receiving delivery of ten personal computers but only being billed for nine. Students indicated the probability that they would be honest, as well as their perceived probability that others would be honest.[41]

Because the above study design has a potential drawback of students understating the "undesirable" effects of their education to themselves and others, another complementary study design involved actual choices in experimental games with monetary payoffs.[42] Students played a game involving cooperativeness, namely, the well-known prisoner's dilemma. The prisoner's dilemma is a two-person, one-shot game in which each player chooses to cooperate or defect.

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[38] *See* Gerald Marwell & Ruth E. Ames, *Economists Free Ride, Does Anyone Else?: Experiments on the Provision of Public Goods, IV*, 15 J. PUB. ECON. 295 (1981).

[39] *See* Robert H. Frank et al., *Does Studying Economics Inhibit Cooperation?*, J. ECON. PERSP., Spring 1993, at 159, 160-61.

[40] *See id.* at 168-70.

[41] *See id.* at 168.

[42] *See id.* at 163-64.

The key feature of the prisoner's dilemma is that defecting is a domi-
nant strategy for each player in that it yields higher payoffs to either
player than does cooperating regardless of how the other player be-
haves.   Both players defecting, however, results in the lowest total
monetary payoff of all of the four possible outcomes.   Thus, the pris-
oner's dilemma provides a setting to investigate the conflict between
individual and social or group rationality (assuming the game is one-
shot and there is common knowledge of players' rationality and pref-
erences).

Frank et al. found that the probability of an economics major de-
fecting is about 0.17 higher than that of a non-economics major de-
fecting when the subjects were not allowed to make promises about
what they would do.[43]   When such promises, which were unenforce-
able due to their anonymity, were allowed, there were virtually no
differences in defection rates.   An exit questionnaire revealed that
while 31% of the economics students explained their behavior solely
with respect to features of the game, only 17% of the non-economics
students did so.[44]   Finally, the study revealed that: (1) expectations
about the other player's choice strongly influence a player's behavior;
and (2) even holding expectations constant, economics students de-
fect at a significantly higher rate than do non-economics students.[45]

Other studies have found that economics majors behave signifi-
cantly more like the neoclassical economics model predicts than do
non-economics majors in ultimatum bargaining games.[46]   These are
two-person games in which the first player (the allocator) has to pro-
pose how to divide a sum of money (ten dollars in the experiments)
between that player and another player (the receiver), who can ac-
cept the proposed split, or refuse, in which case both players get
nothing.   The fact that these games are one-shot should rule out
reputation and repetition effects.   Standard economic theory predicts
a division of $9.99 to player one and only $0.01 to the other player.[47]
But, experimental research found that fifty-fifty splits are the most
commonly made proposal by allocators, while receivers will reject very

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[43] *See id.* at 166.

[44] *See id.* at 166-67.   The probability of such a difference being due to chance is less
than 0.005. *See id.* at 167.

[45] *See id.*

[46] *See, e.g.,* John R. Carter & Michael D. Irons, *Are Economists Different, and If So,
Why?,* J. ECON. PERSP., Spring 1991, at 171; Daniel Kahneman et al., *Fairness and the
Assumptions of Economics,* 59 J. BUS. S285 (1986).

[47] Technically, this is the only subgame-perfect Nash equilibrium.   Basically,
threats by the receiver to reject $0.01 are not credible because $0.01 is greater than $0.

one-sided proposals as being unfair.[48] In both the role of allocator and receiver, economics (or commerce) majors acted more like standard economic theory predicts than non-economics majors (or psychology students). This experimental design assigned allocator and receiver roles through a preliminary word game, which might have led allocators to feel they deserved a bigger split than receivers did because they "earned" their position. This issue has been addressed in two well-known related studies, which replaced the word game with a coin flip game.[49] Further, the above findings are robust with respect to the size of the monetary payoffs involved[50] and the nationality of the subjects involved.[51]

What do all of these findings mean? They certainly provide support for two propositions: (1) Economics is a language that affects the behavior and expectations of speaker and listener; and (2) there is a tendency for economics models to become self-fulfilling, although this is not always the case.

The issue of whether or not exposure to monetary commensurability by itself, as opposed to more generally the language of economics, affects behavior is not resolved by the above findings, however, because all of the above experiments investigating the impact of economics instruction are joint tests of not only the behavioral impacts of learning about monetary commensurability, but also the behavioral impacts of learning about other aspects of the language of economics, such as the assumption of rationality in the sense of the pursuit of self-interest.

IV. ENDOGENOUS MONETARY COMMENSURABILITY

What is perhaps most disturbing about commensurability to incommensurabilists is commensurability with money because it is argued that money is a one-dimensional cardinal scale which flattens

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[48] *See* Werner Güth et al., *An Experimental Analysis of Ultimatum Bargaining,* 3 J. ECON. BEHAV. & ORG. 367, 383 (1982).

[49] *See* Elizabeth Hoffman & Matthew L. Spitzer, *Entitlements, Rights, and Fairness: An Experimental Examination of Subjects' Concepts of Distributive Justice,* 14 J. LEGAL STUD. 259, 267-72 (1985) (describing the various experimental instructions used in the study); Elizabeth Hoffman & Matthew L. Spitzer, *The Coase Theorem: Some Experimental Tests,* 25 J.L. & ECON. 73, 82-91 (1982) (describing the experimental design using two-person and three-person experiments).

[50] *See* Elizabeth Hoffman et al., *On Expectations and Monetary Stakes in Ultimatum Games,* 25 INT'L J. GAME THEORY 289, 299 (1996).

[51] *See* Alvin E. Roth et al., *Bargaining and Market Behavior in Jerusalem, Ljubljana, Pittsburgh, and Tokyo: An Experimental Study,* 81 AM. ECON. REV. 1068 (1991).

out and impoverishes the multidimensional contours and richness of life.[52] But such a one-dimensional view of money is by no means universal, as evidenced by the findings of economic sociology[53] and behavioral economics.[54] Of course, the same criticism of projection of multiple dimensions of reality into a single dimension of analysis already applies to utilitarianism in general, even when utility functions are not expressed in wealth, but only are reducible to abstract "utils."[55] As noted by the Nobel Economics Laureate Kenneth Arrow in his review of Radin's book:

> It is, of course, no part of utility theory that everything has a price. To be sure, when commodities are infinitely divisible and indifference surfaces are convex, then *marginal* variations in commodity use are commensurable with each other and therefore with money or income, thought of as generalized purchasing power. But the typical examples designed to show the absurdity or immorality of assigning a money value to activities are based on finite changes.[56]

Richard Epstein makes a similar point about discontinuous choices.[57] As Arrow states, the fact "that parents would not sell a child at any price is in no way inconsistent with ordinary economic theory."[58] However, the same parents who would not accept any amount of money to sell their child would most likely be willing to pay their entire financial or physical wealth to a kidnapper as ransom in order to "buy back" their child.[59] Thus, the issue appears to be that, in a market for one's children, selling prices are inappropriate no matter how high, while buying prices are appropriate no matter how high (or become more so as they get higher, until all of the parents' mone-

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[52] *See* RADIN, *supra* note 11, at 9 (denying the commensurability of value and arguing that such an approach "may debase . . . the way humans value things important to human personhood").

[53] *See* VIVIANA A. ZELIZER, THE SOCIAL MEANING OF MONEY 1 (1997) ("This book explains the remarkably various ways in which people identify, classify, organize, use, segregate, manufacture, design, store, and even decorate monies as they cope with their multiple social relations.").

[54] *See* Amos Tversky & Daniel Kahneman, *The Framing of Decisions and the Psychology of Choice*, 211 SCIENCE 453, 457 (1981) (describing the results of a study which demonstrated a "paradoxical variation in the value of money [that] is incompatible with the standard analysis of consumer behavior").

[55] *See* RADIN, *supra* note 11, at 119-20 ("The idea of fungibility, even without commensurability, still undermines the notion of individual uniqueness.").

[56] Kenneth J. Arrow, *Invaluable Goods*, 35 J. ECON. LITERATURE 757, 759 (1997).

[57] *See* Richard A. Epstein, *Are Values Incommensurable, or Is Utility the Ruler of the World?*, 1995 UTAH L. REV. 683, 690-93.

[58] Arrow, *supra* note 56, at 759.

[59] Thanks to Evelyn Brody for pointing this out.

tary resources have been exhausted). By the same token, anybody who tries to buy a child from a parent, as opposed to buying one back from a kidnapper, is viewed as being engaged in an inappropriate form of behavior no matter how high the offer price (and perhaps with higher offers being viewed as more inappropriate than lower ones). The gap between bid and ask prices is not exclusively due to an "endowment effect"[60] from becoming emotionally attached to one's children, but also to notions of what are socially appropriate prices (namely, zero and infinite, respectively, or as close to those values as feasible). This discussion is related to an explanation of laws banning usury, price gouging, ticket scalping, prostitution, commercial surrogacy, and baby-selling based on the notion of what is fair in terms of "being close to" a "reference transaction."[61]

So, what is the real concern that incommensurabilists have about monetary commensurability? Part of the concern seems to be a fear that a culture of explicit monetary commensurability will result in the possibility of universal commodification. The notion that explicit, as opposed to implicit, monetary commensurability is dangerous relies either on a myopia or on an externality rationale for prohibiting explicit monetary commensurability. This argument is related to individual or social desires to engage in public denial of monetary commensurability in order to conceal tragic or desperate choices.[62] In addition, this argument relates to Michael Fitts's arguments for the desirability of less information in political decisionmaking.[63] Finally, such an argument assumes that individuals' tastes are malleable, or, in the jargon of economics, that preferences are endogenous.

The notion that preferences are shaped by our past experiences, as well as by current social and cultural influences, has been formally modeled by Gary Becker's research into where preferences come

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[60] *See* Richard Thaler, *Toward a Positive Theory of Consumer Choice*, 1 J. ECON. BEHAV. & ORG. 39, 43-47 (1980) (providing examples of how the endowment effect explains behavior in buying and selling decisions).

[61] *See* Christine Jolls et al., *A Behavioral Approach to Law and Economics*, 50 STAN. L. REV. (forthcoming 1998) (manuscript at 32, 35, on file with the *University of Pennsylvania Law Review*) (discussing laws that ban economic transactions).

[62] *See* GUIDO CALABRESI & PHILIP BOBBITT, TRAGIC CHOICES (1978) (discussing "tragic choices" and the processes of allocation of resources).

[63] *See* Michael A. Fitts, *Can Ignorance Be Bliss? Imperfect Information as a Positive Influence in Political Institutions*, 88 MICH. L. REV. 917, 954-55 (1990) (discussing an argument that "an ideological debate in a real-world political environment, where people are aware of their self-interests and their ideologies differ, can often *exacerbate* divisions and undermine the ability to reach a consensus").

from.[64] The ideas of changing preferences by advertising, marketing, political campaigns, democratic deliberation, and persuasion are all familiar ones.[65] Informational campaigns by a government (such as anti-smoking crusades) involve indirect preference shaping from the provision of (selected) information, as well as more direct forms of preference manipulation via the framing and presentation of that information. In fact, in light of well-known cognitive biases, providing information may effectively result in providing advice.[66]

A. *Psychological Game-Theoretic Models*

A recent development in game theory is that of psychological games, which explicitly incorporate elements of social psychology into game theory.[67] Game theory, more accurately called multiperson decision theory, is a branch of applied mathematics with numerous applications in economics,[68] politics,[69] law,[70] biology,[71] and management.[72] Psychological games capture the idea of belief-dependent emotions, such as disappointment, regret, or surprise. In a psychological game, at least one player's payoffs depend on beliefs about

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[64] *See* GARY S. BECKER, ACCOUNTING FOR TASTES (1996). Two Nobel Economics Laureates, George Stigler and Gary Becker, coauthored a seminal paper in this area. *See* George J. Stigler & Gary S. Becker, *De Gustibus Non Est Disputandum,* 67 AM. ECON. REV. 76 (1977) (discussing the economist's search for an explanation of differences in behavior).

[65] *See* Cass R. Sunstein, *Social Norms and Social Roles,* 96 COLUM. L. REV. 903, 952 (1996) (discussing various methods of "norm management" at the local, state, and federal levels).

[66] *See* Jolls et al., *supra* note 61 (manuscript at 49) (recognizing that "there is often no 'neutral' way to present information" and thus "he who provides information ends up giving advice").

[67] *See, e.g.,* John Geanakoplos et al., *Psychological Games and Sequential Rationality,* 1 GAMES & ECON. BEHAV. 60 (1989); Van Kolpin, *Equilibrium Refinement in Psychological Games,* 4 GAMES & ECON. BEHAV. 218 (1992).

[68] *See* JÜRGEN EICHBERGER, GAME THEORY FOR ECONOMISTS at xi (1993) ("In economics in particular, theory is often conducted in terms of game-theoretic concepts.").

[69] *See* JAMES D. MORROW, GAME THEORY FOR POLITICAL SCIENTISTS 1-3 (1994) (suggesting that game theory provides explanations for decisions and outcomes in politics).

[70] *See, e.g.,* Peter H. Huang, *Strategic Behavior and the Law: A Guide for Legal Scholars to* Game Theory and the Law *and Other Game Theory Texts,* 36 JURIMETRICS J. 99 (1995) (reviewing DOUGLAS G. BAIRD ET AL., GAME THEORY AND THE LAW (1994)).

[71] *See* LARRY SAMUELSON, EVOLUTIONARY GAMES AND EQUILIBRIUM SELECTION 17 (1997) (discussing how "[e]volutionary game theory takes both its name and its basic techniques from work in biology").

[72] *See* JOHN McMILLAN, GAMES, STRATEGIES, AND MANAGERS 3 (1992) (using game theory to "investigate decision-making in business organizations").

some other player's choices, or higher order beliefs over such be-liefs.[73] Psychological game-theoretic models of monopoly pricing and labor economics explain why firms do not always charge monopoly prices nor behave with respect to workers as neoclassical economics predicts.[74] Moreover, these models explain how the presence of en-dogenously generated emotions affect the frequency of suits that go to trial rather than settling.[75] Psychological versions of a one-sided prisoner's dilemma explain how to control bureaucratic corruption and tax evasion.[76]

Although emotions can be a response to strategic decisions cho-sen by other economic actors, emotions may not depend on beliefs about such choices. Emotional responses of this category can be sim-ply incorporated into a game by altering the payoffs in a way that does not depend on beliefs over strategies.[77] Psychological games focus on other types of emotional responses, namely, those responses that de-pend on beliefs about strategic actions. The term "belief-dependent" differentiates such emotional responses from "belief-independent" emotional responses. Belief-dependent emotional responses provide an explanation of why the same action can result in different emo-tional reactions on the part of a given individual at different times. A person may or may not feel particular emotions in response to a fixed strategic decision, with the difference being due to different beliefs about the choice in question. So, the difference between belief-dependent and belief-independent emotional responses is that the former involve endogenously determined payoffs, while the latter involve exogenously fixed payoffs.

The role of belief-independent emotional responses in strategic interaction has been studied already in the economics literature.[78] An important feature of psychological games is the role that beliefs (over

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[73] *See* Peter H. Huang & Ho-Mou Wu, *Emotional Responses in Litigation*, 12 INT'L REV. L. & ECON. 31, 32 (1992).

[74] *See* Matthew Rabin, *Incorporating Fairness into Game Theory and Economics*, 83 AM. ECON. REV. 1281, 1282 (1990) (developing a game-theory paradigm for incorporating altruistic and spiteful emotions into economic models).

[75] *See* Huang & Wu, *supra* note 73 (demonstrating that emotions such as anger, pride, and revenge affect the frequency of going to trial).

[76] *See* Peter H. Huang & Ho-Mou Wu, *More Order Without More Law: A Theory of Social Norms and Organizational Cultures*, 10 J.L. ECON. & ORG. 390, 391 (1994) (using psychological game theory to predict the likelihood of corrupt behavior).

[77] *See id.* at 392.

[78] *See, e.g.,* ROBERT H. FRANK, PASSIONS WITHIN REASON: THE STRATEGIC ROLE OF THE EMOTIONS (1988) (noting the tendencies of people to fail to pursue material self-interest because of (belief-independent) emotional responses).

strategic decisions) explicitly play in endogenously modifying preferences through emotions. Belief-dependent emotions involve changes in utility that depend on endogenously determined equilibrium beliefs about decisions. Emotions that are independent of players' beliefs about behavior or that depend on incorrect beliefs about behavior reflect exogenous tastes. Emotions that are dependent on players' beliefs over choices are sensitive to equilibrium behavior if such beliefs are required to correspond to actual decisions. People obviously feel emotions. The issue here, however, is whether exogenously fixed emotional payoffs capture the full spectrum of emotional responses. The capacity to experience feelings is not uniquely human. After all, nonhuman life feels pain, anger, fear, and rage. But only humans have the additional capacity of self-awareness. Part of that self-awareness includes the ability to formulate beliefs about the actions chosen by other humans. Psychological game theory enlarges the scope and domain of rational choice theory by introducing beliefs over strategic behavior into utility functions. The beliefs on which emotions and thus preferences depend often can be interpreted as alternative (organizational) cultures or social norms.

B. *A Contagion Model*

The underlying idea of psychological game theory, that people often feel emotions based on their beliefs about how others will choose to behave, provides a formal analytical framework to model the possible contagion effects of monetary commensurability regarding a certain value. If P denotes the proportion of a society which engages in monetary commensurability of that value, then P lies in the closed interval $[0, 1]$. Let R denote the mean of an individual's beliefs over P. In other words, R is the subjective expected value of P. Let I denote the status quo utility for those who do not engage in monetary commensurability of the value in question. Let C denote the status quo utility of switching to engage in monetary commensurability of the value in question for those who do not engage initially in monetary commensurability. By assumption, $I > C$. Suppose that the utility from not engaging in monetary commensurability of the value in question decreases (for simplicity, linearly) in R. That is, we assume that the utility from not engaging in monetary commensurability of the value in question is represented by a function of R in the form: $U(R) = I - AR$, where $A > 0$ and $C > (I - A)$. The condition that $A > 0$ is the formal representation of the assumption that an individual's utility from not engaging in monetary commensurability of the value in

question decreases with that individual's expected value for the proportion of society which engages in monetary commensurability. The condition that $C > (I - A)$ is the formal representation of the hypothesis that the utility from engaging in monetary commensurability of the value in question is greater than the utility from not engaging in monetary commensurability of the value in question when everybody else in society is expected to engage in monetary commensurability of that value (i.e., when $R = E(P) = 1$).

In any psychological game, psychological equilibria are characterized by two conditions: (1) beliefs over strategies are correct, that is, $R = P$, and (2) strategies form a Nash equilibrium, in that no player has any unilateral incentive to deviate from her strategy choice. The requirement that the practice or culture of monetary commensurability of a value is socially constructed is captured by the idea that beliefs must be in equilibrium and thus consistent with actual social behavior. The requirement that the strategies form a Nash equilibrium captures the standard game-theoretic notion that players' strategies constitute best replies to each other. This game has two strategies, either engaging in monetary commensurability of the value in question or not engaging in monetary commensurability of the value in question. There are three psychological equilibria, two pure and one mixed, namely: $R^* = 0$, $R^{**} = 1$, and R^{***} where $0 < R^{***} < 1$.

The first pure strategy psychological equilibrium involves $R^* = P^* = 0$ or the status quo of nobody choosing to engage in monetary commensurability of the value in question because $I > C$ by assumption. The second pure strategy psychological equilibrium involves $R^{**} = P^{**} = 1$, or the other polar outcome of everybody choosing to engage in monetary commensurability of the value in question because $C > (I - A)$ by assumption. Finally, the third and mixed strategy psychological equilibrium involves $R^{***} = P^{***} = (I - C)/A$,[79] or the outcome where the proportion $(I - C)/A$ of society chooses to engage in monetary commensurability of the value in question (with the complementary proportion, namely, $1 - [(I - C)/A] = (A - I + C)/A$ of society choosing not to engage in monetary commensurability of the value in question).[80] As in a nonpsychological mixed strategy equilib-

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[79] The value $(I - C)/A > 0$, because $I > C$ by assumption or $(I - C) > 0$ and $A > 0$ by assumption. The value $(I - C)/A < 1$, because $(I - C) < A$ by assumption.

[80] The value $(A - I + C)/A > 0$, because $A > 0$ by assumption and $A - I + C = C - (I - A) > 0$, which is true because $C > (I - A)$ by assumption. In addition, the value $(A - I + C)/A < 1$, because $A - I + C = A - (I - C) < A$, which is true because $(I - C) > 0$, which is true because $I > C$ by assumption.

rium, the utilities from choosing either pure strategy are the same. In other words, in the mixed-strategy psychological equilibrium, an individual is indifferent over the pure strategies used with positive probability.

The difficulty and possibility of changing the prevailing legal/moral culture is reflected by the fact that individuals are unable to move unilaterally among multiple equilibria, but are able to do so collectively. The shared beliefs that human emotions depend on will vary with the particular context. For certain values, such as those for which organized markets exist and function smoothly in a society, $R = 1$. Everybody in that society will engage in monetary commensurability of that value. Universal monetary commensurability of a value corresponds to an emotional disutility from not engaging in monetary commensurability because of beliefs placing a probability of one on other members of society engaging in monetary commensurability for that value. For other values, such as loyalty and trust, for which there are no markets, $R = 0$, and nobody will engage in monetary commensurability of that value. Universal monetary incommensurability of a value corresponds to no emotional disutility from not engaging in monetary commensurability due to beliefs placing a probability of zero on other members of society engaging in monetary commensurability for that value. Finally, there are those "contested" values for which a certain intermediate proportion, P^{***} where $0 < P^{***} < 1$, of society will engage in monetary commensurability of that value. Incomplete monetary commensurability of that value corresponds to an intermediate level of emotional disutility from not engaging in monetary commensurability due to beliefs placing a probability strictly between zero and one on other members of society engaging in monetary commensurability for that value.

The above model suggests a natural role that legal policy can have in selecting one focal point among the multiple possible equilibrium outcomes by selecting a probability belief about what others will do as being salient or likely. In so doing, legal practices such as awarding monetary tort damages can alter beliefs over the degree of actual monetary commensurability as well as monetary commensurability discourse, thereby altering the resulting social equilibrium outcome by altering individual preferences regarding monetary commensurability.

V. ENDOGENOUS ATTITUDES OVER COMMODIFICATION

The above model can easily be reinterpreted to provide a formal analytical framework to model the possible domino effect that com- modification can have across values. Reinterpret P as the proportion of values (or the time) that the law or government agencies commod- ify. As before, P lies in the closed interval [0, 1]. Reinterpret R to be the mean of an individual's beliefs over P. As before, R is the subjec- tive expected value of P. Reinterpret I to be the status quo utility for an individual not to engage in any commodification. This could be thought of as representing a Marxian "utopia" of universal noncom- modification. Reinterpret C as the status quo utility of switching to engage in universal commodification for those who initially engaged in universal noncommodification. By assumption, $I > C$. Suppose that the utility from engaging in universal noncommodification de- creases (for simplicity, linearly) in R. That is, we assume that the utility from engaging in universal noncommodification is represented by a function of R of the form: $U(R) = I - AR$, where $A > 0$ and $C > (I - A)$. The condition that $A > 0$ is the formal representation of the as- sumption that an individual's utility from engaging in universal non- commodification decreases with that individual's expected value for the proportion of values commodified by the legal system or govern- ment policies. The condition that $C > (I - A)$ is the formal representa- tion of the hypothesis that an individual's utility from engaging in universal commodification is greater than the utility from engaging in universal noncommodification when laws or government policies are expected to engage in universal commodification, that is, when $R = E(P) = 1$.

As in the model in Part IV, this game has two strategies, namely, engaging in universal commodification versus engaging in universal noncommodification. As before, there are three psychological equi- libria, two pure ones and one mixed one, namely: $R^* = 0$, $R^{**} = 1$, and R^{***} with $0 < R^{***} < 1$. In this reinterpretation of the model in Part IV, there are three endogenous degrees of commodification associated with three equilibrium probability beliefs, which can be interpreted as endogenously determined corresponding social norms.

The first pure-strategy psychological equilibrium involves $R^* = P^* = 0$ and represents a world in which the state and individuals engage in universal noncommodification. The second pure-strategy psycho- logical equilibrium involves $R^{**} = P^{**} = 1$ or the other polar outcome in which the state and individuals engage in universal commodifica- tion. Finally, the third and mixed-strategy psychological equilibrium

involves $R^{***} = P^{***} = (I - C)/A$, or the outcome where the state and individuals commodify this proportion, $(I - C)/A$, of the possible values or that proportion of the time (and do not commodify the complementary proportion, namely $1 - [(I - C)/A] = (A - I + C)/A$, of the possible values or that proportion of the time).

As before, this model implies that legal or government policy can select a focal point among the multiple possible equilibria, by choosing a probability belief about what the state or the legal system will do as being salient or likely. In so doing, government practices or legal policies such as the use of monetary CBA can alter beliefs over the degree of actual commodification as well as commodification discourse, and thus can alter the resulting social equilibrium outcome by altering individual preferences over commodification.

CONCLUSION

The articles by Craswell and Adler, and more generally this Symposium, make an important contribution to legal scholarship by warning us not to engage in commensurability discourse unquestioningly or inappropriately. More importantly, there is a strong argument for proceeding with care even when the discourse of commensurability is used tentatively and appropriately, because that discourse has a potentially dehumanizing effect. Of course, there are many dialects within the language of commensurability, and commensurability is just one language among many. Commensurability rhetoric is a powerful and seductive force with much appeal. But we must use that rhetoric wisely and cautiously, especially when examining contested examples, such as baby-selling and vote-trading.

The key question we as a society must answer is whether we are willing and able to "buy" into some, but not necessarily all, of commensurability rhetoric if it reflects and usefully shapes the legal and social world. The answer has to be and hopefully is yes. That universal monetary commensurability or commodification would lead to a strange understanding of humanity is a position most people would believe is true. This is formally captured in the models of Parts IV and V by the fact that individuals' utilities are lower in a world where all of society engages in monetary commensurability of a value or where the state engages in universal commodification as compared to a world in which they do not so engage. Even most economists view the Arrow-Debreu system of complete markets not as a positive description likely to ever accurately reflect reality, but rather as a normative benchmark against which one can compare reality.

It is also virtually inconceivable that our current society could adopt universal monetary incommensurability or noncommodification. This leaves the stage for some type of incomplete monetary commensurability and commodification. The purpose of the models in Parts IV and V is to demonstrate how this "Middle Way" is theoretically possible. Of course, the models are simplistic. Individuals who do not engage in universal monetary commensurability or commodification may not have the preferences assumed in those models. They may be committed to not engaging in universal monetary commensurability or commodification regardless of the actions of other members of society or the state. If that is the case, though, there is no reason to be concerned about the social psychological effects of monetary commensurability or commodification. The models are constructed to demonstrate that even when individuals' preferences are malleable, there are other possible outcomes besides universal monetary commensurability or commodification. That such a proposition can be proven even in a utilitarian framework is the substantive contribution of those models.

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